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CURVATURES OF THE SPINE IN GROWING CHILDREN.

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These deformities in varying degrees of severity are unfortunately so common among the school children of our communities it is important that more attention should be paid to the subject by general practitioners, as well as teachers and parents. Investigation in the past twenty years has given the specialist much added knowledge on the subject as well as much that is complex and demanding still further research, but the main important facts are simple and should be more generally known. Curvatures result, in a large majority of cases, from the inability of the spine to bear the weight which falls upon it in the erect position. Quadrupeds and quadrumana may be said not to suffer from these curves. To a certain degree such curves are physiological; in weakened spines, however, they become pathological. In the early and less advanced stages they can be corrected; in all stages they can be helped.

For convenience they may be classed as front and back curves (anterior posterior curves, round shoulder, hollow back); simple side curves; twisted side curves. For the purpose of treatment and of prognosis it is important to recognize these variations from the normal at an early stage of their development and to be able to note with accuracy improvement or the reverse. As these cases are in the main the results of defects in growth, changes in the curves are slow in development. The practitioner who trusts to his memory is liable to be deceived by his expectations.

There are many methods of recording these cases and the simplest, if sufficiently accurate, will best suit the general practitioner. It is necessary to note the outline of the trunk seen from behind including the slope of the shoulders and the line of the hips; the line of the spinous processes; the position of tips of the scapulæ; in side view outlines of the trunk proper uncomplicated by the projecting scapulæ; the lateral flexibility of the lines of the spine and the degree of fixed rotation. Records of round shoulder curves of sufficient accuracy can be made by the aid of a steel tracing rod attached at one end to a flat plate placed at right

angles to the rod and furnished with a hole large enough for the point of a marking pencil. Three inches at the other end of the rod should be bent to a right angle to enable the tracer to clear the scapulæ in taking side tracings of the spine. If a sheet of paper is pinned on a smooth board and the patient placed sideways (sitting or standing) a suitable distance from the paper, the tracings can be easily made. Taken from time to time they furnish a simpler and more accurate record than a photograph, shadow tracing or skiagram.

Round shoulder curvatures are the most common forms of spinal curvature, and may be classified according to the situation of the curves. In some cases there is a marked lumbar lordosis, less marked or even absent in others. In other cases the most characteristic feature of the distortion is a projection of the shoulder blades. In young children there is little stiffness in the movement forward of the spinal column, though localized stiffness may be marked among adults. In recording the cases it is important to secure tracings of the middle line of both the back and the front as seen on lateral view. These tracings, as previously stated, should be made to avoid the projection of the scapulæ which, on account of being loosely hung from the upper part of the spinal column, are independent of the spinal curvatures proper. It is for this reason that shadow pictures or photographs do not furnish the desired data in the observation of these curvatures.

In treating this condition the predisposing influences should be borne in mind. The erect position is impossible for the quadruped, and is difficult for the ape and infant. It demands a definite amount of strength in the spinal column and the connected muscles and ligaments for normal posture with the physiological curvatures necessary for body and trunk balance. Weakness in any of the tissues or portion of them destroys the balance and faulty curvatures result. These, if habitual, occasion in time structural changes; the curved portions of the spine lose their normal flexibility and distortion is developed. There are manifestly two methods of combating this: First, strengthening the spinal column; second, diminishing the superimposed load. Forcible correction applicable in some forms of resistant scoliotic curvatures or the use of corrective plaster or celluloid jackets are inapplicable in round shoulder deformities, as they demand

an inclusion of the neck and head in order to correct pressure. Cumbersome apparatus is also debarred, as it increases the muscular weakness which is an etiological factor of the deformity. Muscular exercises which do not develop the sets of muscles necessary for correct attitude should be avoided as burdening a child not equal to the muscular tax levied by daily life. The need of treating even the milder cases in the formation period of child growth cannot be ignored. But for a rational understanding of the principles underlying rational treatment, the natural laws of development must be borne in mind.

The creeping infant is a quadruped until increased strength of the gluteal and lumbar muscles makes the erect position possible. If the back muscles are not strong enough to steady the spinal column in the normal posture, the superimposed weight comes upon the ligaments, and, due to the

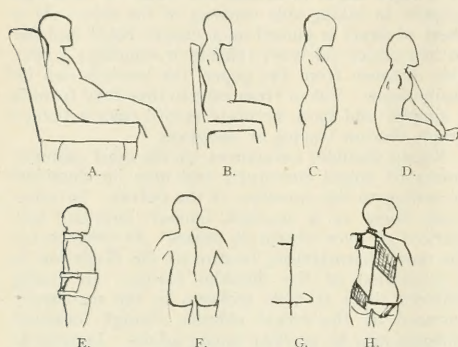


FIG. A, B, C, faulty sitting and standing attitudes; D, trunk contour in floor sitting; E, check-rim brace in round shoulders; F, lateral curve; G, light steel brace; H, spiral webbing and strap applied to give correcting pressure.

inefficiency of these, the normal curvatures become exaggerated and a hollow back and round shoulders follow in varying degree. Normally, the child should remain a quadruped until its back muscles justify bipedal locomotion. Circumstances may interfere with a balanced development, a nascent ambition may exceed a retarded muscular strength. When this condition exists, it is impossible to keep the child a quadruped, but the child's activity and daily habits should be directed with a proper appreciation of existing conditions. Measures should be taken to limit the burden of the superimposed weight bearing and to develop the supporting muscles. As a rule the leg muscles gain sufficient strength as soon as the child begins to walk and do not demand consideration, except that it should be remembered that the strength of the foot muscles should not be impaired by constricting foot wear.

Under pathological conditions the period of erect position should be limited below the length of time possible for a normal child. This was formerly done by prescribing a tedious daily period of horizontal recumbency not easily enforced for a long period, nor were the gymnastic exercises formerly employed wisely selected for economizing strength.

Attention should be directed in a weak child solely to the development of muscles where strength is needed and not to more generalized exercises. One of the most difficult questions is the prevention of faulty chair attitudes, not only at home but in school. Of the thirteen to fourteen hours of a growing child's day, from eight to ten hours are often passed sitting in badly fitted chairs. Much thought has been expended upon school seating but the problem is far from solved, for the simple reason that the restless child needs a constant change of position, and a chair is designed chiefly for one position. Home chairs are practically all designed for adults and therefore not fitted for children. In contrast to this the more natural life of a child in a primitive society is of interest. In primitive society the children when not active in the erect position were either recumbent, prone, lounging in positions in which the superimposed upper trunk weight did not fall upon the lower portion of the spine or pelvis, or sitting upon their haunches with their spinal column free to move, adapting itself to balance and to an adjustment of weight and changing the play of the back and trunk muscles, thus furnishing rest to overused muscles and yet constantly exercising these muscles in steadying the erect attitude.

In civilized life of modern times the chair back plays an important part. The child instinctively leans on the back of the chair, and as the seat is not designed for the different ages of growing children the depth of the seat prevents a suitable support to the lower part of the child's back. A constant strain comes upon the lumbar fascia and the muscles of the back are not exercised. There is, therefore, a constant strain without muscular development. Lying upon the floor is discouraged. A normal healthy child can stand the resulting back strain, but a weakly or overgrown child is constantly subjected to abnormal conditions for his back. It is to be remembered that the general use of the chair is comparatively a modern custom. The chair, though as old as the Egyptian dynasties, was the seat of monarchs or the ruling classes. When seats were used for ordinary people they were low stools, easing the leg and thigh muscles from the strain of sitting on the haunches and for an aid in rising from the low level of the ground.

The narrow seated straight backed chairs of the early settlers checked the excessive leaning on the chair backs but did not diminish the superimposed upper trunk weight. Furthermore, they were used in homes where the household activities gave muscular activity to the child and did not favor lounging. This suggests that the spinal curves so common in modern life may be considered as chair back distortions and largely due to modern conditions of prolonged chair back seating. Sitting upon the ground and floor checks a tendency to an abnormal forward tip of the pelvis and the resultant exaggerated hollow back and increased danger of enteroptosis. If it favors a backward projection of the lumbar spine this was counteracted in primitive society by the ready assumption of a recumbent attitude and a frequent change of position.

A study of the contour lines of the trunk, as

taken from the side, shows great variation from what may be determined the normal type. These variations are so numerous that an attempt to classify them may lead to confusion. Briefly stated, they may be considered as an exaggerated forward bending of the upper part of the column or the whole of the column, with exaggerated hollowing of the back. In some cases one or the other feature is the more noticeable and in some instances both may exist to an exaggerated degree or either may be present to an abnormal extent with an abnormal diminution of the usual physiological curve. In short, there may be round shoulders, curved backs, hollow backs, flat backs and sway backs with flattened chests and protuberant abdomens.

Technically these may be considered an exaggeration or diminution of the normal curvature, dorsal kyphosis, lumbar lordosis, and their combination in varying degrees. The projection of the shoulder blades is largely a condition independent of the curve but often accompanying it. It is dependent chiefly on a lack of development of the muscular strength of the back muscles attached to the scapulæ at one end and the spinal column at the other.

Climbing exercises and lifting work are not common in modern child life, especially among girls. The downward drag of the arms stretches the muscles and there is little exercise to strengthen them. The drag of clothing hanging from the shoulders also favors the dropping forward of the shoulder blades.¹ In treating these cases an important indication is manifestly to relieve the child from an excess of the superimposed upper trunk strain on the lower portion of the back. The child will not return to the habits of a quadruped and constant flat recumbency continued for a long period is not adapted to restless child life.

Prone lounging and the prone position should be encouraged where domestic conditions make this feasible, and enforced recumbency or the prone position should be enjoined for a limited time in the middle of the day. The use of a sloped back chair should be advised for such sitting hours as are required, or, when that is not at hand, or in pronounced cases, a special reclining board should be used. A light board, narrowed through the back and between the shoulder blades and long enough to reach from the head to the lower part of the buttock can be placed on a lounge at a reclining angle so that the greater part of the trunk weight shall rest upon the inclined board. The knees of the child should be flexed and a pillow placed under them. A swathe placed around the board and encircling the abdomen loosely presses the abdomen and lower chest back to the board. Padding the board is rarely necessary but can be done. This arrangement has the advantage over the old fashioned reclining board in that it is less irksome to the child and can be used for a longer period. The child can use its arms freely, can look about and can read either with or without the aid of a book rest.

In prescribing muscular exercises in cases of this type, beside general exercises which are always beneficial and the setting up exercises useful for

improved carriage, it is necessary to strengthen the gluteal and the lower back group of muscles, the trapezius, and the group of muscles which hold the head and neck from falling forward. When faulty attitudes are constant, such as exaggerated hollowed back or rounded shoulders, the best exercises are those that will develop the desired muscles with the spine as little distorted in its curve as possible. Where no exaggerated lordosis is present, exercises of the head, back, and arms, with and without dumb bells, are employed, and those that tend to raise the head, shoulders, trunk, and arms, while the legs are held, are also of service.

Where, however, lumbar lordosis is present, a similar series of exercises is suitable with the patient kneeling, the trunk and face resting on a low lounge. The child can be made to exercise the back and gluteal muscles without danger of increasing the exaggerated inclination of the pelvis which is sometimes seen in the erect position, from undue pull of the ileopsoas muscles. Creeping exercises with a weight hanging from the neck are beneficial, especially in the round shoulder deformity. Rowing exercises, with a low stool for patients with hollow backs and a higher seat for those with round backs or with a head instead of an arm pull for round shoulder patients, can be made to strengthen the back and gluteal muscles. Where the curves appear to be chiefly due to faulty attitudes rather than unusual muscle weakness, a useful exercise can be prescribed in directing the patient to sit and walk while carrying on the head a small light cushion or pillow and later a basket in which weights of varying amounts may be placed.

A judicious combination of prescribed rest and exercises conscientiously carried out, with a proper regard for the need of maintaining the willing co-operation of the patient, constitutes the rational management of the lighter forms of anterior posterior curves. As changes and progress are necessarily slow, a gradual, careful and accurate recording of curves at stated intervals is essential, as well as records of weight, height, and growth. In considering the daily routine of the child's life, the character of the chairs used is of importance. Nothing is said here in regard to school seating, which is a subject as a rule beyond the control of the family physician, whose function it is to decide whether the patient can withstand the strain of ordinary school life or should be given the benefit of better health growing activities.

The abolition of chairs and the use of mats, low stools, lounges, and divans though practicable in nursery life is so contrary to the customs of our civilization that any suggestion as to the abolition of ill fitting chairs in the domestic life of childhood would be useless. Where suitable and properly fitting chairs are not provided at home, low stools are undoubtedly less injurious for growing children than ordinary chairs designed for adults. In round shouldered children the chest is flatter than normal, therefore deep breathing exercises should be prescribed. Climbing, pulling, bar hanging, and all exercises which exercise the back muscles connected with the scapulæ are beneficial. In growing children abnormal anteroposterior stiffness is rarely

found. If present to any extent, as shown by accurate contour tracings in flexed and hyperextended positions, head hanging for round shoulder curves and arm hanging for lumbar curves are serviceable.

If marked abnormal stiffness is found in hyperextension in any portion of the column, correction can be secured by means of a strap passed under the back of the patient, who should be recumbent upon a flat surface, and secured to a cord running over a pulley in the ceiling. In this way hyperextensive stretching can be exerted at a desired portion of the spinal column.

The use of an appliance to overcome a deformity dependent for its application largely upon muscular action is manifestly unsuitable in a growing child. In many cases these faulty attitudes may be counteracted in the young by painstaking attention to correct carriage. The slouching boy entering West Point becomes noticeable as an officer of erect carriage. Occasionally among weak muscled individuals, faulty bearing is so constant in the erect attitude that the development of structural changes in tissue, of adaptive shortening of muscle fascia and ligament, threaten eventually to cause faulty formations in cartilage or bones. In such cases the use of apparatus to form the habit of correct carriage is necessary. The weakening of muscular power can be avoided by making use of appliances for a limited period each day and supplementing the treatment by muscular exercises and rest in reclining chairs or lounges. The appliance should be as light as possible and applied with as little muscular constriction and unsightliness as is compatible with efficient correction of the faulty attitudes. Most appliances are not thoroughly effective and are cumbersome. They merely attempt to hold the shoulders back by means of crutch supports based upon a pelvic and trunk hold, though in order to correct an inclination to forward bending of the head a neck control is necessary.

An appliance can be arranged by means of a steel upright reaching from the upper part of the neck to the middle of the sacrum, with a cross piece at the level of the middle of the scapulæ and straps and abdominal pad, in order to press the curved back forward and the shoulders and neck as well as the abdomen backward. Such an arrangement can be worn for a time daily under the clothing and serves as a check to incorrect attitudes without unduly restricting ordinary activity.

LATERAL CURVATURE.

That in addition to anteroposterior curves, lateral curves and lateral curves with twists of the spinal column and accompanying distortions of the ribs should be developed under favoring conditions, would not appear surprising to any one familiar with the anatomical structure of the trunk and the many possible conditions favoring deviation of the superimposed trunk weight and the ability to sustain these deviations normally. The resulting distortions vary in degree and to some extent in character and are so diversified that it is natural that much should have been written in past medical literature describing these deformities and suggesting methods of treatment. These curvatures are

etiologically faults in growth and not results of traumatism or changes due to inflammatory processes. One of these abnormalities in a growing child demands not only corrective measures for a short time but a continuation for a long period of both these and all other necessary preventive measures. The element of careful, continued treatment is needed for this class of patients more than for any others in the entire category of surgical ailments.

The complexity of the subject and the little exact knowledge until comparatively recently as to pathological conditions have given rise to more theories as to treatment than generalizations founded on extended observations following individual cases for several years of growth. This has also resulted from the chronic nature of the affection and the slowly developed changes. A surgeon without precise data, relying upon his memory and impressions as to a condition, may unconsciously persuade himself as to an improvement in carriage or figure which may not be apparent to an unprejudiced observer. As a result of this a great variety of mechanical appliances, surgical devices, and methods of treatment have been recommended, and as much time is needed before definite and permanent results can be observed from their use, there is some difficulty in forming positive opinions as to the benefit to be expected from the measures of treatment employed. A temporary improvement is not a cure.

The old treatment with spinal coaches, heavy mechanical devices, and crude forms of gymnastics may be rejected as not based upon pathological knowledge, careful observations, or skilled mechanics. The extensive researches of the last twenty years have collected many important facts and it is now possible to present more sensible and practical remedial measures. For practical purposes, cases group themselves not only according to the shapes of the curves but according to their gravity and the amount of stiffness and structural change. This paper is intended to refer especially to the more flexible forms of lighter grades of curvature, as they have received less attention by modern surgical writers than the more severe grades and therefore often perplex the family physician. Many lateral curvatures in growing children, like anterior posterior curvatures, are merely habit curvatures and correct themselves in the gained strength of normal growth under proper conditions; others threaten structural changes and permanent distortions. In others, again, distortion and structural changes have already become established in varying degrees of development. The severe grades of fixed curvatures with marked rotation of the ribs are not considered in this paper as they have been thoroughly discussed in recent years by many surgeons, and the possibility of correcting many resistant curves by the use of strong forcible pressure efficiently applied has been abundantly demonstrated. There are, however, a large number of lighter cases not suitable for harsh measures and yet of too threatening a character to be ignored or to be left simply to the care of the gymnastic teacher or nonmedical physical culturist.

An important point requiring judgment is whether in the lightest form of cases distorting structural changes are imminent. This can be determined to a satisfactory degree by examining the extent of lateral flexibility as shown by the curvature of the spinal column in lateral flexion in both directions, if care is used that the lateral trunk motions are made without rotation of the cross plane of the pelvis or shoulders.

Tracings of this sort, while not of exact scientific physiological value in determining the amount of rotation of the individual vertebræ, are useful as indicating variations from normal lateral flexibility and can be readily made by the practitioner or family physician not equipped with the expensive appliances of the orthopedic specialist. An examination of tracings in a number of cases shows considerable variations in the lateral stiffness and lateral flexibility in different children. Frequently the column is more flexible in bending to the right than to the left side. In cases with marked rotations, anomalies in lateral flexibility are often found due to structural changes in cartilage and ligament, if not in bone. Where marked lateral stiffness is found on one side without observable rib rotation, a condition of some structural changes, loss of elasticity, or abnormal shortening, may be presumed to exist in the tissues checking lateral bending. Except to the extreme degrees of lateral bendings, these checks in growing children without distortion can be assumed not to be osseous abnormalities in a large majority of cases, and where osseous deformities exist they can be determined by irregularities in the contour and outline of the spine.

Where localized abnormal stiffness is present in the spine, correction by free muscular exercises is not to be expected, nor are the ordinary resistant passive exercises sufficiently precise in their effect to furnish exact correction in the regions of diminished flexibility. They may even increase the existing flexibility at certain parts where this is undesirable, and this may not be noticed unless changes in lateral flexibility are continuously and accurately watched.

Lateral curvatures differ but little pathologically from anteroposterior curves except in the location and extent of the structural changes. There is also a difference in the determining lateral aspects of the column. These conditions are many and among them occasionally are found congenital abnormalities or defects of the skeletal structure. In ordinary cases in growing children there are the same stages of development of the deformity as in anteroposterior curves, viz., the stage of constant faulty attitude, second, the stage of commencing structural change in bone and ligament, and third, the stage of abnormal localized stiffness of the spinal column with marked structural change.

In pathological lateral curvatures there is, especially in the dorsal regions, necessarily a rotation of the individual vertebræ around a definite point. This twist varies in degree and in location, probably on account of the varying static conditions and on account of the varying strength of the resisting structures. These variations lead to attempts at

classification of these curves according to degree and localization and the amount of distortion. The twist in the spinal column, when it is developed to a pathological extent changing the strain upon the ribs and the sternum with the resulting distressing deformity, makes pronounced scoliosis one of the more grave deformities and its proper treatment a matter of no little concern.

In the less severe types in growing children the methods to be employed are, in the main, similar to those already mentioned in anteroposterior curvatures, viz., measures of accurately recording the curves and flexibility of the spinal column, for muscle strengthening exercises; relief from superimposed weight; corrective measures; at times supporting and correcting appliances. There is, however, this difference between the two varieties of deformities, that the threat of the rotation deformity in the lateral curve makes this variety of spinal curvature one which demands thorough and careful treatment more urgently than is often the case in simple uncomplicated anteroposterior curvatures. It may be said that any evidence of a rotation deformity justifies energetic measures, which in the earlier and even in the well marked cases if persistently applied promise beneficial results.

Too much emphasis cannot be laid upon the fact which the physician should always bear in mind, that as he is dealing with a nonoperable vice in growth, results cannot be obtained rapidly, that for this reason home treatment furnishes the most important of the measures to be employed, and that it should be prescribed in a way adapted not only to the needs of the case but also to the intelligence and nursing capacity of the patient's family.

To correct a distortion temporarily for a few months by a corset or brace may be beneficial in a growing child, but it does not ensure future normal growth unless the measures are continual during the remaining growing years. This is only possible in a majority of cases through the guidance and careful direction of the mother or guardian of the growing child or adolescent.

Manifestly, accurate records of the important features of these cases are of prime importance in lateral curvature. Among these are the amount of rotation, the curvature of the column, its flexibility, its variation from the normal, and a deformity in contour.

The oft recommended method of tracing the lines of the back placed before a glass plate, with the pelvis secured, has many advantages if employed in a simple form. It requires, however, a dioptr to secure accuracy. If the eye looks obliquely or at different angles at the sides of the trunk or the slope of the shoulder or hips the tracings will vary and lose accuracy. A simple and easily made dioptr is furnished by piercing a small cube of metal or wood, easily moved by the hand and kept flat on the plate glass surface, and inserting a small brass tube large enough and not too large to be looked through on to the point of a pencil placed obliquely in the block and adjusted to mark on the glass. Glass marking pencils make a sufficiently clear mark. A darker and more readily made mark is made with an eyebrow pencil.

These, however, are so soft that they quickly need replenishing. Still darker marking can be made by using instead of the pencil a small water color brush dipped in black paint.

The patient should sit or stand with the back as near as possible to a plate of transparent glass, in a well lighted room with a white screen or light contrasting surface in front. The pelvis is sufficiently secured if the patient straddles a chair or sits squarely on a stool or stands with the feet somewhat apart and the anterior superior spines held firmly against the back of a chair back, on which the hands can also be placed with the arms spread from the sides of the trunk.

The patient's position is less unnatural and rigid in this way than if more firmly secured, and this furnishes a more satisfactory position for a record. The recorder can easily notice and correct any undesirable attitude and observe if the plane of the shoulders and pelvis is not parallel with that of the glass plate. The lines of the shoulders, trunk, and hips can be readily and accurately traced and marked on the glass by means of the pencil armed dioptr, and also the tips of the scapulae and the marked lines of the spines of the vertebrae, with the patient standing straight or bent to either side, care being taken that the side motions are made without twisting the plane of the shoulders and pelvis away from the plane of the glass. Tracings on tissue paper taken from the lines marked upon the glass serve as permanent records and can if folded be kept compactly with other notes of the case.

It is evident that the glass plate must be firmly fixed on a stand. This is easily arranged by placing a piece of window glass of desired size in an unbacked picture or mirror frame and securing it on a stand. If a number of cases are recorded by the above mentioned methods and the tracings examined, facts of interest will be noted, especially in regard to the variations in the side flexibility of the line of the vertebral spinous processes, both in normal cases and in those with pathological curves. In many instances without lateral curvature the flexibility to the right will be greater than to the left and the centres of greatest side flexibility will be found to vary considerably as to their localization in the vertebral column. This is probably due in some instances to osseous or cartilaginous anatomical idiosyncrasies and in others is the result of ligament adaptations to acquired habits of attitude or movement. These lines of curvature furnish useful records both of an abnormal condition of spinal mobility or of changes under treatment or observation, and may serve as a useful diagnostic symptom of early structural change not yet apparent to the eye.

Various elaborate orthopedic appliances have been devised and are of use for the purpose of correcting pathological stiffness of the spine. It is desirable that a simple and effective device suitable for home use be available for constant use. In arranging exercises for lateral curvature, as for round shoulders and anterior and posterior curvature, a distinction must be made between muscular exercises, that is those for the development of weak and but little used muscles, and for the strictly corrective exer-

cises, that is for the correction of faulty posture due either to faulty habit in attitude or to shortened or inelastic ligaments. Where muscles are to be exercised this should be done with as little opposition as possible from imperfect posture, that is with the curvatures as near as possible to the normal, and, if the faulty curves are to be stretched and straightened, with as little resistance as possible from resisting muscles. This distinction is not always made in class room exercises, with the result that the proper muscles are not always developed nor the resistant tissues always stretched at the most needed points.

Corrective stretching is best done with the trunk muscles relaxed and in marked lateral curvatures with the patient recumbent, prone, or resting, without the added opposition of superimposed weight. This can be most simply done by side pulling straps properly adjusted, guided by the knowledge of the localization of the side stiffness obtained by side bending tracings. When muscle developing exercises are prescribed they should be planned after examining carefully the special groups of muscles to be developed, that energy may not be expended unnecessarily upon the strengthening of muscles already adequate for the work required of them.

It is difficult to state precise general rules as to muscular exercises in individual cases, but the matter is not unduly complicated if ordinary judgment is employed after the patient's attitudes are studied and the direction noted into which the patient tends to sag. Where the patient is noticeably weak, the muscular exercises should be taken in the recumbent posture. Later, with regained strength, they can be taken in a position corrected by means of side pulling straps or head suspension, and finally, with the patient standing, either with the side strap pull or self correction.

The most important group of muscles are those along the spinal column connecting the vertebrae and the pelvis, the head and the spine, but in addition to these the trapezii, the scapuli, the serratus acting on the scapulae chiefly, the glutei, the ilio psoas muscles, and the abdominal muscles which hold the weight of the intestines are all to be considered. Muscles lying in habitual concavities may, as a rule, be considered weaker than those subject to the exercise of a more constant load, unless this strain is borne by stiffened ligaments.

The exercises should be as simple as possible so they may be done by the patient at home under the supervision of a parent or intelligent attendant. It must always be borne in mind that muscular development is not a speedy process and requires in most cases home treatment under inspection at stated intervals by the surgeon in charge. If gymnastic apparatus is used it should be of the simplest character. As a rule dumb bells of various weights can be relied upon to furnish sufficient gradation. Weight and pulley appliances are, however, often needed for the development of certain muscles.

Where a twist at any part of the spinal column has become a marked symptom, as shown by the prominence of one shoulder blade or the unnatural projection of the ribs or of one iliac crest, more

than corrective stretching or muscle developing exercises are needed. These symptoms indicate that the column is yielding under faulty imposed superincumbent weight and that the checking intervertebral ligaments are unable to keep the vertebrae from rotation, with the threat of permanent alteration in the respective lengths and elasticity of the stretched and shortened ligaments and an ultimate change in the shape of the intervertebral cartilages and even in the vertebrae themselves.

Under these circumstances a careful examination of the patient is necessary to determine whether any rachitic or congenital anomaly of the spinal, sacral, or clavicular bones is present; a shortening of one limb; a previous empyema or distorted sternum determining a faulty position, or whether the twisted posture results from the habit of sitting or standing with one side of the pelvis or shoulder advanced more than the other, or from a twisted attitude of the head as has been rarely observed. It is easy to exaggerate the gravity of a slightly rotated spine. In some uncomplicated instances the condition may be outgrown, but as a rule such cases need careful and continued observation and appropriate treatment, the thoroughness of the treatment depending upon the extent and the corrigibility of the rotation under normal pressure.

The extent of the twist is easily seen by looking along the flexed back of the patient, and the twist should be recorded by a careful tracing record. It is a matter of judgment in each case whether it is safe to rely on a more constant supervision of the patient with an increased enforcement of daily recumbency or, as may be necessary in the more rapidly developed deformity and more rapidly growing patients, to prescribe rigid recumbency with a supporting plaster of Paris posterior shell, with the application of intermittent daily corrective pressure. In the more severe cases constant correcting pressure may be necessary.

Intermittent pressure correction can be readily applied by adding a front counter pressure to the reclining board described. This counter pressure can be furnished by a properly padded and sufficiently wide, light board which by means of straps attached to the reclining board can be made to exert counter pressure upon the sternum and unduly projecting anterior portion of the trunk. Constant correction can be exacted by a properly applied plaster jacket, but in the less grave cases and in growing children, a much more acceptable means can be furnished by celluloid paste anterior and posterior shells, made from casts taken with the patient in a recumbent and in a prone position. These should include the neck and pelvis and should be cut so as not to exert pressure where it is not required. The shells should be cut so as to leave a gap at both sides when applied, with proper strap attachment so that any desired pressure may be furnished.

It is manifest in lateral curvature, as in round shoulders, that it is unwise in critical cases to rely solely upon intermittent recumbency with possible faulty attitudes a greater part of the seated daily life of the child, even if supplemented by daily exercises. A limit, moreover, must be placed upon

the constant use in a growing child of plaster, celluloid, or heavy corsets which by constriction cause atrophy or weaken the trunk muscles needed in the future activity of the child. There is need of a light, not unsightly appliance, exerting lateral oblique forward and backward pressure as required by the character of the distortion. The dropping shoulder should be checked to prevent the distorting lateral drag from the weight of the arm. In addition the shoulders should be prevented from twisting away from the normal cross plane of the trunk and pelvis.

A reasonably efficient check brace can be furnished if a steel upright with a short cross piece at the top be attached to a pelvic band and furnished with a strap which half encircles the neck and a strap attachment passing under the axilla on the side of the dropping shoulder. Adjustment and variation are needed to meet the different curves and deformities of different cases, but the simple principles of the appliance and the ease with which adaptation can be made to meet the needs of individual cases make the appliance a serviceable one for certain cases.

The treatment of flexible and slightly resistant curvatures in growing children demands an unusual exercise of judgment, patience, and persistency. This, however, is no reason why the surgeon should turn from the duty of taking charge of such cases, or relegate them to the care of those unqualified from the lack of thorough medical knowledge to furnish the most rational and thorough methods of relief. The principles of treatment are not difficult to comprehend, nor are the details beyond the range of every painstaking practitioner. A broad placed band passing from the upper part of the upright and spirally encircling the trunk can be made to exert pressure on the projecting ribs behind and on the projecting region in front, if strapped to buckles on the pelvic band on the opposite side. The pelvic band is kept from tipping or rotating by means of perineal straps.

The conclusion reached in many years of observation of this class of deformities may be summarized as follows:

When treatment is needed early treatment is important.

The amount of abnormal spinal rigidity as well as the degrees of the curvatures or twists are, important factors to be considered.

The method of treatment employed whether gymnastic, corrective, or mechanical should be used with a precise purpose and with a definite knowledge of the results obtained.

The comfort and contented cooperation of the patient is an important factor in securing the best results and, next to hygienic measures, one of the most important adjuvants in treatment.

Children with curved spines may be classed: 1. Those sitting or standing in faulty attitudes from indolence, weakness, careless habits, or faulty clothing, and 2, those with changed structure in the spinal column or where such change is threatened.

The first class is helped with little difficulty or grows naturally to a normal type if in healthy surroundings. The second class needs careful exami-

nation and special treatment. In some cases an adaptation of school study period is necessary.

It is, as a rule, undesirable that the attention of young girls should be called to any peculiarities in their figure.

To determine any changes in structure of the spine, back view contour tracings alone are not sufficiently reliable.

For accuracy side view tracings should also be taken, freed from the misleading position of the movable shoulder blades.

It is always necessary to examine the movement and change in stiffness of the spinal column itself and the degree of twist if any is present.

Children do not grow evenly and they normally pass through different stages of attitudinal habits. They tend, however, to grow true to a normal type, unless this is interfered with by ill health or unfavorable conditions.

As the variations of attitude are many the shapes of the back are correspondingly varied, but these normal varieties may, if desired, be grouped as flat backs, round backs, hollow backs, flexed backs and curved backs. These attitudinal flexible curves are so common, however, that they cannot always be justly called pathological, as the majority correct themselves. The abnormally stiff curved backs and twisted backs are to be regarded as pathological.

To what extent the variations of the attitudinal curves are in danger of becoming pathological, i. e., exceeding the limit of normal health, is a question of opinion. This opinion should be based upon as accurate observance as possible on the probable existence of any structural changes in the spinal column, indicated by abnormal stiffness as well as faulty curves and asymmetrical contours.

The chief obstacles to the growth of a child of normal type without the development of structural changes are: Poor health, poor environment, rapid growth, faulty clothing, and deforming occupations and habits, including an excess of seated and inactive hours.

Growing girls in good health with only slight attitudinal curves need only occasional, if any, observation.

Growing girls with marked attitudinal curves with no structural changes and girls with slight attitudinal curves and slight structural changes need more observation.

Girls with increasing attitudinal curves and marked and increasing structural change need vigorous, thorough treatment, especially if not strong.

In growing boys with flexible spinal curves, the need of treatment is dependent upon the outdoor play, activity, vigor, rate of growth, and the health of the boy.

Desultory and unsystematic treatment is of little use in the correction of curves. If treatment is undertaken it should be vigorous, systematic, and regular.

Growing girls should not be made unduly conscious of physical defects in shape, as there is a danger of exaggeration.

As early treatment is of great importance,

mothers should periodically examine the backs of these children and be cognizant of the plain facts in regard to spinal curves. The school nurse should be well informed in the subject. The general physician can easily familiarize himself with a working knowledge which would enable him to guide the management of these cases in their growing years.

The schools can be of help. An observant teacher who watches her class should be able to classify them in A, B, C, and D groups, according to general condition, evidences of vigor, and flat-chested, round-shouldered, crooked sitting and standing attitudes commonly assumed. The C classes will need careful observation and the D class thorough examination by some one well informed in the matter.

With a widely diffused knowledge of the subject and a general appreciation of the facts of the case, curvatures of the spine should disappear in our community. The school children and women would present better and stronger figures and the rank and file of our men be more upstanding.

The statistics furnished by the draft boards show that our population is physically below what it should be in our land of abundance. The soldiers returned from the training camps have taught what can be done with the average slouching street boy, farm hand, and college student. Prevention is more important than cure. Curvatures of the spine are notably preventable.

133 NEWBURY STREET.

IMPORTANT NEEDS OF HOSPITALS FOR MENTAL DISEASES.

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Most forms of mental disease that are not related to the actual destruction of nervous tissue are curable. Dementia præcox types, which constitute the majority of all cases of mental disease, have generally been asserted to be incurable, but despite this depressing dogma the possibility of improvement in most cases and a cure in many has been demonstrated repeatedly in the past four years at St. Elizabeth's Hospital. In more than fifty per cent. of the cases of this type the patients have been assisted to readjust to a normal social attitude, efficient selfcontrol, and clear thinking. They include cases of the so-called dementia præcox type of the paranoid, catatonic, and hebephrenic varieties; cases that were considered to be hopeless and incurable after from several months to two years of the most severe forms of mental derangement. The recoveries from abnormal compulsions and abnormal ways of thinking depend, in most cases, upon the nature of the uncontrollable emotions or autonomic cravings, the manner of the individual's resistance to the cravings, the individual's social obligations, the critical and suppressive influence of his relatives or custodians, and the manner in which he is treated or taken care of after he has lost selfcontrol. Each case varies considerably in some features from the general type, but in certain fundamental principles all cases, no matter what the type, are alike. These

fundamental principles, however, are not generally recognized by those who have charge of the methods and means of caring for and treating the mentally diseased in the great institutions throughout the country.

The fundamental principles are: 1, That the emotions or cravings of the individual must, in some manner, be relieved by giving the cravings free play to seek directly or indirectly what they need; or, 2, the individual must be assisted and given sufficient freedom and encouragement to redevelop the conviction of being socially fit and actually estimable in some capacity in order to develop substantial selfcontrol.

The inevitable results of not recognizing these laws of the emotions are: 1, The cravings tend to become uncontrollable and pursue an abnormal or perverse course of acquiring gratification which most often takes on the form of disguised or overt sexual perversities with derangements of the sensations, which, in turn, become the foundation of unreasonable delusions and hallucinations, becoming so vivid and persistent as to be mistaken for external realities and interpreted as being caused by secret intrigues or divine influences, thereby setting up a vicious circle of reasoning and the progressive tendency to become more eccentric and asocial; and 2, the unchangeable conviction of being miserably inferior, of never becoming worthy of respect or friendship, and always being forced to bear the remorseless stigma of irresponsibility and degeneracy. General Sherman is reported to have said that the hardest battle of his life was to live down the charge of insanity. The thoughtless attitude of the people is to be changed by educating them to have as much confidence in those who have recovered from mental diseases as they have in the recoveries from other diseases, in order to help the patient to be less fearful of being distrusted and disrespected. Both sides of this procedure have essentially a therapeutic value in that they are conducive to an easier and more durable recovery for the patient as well as exerting a humanizing influence on the people. Hence the procedure should be an important part of the therapeutic method, a permanent, outstanding feature of the hospital life of the patient, and the means of maintaining social contact between the hospital and the community.

The same great emotional and instinctive forces that build up an estimable, efficient personality by being able to pursue a harmonious, constructive course will destroy the personality when they are unduly suppressed and diverted from their true objects. Hence, certain methods of building character and mental integrity in the youth and maintaining it in manhood must be adopted by every hospital or asylum that cares for mentally diseased patients. Let the average man or woman imagine what distress he would suffer and what changes of character he would undergo if he were confined indefinitely in a small hospital ward, his judgment discredited, and forced to associate constantly with twenty to fifty other worrying, unhappy people, many of whom had lost control of themselves and become sexually perverse either

overtly or in fancy. The universal answer is that the experience would soon become unendurable to the sane man or woman and cause nothing less than prolonged misery and suffering. It now is recognized that this sort of confinement is most distressing even to the insane because of their uncontrollable cravings which tend to force them into perverse sexual adaptations unless vigorous diversions can be found. After eight years of intensive analytical study of many hundreds of patients of both sexes of every intellectual level and many nationalities, I am forced to the conclusion that all the extreme conditions of dementia not caused by organic destruction, and of chronic, heedless sexual perverseness are due, in most part, to the close, long continued confinement and seclusion in wards.

The mentally diseased, having lost selfcontrol and personal responsibility, are placed, automatically, in a vicious circle because their behavior must be supervised, and the community must be protected from their uncontrollable cravings even though the uncontrollable cravings cause great distress because they cannot seek the stimuli they need. The problem, therefore, is one of custodial and therapeutic method which will duly protect the community and the patient himself but will also give the patient the greatest possible relief from his cravings and stimulate the tendency to control and sublimate or refine them.

The careful study of a large group of patients (over 2,000) of both sexes has shown that in a great majority of cases of mental derangement the weird thoughts and the uncontrollable emotional cravings are greatly influenced by, if not mostly constituted of, sexual fancies and cravings, and that whenever such patients are confined they are placed in a situation which is directly contrary to the laws of nature. In nature when the sex instincts become active the tendency to seek, court, strive, play, and migrate becomes vigorous and dominant. The human animal, however, is confined and physical activity, that should be characterized by spontaneous outbursts of vigorous competitive activity and play, is suppressed or diverted until the cravings must be gratified by weird fancies, autoerotic or perverse compulsions, hallucinations, and sensory derangements.

The tendency to increased sexual abnormality is to be seen in manic depressive insanity in both the male and female subjects and in dementia praecox types when confined or suppressed. It often leads either to compelled erotic outbursts or panic, and terrific striving to prevent the outburst and degradation.

Common sense and practical experience shows that the patients are right when they plead for more liberty and opportunity to get vigorous outdoor exercise which will exhaust the volcanic surplus of energy and fatigue them sufficiently to induce sleep when confined for the night. Because of the patient's inability to control his thoughts sufficiently to do systematic thinking or work, and because the erotic energy naturally compels vigorous play, there is but one truly practical solution and that lies in vigorous, competitive, supervised outdoor sports and exercises. Every patient, no matter what the

age or sex, if physically sound should take part in some form of outdoor sports that fascinate the individual. If the patient is seclusive some sort of running ball game and walking exercise should be made compulsory in order to get him out of the wards.

The American people, despite the inconsiderate resistance due to the organic and functional inferiorities of the senile, the awkward, the ultrareligious, and the timid, are awakening to the absolute necessity of vigorous physical exercises and athletic games and sports for the maintenance of healthy minds and bodies. More than any others, the people who are secluded in prisons, asylums, and hospitals and deprived of the freedom of selecting means of relieving their emotions or cravings, should be given daily opportunities to indulge in physical play in order that they may remain healthy and comfortable, and resume a healthy citizenship.

Provisions should be made for a large variety of outdoor sports in spring, summer, and fall, such as baseball, football, basketball, tennis, la crosse, golf, boxing, wrestling, swimming, drilling, and class calisthenics; and in winter, thorough gymnasium work, bowling, pool, and billiards should be provided. Beside sports, fascinating vocational training is necessary. The hospital for mental diseases, in other words, should become a first class vocational university for the practical reeducation and rehabilitation of the people who have become abnormal and unable to adapt themselves to their social obligations and the social laws, due to their incompatible cravings and previous unsuitable education and training.

Athletic sports should be developed seriously and elaborately. Athletic teams should be organized to redevelop the capacity to cooperate and compete and many contests should be held with the teams of normal men and women of the community, in order to teach the normal people to respect and have confidence in the recoverability and judgment of those who have been insane, as well as to enable the man who has lost confidence in himself to realize that after all he is still capable of competing with normal people and winning success. The athletic teams should be composed of patients and great enthusiasm should be developed to encourage successful competition with their rivals in the institution and outside.

Beside the athletic sports and games to develop initiative, selfconfidence, and selfcontrol, vocational training should be instituted which should be designed for two specific purposes, namely, of giving the patient the possibility of selecting and developing a vocational pursuit that fascinates him and also gives a sense of worthiness which will comfort him despite his inferiority. This will stimulate him to make his best efforts at winning social esteem and sublimate or refine his emotions.

It has been positively demonstrated through the analytical study of many cases of insanity that suppressed emotions are the chief causes of delusions, hallucinations, fears, compulsions, bizarre fancies, impractical day dreams, and eccentric characteristics. It is also well known that the vocation is of the utmost importance for relieving the suppressed

affections which would otherwise cause impractical sensuous fancies and indifference to the demands of a healthy society. Hence an adequate variety of vocations, such as the arts and crafts, the making or repairing of instruments, machinery, tools, household articles, floriculture, horticulture, gardening, stock raising, etc., should be offered to the patients in order that each one may be free to choose the means of selfexpression that is most satisfactory to him. The great State institutions are so enormous and so complicated that they make use of many of the important trades and vocations, ranging from farming, truck gardening, stock raising, dairying, plumbing, electrical engineering, tailoring, dress making, shoe making, furniture repairing, broom making, ice factory, blacksmithing, stenography, baking, carpentering, nursing, etc. These trades, by being placed under the direction of foremen who also combine the business of teaching, as followed by trade schools, could be made the foundation of the university. Furthermore, since one's sense of social fitness relieves, automatically, feelings of inferiority, and the sense of fitness depends mostly upon what others will sacrifice for our abilities and creations, the patient should be given opportunity to sell his creations and be paid for his work. The selling of his products should be encouraged and made practical by social service bazaars that are perhaps best conducted by church organizations.

The gymnasium and vocational building might be combined and its dignity, because of being the means of a return to citizenship and social welfare, should be expressed in imposing architecture. The athletic field should be well equipped, constantly in use and under the supervision of well trained athletic directors.

This plan of rehabilitation and social reconstitution of patients requires a radical change in the present day hospital régime. It requires an increase in the number of physicians, nurses, and attendants, and vocational and athletic trainers, and a radical change of attitude upon the part of the physicians. This at first would be inconvenient and expensive but, because of the great reduction in the duration of the average patient's illness and the increase in the number of recoveries, the yearly cost would be reduced. Furthermore, the asylum would lose its depressing, ominous stigma and in insipid cases mentally diseased patients would be influenced to seek treatment before the condition had become chronic or incurable. The necessity of rehabilitating the crippled soldier through suitable vocational training and the universal necessity of athletic training for all people is becoming recognized. There are more asylums, prisons, and hospitals for mental diseases in America than universities and colleges, and probably eighty per cent. of the mentally diseased may be cured if properly treated. (This applies to cases in which there is no destruction of nervous tissue.)

This method of rehabilitating the mentally diseased must be fully supervised and supported by the medical staff of the hospital and each case should be given individual analytical study in order that the nature of the patients' emotional problem

may be actually understood by both the physician and the patient himself. The patient must not only be relieved of his suppressed emotions but must also learn why, how, and when he suppresses them in order that a practical readjustment can be made and a healthy optimistic attitude maintained. The prison changed to a lunatic asylum, the asylum to a hospital, and the hospital must become a great vocational school and hygienic centre.

THE IMPORTANCE OF THE EARLY DETECTION OF GLAUCOMA AND ITS MANAGEMENT.

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There are few busy physicians who have not observed at least one case of glaucoma in its prodromal, acute congestive, or chronic congestive attacks, that is, if they have practised medicine continuously for several years. The glaucomatous process if unchecked leads to certain blindness. It is known that this process is incurable when the optic nerve head is found to be excavated, but conservative and operative treatment judiciously applied tend to delay it for a longer or shorter time. In the prodromal attacks and in the acute congestive attacks before the optic nerve and retina are injured by the intraocular tension, a cure may be brought about by conservative treatment, or if deemed essential by operative measures.

What impresses one most in the review of work done by notable ophthalmic surgeons is the variance of procedure employed in the treatment of glaucoma in its many stages and the similarity in the records of results obtained. In no other eye condition does the personal equation of the surgeon count for as much as it does in this affliction. A thorough acquaintance with the subjective symptoms and the appearance of the eye in prodromal and acute congestive attacks, inflammatory glaucoma, and glaucoma simplex is essential because effectual treatment cannot be instituted without this knowledge.

The importance of the early detection of glaucoma cannot be overestimated. A suspicion should be created in our minds of the existence of increased intraocular tension when a patient applies for reading glasses before the age that is usual, or, if wearing reading glasses, he applies for stronger ones at short intervals. By questioning one will discover that some time previously when looking at a light, rings appeared about it that had the colors of the rainbow, his vision was temporarily obscured, and he had dull frontal headaches. To the average patient these symptoms do not seem to be worthy of complaint although they really constitute a prodromal attack of glaucoma, if intraocular tension is present. These attacks last several hours and later the eye appears to return to normal. It is during the intervals that these patients seek stronger glasses for reading. The length of time between attacks is variable. If the eye is closely

examined during these prodromal attacks the tension is increased, the anterior chamber is shallower than normal, there is a faint cloudiness of the cornea, and the pupil tends to dilate.

Worry, mental emotion, insomnia, a hearty meal, or a drop of atropine solution placed in the conjunctival culdesac during or following a prodromal attack may set up an acute congestive attack which is characterized by pain that increases until at times it becomes intolerable. It occurs in one side of the head and extends to the teeth and ear, the face is pallid, and vomiting occurs frequently. Vision is markedly reduced during the attack but rarely ever results in blindness in the first seizure. The tension of the globe is found to be greatly elevated, the ocular conjunctiva congested, the cornea markedly cloudy, preventing an examination of the fundus by the ophthalmoscope. It is also insensitive to touch, the anterior chamber is shallower than normal, the iris narrowed irregularly giving the pupil an oval shape and is inactive to light stimulus, and a greenish reflex is seen in the pupillary space.

Prodromal attacks untreated occurring for a year or more nearly always merge imperceptibly into the chronic inflammatory glaucomatous condition, but when an acute congestive attack is set up in the course of the prodromal stages and is unchecked the chronic inflammatory state arrives much earlier.

After prodromal and slight acute inflammatory attacks the eye may return to the normal state, but it never does following attacks of chronic inflammatory glaucoma. The intraocular tension in this state is always found to be elevated and only more so during a seizure, and this continuous effect gives to the eye the so-called glaucomatous aspect, characterized by a purplish ring of bloodvessels surrounding the cornea (distended anterior ciliary veins) shallow anterior chamber, iris off color (usually appearing gray) oval and dilated pupil that rarely reacts to light, and tension permanently increased. The optic nerve head when it can be viewed by the ophthalmoscope is found to be pale and excavated. There is always a history of sinking vision. This stage may pass into absolute glaucoma in which the eye is blind, stony hard and all the objective and subjective symptoms exaggerated as the result of the degenerative process.

In glaucoma simplex there is the absence of congestive symptoms and pain. The anterior chamber is not changed. Tension may or may not be detected but if examined frequently with the tonometer a rise may be determined at times. Both eyes are affected simultaneously almost without exception. This type of glaucoma is wanting in external symptoms and the diagnosis is determined by ophthalmoscopic examination when reports are given of a gradual diminution of vision. The fundus picture reveals an excavated optic disc usually with its choroidal halo and occasionally an arterial pulse. The depth of the excavated disc depends upon the length of time the condition has existed.

The foregoing paragraphs give a general picture of primary glaucoma in its usual phases and are

sufficient to impress the gravity of this terrible affliction, the suffering from which we are called upon at times to alleviate.

Glaucoma is classified as primary and secondary. The primary type develops without the existence of previous ocular disease; the secondary type is the sequelæ of previous disease or injury to the eye. Some of the predisposing factors that have been noted in primary glaucoma are as follows: The patient is forty years of age or over; there is a hereditary tendency; Jews, Egyptians, and Brazilian negroes are most frequently attacked; the refraction of the eye is hyperopic; corneæ are smaller than usual; large crystalline lenses. The disease is more likely to develop in those who are thin and dyspeptic, in women more frequently than men, and it is usually associated with bronchitis, heart disease, syphilis, influenza, gout, trigeminal neuralgia, or chronic intoxications.

Many theories have been advanced as to the cause of glaucoma, but none sufficiently explain it, and many directions for the treatment of it have been given. There is no definite prescription for this condition and the means we employ to relieve it have been handed down by our predecessors in ophthalmology or are some modifications of them that have proved efficacious in our own hands.

When subjective symptoms (frequent changing of reading glasses with a previous history of halos about lights and obscure vision at the same time) point to a prodromal attack of glaucoma, a determination of the degree of intraocular tension by a tonometer is imperative, and if this is done at the time of the attack and a rise above normal is found, the condition is undoubtedly glaucoma. This is the ideal time to attack the disease because conservative measures employed now and continuously hereafter may hold in check the train of symptoms that generally result so disastrously when untreated. The object of conservative treatment, which consists of miotic solution dropped into the culdesac, is to keep the iris strongly contracted at all times with the lowest strength solution. Weak solutions of eserine salicylate, one eighth grain to the fluid ounce, or pilocarpine, two grains to the fluid ounce, are usually effective in the beginning, but additional strength of solution is required with time. One drop of eserine or pilocarpine solution, whichever is selected, of the strength indicated is placed in the culdesac of each eye morning, midday, and on retiring, one drop of double the usual strength solution will be found necessary to keep the iris contracted actively over night. Unceasing attention to the eye and general health will be found necessary for the balance of the patient's life, and if the miotic treatment is properly administered it may prevent a congestive attack and much loss of vision for years.

During the miotic course of treatment fields of vision and height of intraocular tension measured by a tonometer should be recorded regularly every month or so. A progressive reduction of the visual fields, or the occurrence of a congestive attack, proves that miotics are ineffective and it is now time to consider operative measures. If the result of intraocular tension is sufficient to markedly re-

duce visual fields without a congestive attack, or if a congestive attack occurs and is not severe, an iridectomy is always indicated and should be done just as soon as an operator can be reached. However, if the pain in an acute congestive attack increases until it becomes violent and an eye surgeon is not very near at hand, we are justified in operating. A sclerotomy must be done at once. If the eye surgeon had arrived he would have done a sclerotomy then and performed an iridectomy about twenty-four hours afterward.

A sclerotomy by reducing this excessively high intraocular tension not only relieves the violent symptoms of the attack and the crushing effect upon the optic nerve and retina which would eventually greatly damage the vision but it renders the globe more adaptable to the iridectomy that follows and is always indicated in advance of an iridectomy if the tension is very high. Ten millimetres posterior to the corneal limbus and midway between the external and inferior recti muscles is the point selected for the paracentesis of the globe. Less subsequent damage is likely to follow a sclerotomy in this region than any other portion of the globe, because it is out of the line of direct vision and away from the ciliary body and other important structures. A Graefe cataract knife is usually employed. The writer has devised a sclerotome for beginners with a stop fifteen millimetres from the tip of a blade that has the lines of a Graefe cataract knife. In the performance of a sclerotomy, a drop of ten per cent. solution is placed in the culdesac, three times, two minutes apart and a pause of three minutes after the last drop. The conjunctiva is insensitive now and with a hypodermic a few drops of the same solution of cocaine is placed beneath the conjunctiva over the point selected for puncture. Wait five minutes, grasp the conjunctiva with forceps, and with the cutting edge of the instrument directed away from the cornea, in the meridional line, the blade directed toward the middle of the eye and entered as far as the stop in the sclerotome, it is turned so as to spread the sides of the incision apart for a few seconds, and then withdrawn. If the tension should return and produce violent symptoms before an ophthalmic surgeon can be reached a sclerotomy should be repeated. There are few physicians who can not successfully perform a posterior sclerotomy as just outlined.

The keratome with bread knife edges devised by Dr. Paul F. Cavanagh, of the eye staff of the hospital, is usually the instrument of choice in the iridectomy operation. The point is entered one millimetre back of the corneal limbus in scleral tissue and it pierces the sclera with less pressure and seesawing than the usual straight edge keratome. A large piece of iris is removed as close as possible to its ciliary attachment. In glaucoma simplex conservative treatment is the rule, and if operation is decided upon, a sclerotomy or cyclodialysis should be chosen.

In chronic inflammatory glaucoma the iris is usually atrophic and nearly always welded in the spaces of Fontana, and when an iridectomy is tried the membrane is usually degenerated and has to be

picked out piecemeal, seldom intact. The subconjunctival fistulizing operation, like those of LaGrange and Elliot and their modifications, aimed to reduce tension, carry with them some danger of late infection. In five patients with chronic inflammatory glaucoma who refused the major fistulizing operations it was found possible to keep them comfortable by instilling eserine and dionin solution in the culdesacs at stated times following a hot water lavage of the eyes, occasionally a soporific of codeine sulphate by the mouth in very small doses, and operatively a succession of modified posterior sclerectomies—seldom more than four were found necessary in any case. The reduction of vision in this series varied little from that noted following the usual major procedures.

127 WEST FIFTY-EIGHTH STREET.

SHELL SHOCK IN SOLDIERS.

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That shell shock is a misnomer and a term misleading in its implications, is the growing belief of most observers who have had the opportunity of carefully studying the syndrome in the various base hospitals of Europe and America. The fact that in many of these cases goitre and exophthalmos develop soon after the inception of the affection diagnosed as shell shock has cleared the path for a more thorough investigation of the etiology, physiology, and symptomatology of this condition, as a result of which there is a growing conclusion that most cases of shell shock present symptoms in common with exophthalmic goitre, and in all probability, the vast majority of these patients are subjects of either an aberrant or a true form of Graves's disease.

Goitre, associated with cardiac and nervous manifestations, has been a problem in armies of the past, but lack of clinical precision precluded any accuracy of description worthy of note. In the siege of Paris (1871) Graves's disease was common. In 1874 goitre was stated by Michaud to have been epidemic in the French army, and Corvisart described the effects of emotion upon the heart during the French Revolution. During the Civil War the symptoms of soldiers' irritable heart were described by J. M. Da Costa; the chief manifestations were pallor, extreme weakness often to the point of exhaustion, paroxysmal dyspnea, tachycardia, the pulse rate often reaching 120 or over, often accompanied by arrhythmia and increased by physical and mental excitation, and prolonged diarrhea which was considered an etiological factor. The group of phenomena formed an important part of a condition which occurred in many people who not only had been shocked by shell fire, but who, by their nervous makeup, feared to face it. Many instances were seen in civilians in regions where fighting had occurred or where fighting was imminent.

Alexander notes a case of Graves's disease following a bomb explosion. Sajous suggests that the ex-

cessive exertion incident to warfare with the excitement, rage, and fear, lead to functional exhaustion of the adrenals, resulting in loss of tone of the vascular system, exciting thyroid hyperactivity. He thus implies that this adrenal disturbance instigates a general endocrine instability leading to the Basedowian syndrome. Etienne and Richard, in a recent paper, relate that the repeated violent bombardments of Nancy from the big guns and aeroplanes resulted in a wave of cases of exophthalmic goitre among the civilian population, which were characterized by high blood pressure in some, glycosuria in others, and in some women arrested menstruation. In a man of thirty-six, symptoms of Addison's disease appeared, followed by symptoms of exophthalmic goitre. The hyperthyroidism subsided in three months, but the Addison's symptoms persisted to a fatal termination within eighteen months from the onset of the condition. In two other cases Addison's disease became superimposed on preexisting exophthalmic goitre. It is thus seen, as Sajous has often mentioned, that exophthalmic goitre of emotional origin may develop under the influence of a disturbed function of the suprarenal glands; suprarenal disease may also become superimposed on exophthalmic goitre, giving rise to bronzing of the skin.

The magnitude of the question of functional conditions in the World War, especially those classified as hysteria, shell shock, irritable heart of soldiers, war tachycardia, neurocirculatory asthenia, soldiers' psychosis, and the like is described thus by Colonel Pearce Bailly: "The neurological problems of war have assumed an importance quite undreamed of, and the necessity of neurologists for a modern army is receiving general recognition. In battle areas the need of neuropsychiatry exceeds that of general medicine, as the nervous and mental casualties may exceed ten per cent. of the total casualties. France maintains 20,000 neurological beds in the rear, most of which are occupied by functional cases, and at the front tries to maintain one and one half neurological beds for each thousand troops. Major Arthur Hurst, R. A. M. C., estimates that 26,000 beds are occupied each year in Great Britain by purely hysterical patients."

If we take into account the fact that Graves's disease is a chronic condition of "fright, fight, and flight," as evidenced by the typical picture of perpetual terror in the well developed case (bulging eyes, anxious expression, and trembling of the body), we can readily reconcile cause and effect in our conclusion that war conditions are etiological conditions through the production of a state of nervous or emotional tension which, no matter what term may be applied to the disease of the victim, is but a state of disturbed functional harmony between the ductless glands, during which there is especially a hyperactivity of the thyroid gland. In brief, we are in these instances dealing with one or the other typical or atypical forms of what is known in civil life as Graves's disease, Basedow's disease, Parry's disease, exophthalmic goitre, or hyperthyroidism. There is such a thing as mere irritability of the heart's action with slight increase in its rate, insomnia, and nervousness, which, though presenting

little other evidences of Graves's disease must be looked upon as a larval or incipient form of the same, which may merge into a typical case of exophthalmic goitre on the persistence of the etiological factors and the postponement of the proper remedial measures.

Dr. F. D. Smith, in reporting 116 cases of toxic goitre discovered among 65,507 men examined at Jefferson Barracks, concludes that the physical and mental strain of army life accentuates and renders more prominent a hitherto quiescent, incipient case of Graves's disease occurring in civil life, and suggests that toxic goitre is a poor military risk.

Dr. Harlow Brooks, in his study of the disturbed thyroid function in recruits at the Camp Upton Base Hospital, states that he was surprised to find so many cases of hyperthyroidism among men. He concludes in his examination of cases, in his official capacity, that the neurosis described under shell shock, irritable heart, and other allied terms, are due to hyperthyroidism which, in many instances, may be incited by infection or an unknown agent. That the prevailing cause is the environmental and the emotional tension, is suggested by the fact that those races of strong emotional element are most prone to this affection. The Hebrews lead, the Italians are next, then come the Irish, and last of all the negroes. Tachycardia is the most striking symptom in nearly every instance, and this, plus palpitation, causes the recruit to apply to the doctor for treatment, exemption, or discharge. There is rarely an accompanying arrhythmia; the pulse rate is increased by physical or mental excitation; there is a marked throbbing of the superficial vessels, especially the carotids, brachials, and femorals, while the aorta in emaciated individuals can also be seen to throb. Brooks suggests that absolute differentiation of this condition from aortic insufficiency could be made by the graphic method of polygrams. The heart sounds because of their rapidity were usually difficult to analyze, but often a soft, systolic murmur was present at the apex, transmitted at times into the axilla. These murmurs seem to be functional and not organic in nature. Precordial distress is extreme in many cases and often radiates to the left shoulder. Vasomotor instability is evidenced by an alternating flushing and paling of the face, dermatographia, low blood pressure, and capillary pulse. Vertigo, syncope, and outbursts of emotionalism are often precipitated by a sudden call for an examination by the physician. Occasionally such nervous phenomena as epileptiform attacks, convulsive spasms, crying, outbursts of temper, and moments of extreme terror are manifest. Most of the time these patients appear very weak, but attempts at sleep are futile, as the insomnia is complete. Tremor is almost constant, occurring in the outstretched fingers and toes, and oftentimes throughout the whole body. Just as in civilian life, a rise in the afternoon or evening temperature, marked sweating, especially at night, and dyspnea on the slightest exertion are very characteristic. In Brooks's cases two thirds of the patients present a definite thyroid hypertrophy, in some cases amounting to actual goitres, the individuals complaining of a choking sensation, though they but rarely de-

scribed a globus hystericus. A considerable number gave an ancestral history of goitre, particularly on the maternal side, and in many instances, a family tendency to nervous instability, hysteria, insanity, perversions, or genius. Exophthalmos was also present in long standing cases, sometimes developing suddenly. These patients endured the acute infections very badly; tobacco produced in them much more serious symptoms than the average, and they had a distaste for alcohol. It may be remarked that the tachycardia was not altered by digitalis, even in massive doses. The nitrates markedly increased the symptoms, and there was a general hypersensibility to the vasomotor dilators. The diagnosis of hyperthyroidism was confirmed by the adrenalin tests.

J. Barr is also of the opinion that the thyroid is largely at fault in "soldiers' heart" or "shell shock." He believes that the influence of the gland is primarily exerted upon the calcium metabolism which in turn affects the action of the heart. The condition first appearing is likely to be hyperthyroidism, followed by hypothyroidism.

Wilson, Poynton, and Stoney, in a symposium, refer to the possible thyroid etiology of "soldiers' heart." Wilson observed thyroid enlargement in about one ninth of his cases; thyroid medication seemed to augment the symptoms. Poynton and Stoney suggest the use of x ray treatment of the thyroid in cases of undoubted thyroid involvement.

P. Hernaman-Johnson and P. C. White state that soldiers from the front who suffer from so-called irritable heart are found to have been subjected to great strain. The symptoms which they find most prominent are palpitation, slightly elevated temperature, enlarged thyroid, rapid pulse, dyspnea, tremor, insomnia, irritability, and emaciation. These authors emphasize their belief that the condition commonly called irritable heart is really a form of Graves's disease.

F. A. Stoney, in discussing the connection between soldiers' heart and hyperthyroidism, emphasizes the likelihood of confounding mild goitres following shell shock with neurasthenia and the symptomatology of incipient exophthalmic goitre. The onset of the illness usually dates back to some severe shock, such as that produced by a bursting shell or a burial. These soldiers are sent back to base hospitals with such diagnoses as shell shock, neurasthenia, early phthisis, and soldiers' heart. Examination of these hearts proves them to be typical of early Basedow's disease and are characterized by practically normal rate when lying down and increased rate, ninety to 100 a minute, when standing or sitting. Not infrequently the heart is dilated, the action tumultuous and irregular in force and rhythm. The characteristic sign on auscultation is a brief first sound lacking in tone; murmurs are often present and in addition there are such subjective symptoms as fainting, weakness, dyspnea, giddiness, precordial pain and palpitation, all of which characterize Graves's disease. The diagnosis is confirmed by such findings as perspiration, tremor, nervousness, and the other typical signs and symptoms.

K. W. Ney incorporates in a report on military surgery the fact that a large number of patients sent to the European base hospitals from the firing line come there with a diagnosis of general fatigue and tachycardia. These patients are sent in by the hundred, and in many instances absolute rest in bed and digitalis fail to cause abatement of the symptoms. They can stand no exertion, and even while at rest the heart action is very rapid. Many of them remain in the hospital for months during which time a gradual enlargement of the thyroid gland develops. In these cases, Ney believes, there are indications of a derangement of the ductless glands, especially the thyroid, through a disturbance of the emotional balance.

C. Boir, of Berlin, describes three cases in which soldiers, after a great fright, showed a classical picture of Graves's disease. Moon, Roussel, Bram, and others suggest that a frequent predisposing cause in the production of conditions simulating hyperthyroidism in the recruit is nicotine poisoning. The various movements throughout the country for the purpose of sending large quantities of cigarettes to our boys overseas may have had their merit. Confirmed smokers have probably been benefited by an ample supply of tobacco, for it must be admitted that its lack would have played havoc with their nervous systems. On the other hand, many young men who never smoked at all or but little have had forced upon them the idea that excessive smoking is the boon to a feeling of well being, and it is among this class especially that thousands of cases of invalidism occurred through a greater predisposition to neurocirculatory diseases.

From a careful examination of the conclusions and deductions of the various observers herein mentioned, and many others, it is obvious that we must classify differently these conditions heretofore noted as shell shock, irritable heart of soldiers, neurocirculatory asthenia, early phthisis, and the various other terms employed as a cloak for lack of clinical precision. It seems clear that, in view of the fact that a large proportion of patients, perhaps the majority of them, present evidences of thyroid hyperfunction, the totality of cases herein discussed must of necessity be divided into two classes: a, those which are probably not due to hyperthyroidism (the minority), and, b, those which are clearly due to a hyperactive thyroid, i. e., Graves's disease (the majority).

a. This class which cannot be placed in the category of hyperthyroidism, probably requires further and more minute subdivision if one is to employ more accurate terminology. These patients have probably some inherited tendency toward the various forms of neurotic disturbances. A careful investigation of the family history usually reveals the fact that there is a trend toward epilepsy, migraine, melancholia, dementia, neurasthenia, hysteria, or one of the forms of insanity on the maternal or the paternal side or both. This acting as a predisposing factor, all that is necessary to disturb the balance of the higher cerebral centres and its concomitant forces is the exciting causes of warfare. Mere passive observation of casualties, such as the picture of wounded being brought in on

stretchers, is often sufficient to disturb the balance of an individual who was formerly considered normal. How much more liable is this predisposed creature to neurasthenia, hysteria, melancholia, or even dementia or mania, when he is in the presence of actual fighting with bombs exploding about him and his comrades falling before his eyes, often reduced to unrecognizable masses of flesh! A person whose mental inheritance is irreproachable quickly extricates himself from this psychic difficulty, and in the heat of the strife reconciles himself to the great moral principle involved and fights on to victory. But the creature in question, whose mental balance has wavered, is as badly off as one whose physique has been paralyzed by a shell. He becomes a useless entity, if not an impediment to the proper progress of the moment's events, and must be quickly removed from the scene. These patients, as a rule, are subjects who are finally classified as cases of melancholia, neurasthenia, hysteria, hysteroneurasthenia, acute mania, dementia præcox, and the like, and must be treated as such in much the same fashion as cases occurring in civil life.

b. With respect to this class, probably the great majority of cases, it is concluded by nearly all clinicians that emotional shock is the greatest exciting factor in the instigation of the Basedowian syndrome. If this be true, what situation presents a greater degree of emotional shock than the condition of actual warfare in which the instinct of self-preservation is so keenly involved? The question of predisposition in hyperthyroidism is still moot. It is thought by many that here also there must be some predisposing inherited tendency toward the disease, for why should nine out of ten men in a given situation remain normal while one man becomes a victim of Graves's disease? It certainly seems as though the afflicted one must have a special susceptibility. But this question is still open.

The diagnosis of incipient hyperthyroidism is often fraught with difficulty. The diagnoses of irritable heart of soldiers, shell shock, early phthisis, and the like, are not without cause, though erroneous, but are based upon observed phenomena which are just as misleading in military as in civil practice. The elusiveness of the early stages of thyroid hyperfunction has led many otherwise able diagnosticians to deductions totally at variance with existing factors, which latter soon proved to be a state of endocrine instability. The main reason for this difficulty lies in the fact that the most important signs of exophthalmic goitre, i. e., exophthalmos and goitre, are late in coming, and in their absence diagnostic pitfalls are met with. As a rule, the earliest manifestation of hyperthyroidism is the tachycardia, associated with subjective precordial symptoms; this, in combination with the nervousness, insomnia, and anorexia, easily leads to a conclusion that the subject is suffering from irritable heart, which, by the way, is an unscientific diagnosis, merely indicating a symptom. The differentiation between this and the tachycardia of incipient hyperthyroidism is easily made; a rapid heart not due to a surplus of thyroid substance in the blood is capable of being slowed by digitalis and by sleep.

In the tachycardia of hyperthyroidism, digitalis and sleep have little if any effect upon the rapidity of the heart's cycles. The diagnosis of shell shock is again just as misleading as the term idiopathic when placed before the term epilepsy, or the term essential preceding the terms anemia or asthma. They are mere words and tell us nothing, serving as a cloak for our ignorance. Under shell shock were included until recently all patients who were not suffering from actual physical injury; but the gradual assertion or injection into the clinical picture of certain other signs and symptoms in these instances led to a more careful and scientific classification in course of time. Early phthisis is frequently the diagnosis based upon the rapid emaciation, deficient respiratory expansion, a slight rise in afternoon temperature, and excessive sweating, all of which are present in hyperthyroidism, and it is indeed often difficult to distinguish between the two. Occasionally one meets with a case where hyperthyroidism and phthisis occur in the same patient, and here the difficulty of diagnosis is greater still; but under ordinary circumstances, the absence of cough and expectoration and of a daily chill, the absence of definite pulmonary lesions, and the presence of the peculiar physiognomy (even in the absence of exophthalmos), the persistent marked tachycardia, and the slight fullness of the thyroid gland especially when the head is thrown backward—all these serve to solve the problem. Occasionally certain laboratory tests are made to confirm our deductions, among which may be mentioned an x ray examination of the chest, the tuberculin test, and the Goetsch adrenalin test. Careful examination and laboratory observations should rarely, if ever, fail us in the proper diagnosis when hyperthyroidism is a possibility.

Having classified a given case as one of hyperthyroidism or dysthyroidism, which is a better term, what is to be done to restore the individual to former stability of body and mind? How are we to place this man back again into his civil environments as a useful citizen of the community and a wage earner, with the possession of his normal standard of health and life expectancy? This question resolves itself into one respecting the form of the therapeutic procedure to adopt.

Shall we operate in this case or not? A complete discussion of this matter would entail an expenditure of time and space totally beyond the scope of this paper, so that we must here speak in general terms. Up to within a few years ago, when the subject of endocrinology was in its infancy, and the etiology of Graves's disease consisted in a huge mass of confusing theories and hypotheses, and when the majority of clinicians incriminated the thyroid gland as the most important, if not the only factor involved in the syndrome, thyroid surgery was considered the only means to cure. So conclusive was this view held, especially by the surgeon, that any opinion to the contrary was looked upon as an evidence of poor clinical judgment. Within recent years, however, conditions have undergone a change. Endocrinologists are proving that hyperthyroidism, though due to a surcharging of the blood with thyroid substance, has not a local etiology, but is a manifestation of a generalized

functional and structural disturbance of the endocrine and other organs of the body, the thyroid gland forming but a link in the chain of events constituting the physiological-pathological picture. In view of this advanced knowledge of the disease it is recognized that local surgery, in fact surgery itself, has no place in the treatment of hyperthyroidism, excepting in rare instances. This conclusion is gradually but surely becoming the belief of even the most eminent thyroid surgeons, to say nothing of the various internists who have been able to cure completely nearly all of their patients nonsurgically. Moreover, the former enthusiasm in surgery as a therapeutic measure in hyperthyroidism has been considerably dampened by the fact that the mortality rate of operation is really much greater than statisticians claim, that such operative accidents as the removal of too much thyroid with resulting myxedema, the removal of the parathyroids followed by tetany, injury to the recurrent laryngeal nerve with aphonia, and other surgical unforeseen incidents, occur when least expected.

Add to this the fact that the vast majority of patients are only temporarily improved, the symptoms recurring sooner or later, requiring a multiplicity of operations, and it can readily be seen why surgeons are now losing their ardor in this work, selecting their cases with greater care, making less positive promises of permanent cure, and exhorting their discharged patients to place themselves under a prolonged régime of nonsurgical therapeutics, lest there be a total recurrence of symptoms. The truth of the matter is obviously a growing distrust of surgery and a complete reliance by surgeons on presurgical and postsurgical nonsurgical treatment for desired results.

The statement made by an eminent internist of New York to the effect that he had never seen a case of hyperthyroidism cured by surgery is the belief of many others, including myself. Surgery in hyperthyroidism is not only unsuccessful but adds "insult to injury," shocks and devalues the subject, and unnecessarily postpones the institution of successful nonsurgical measures. This applies to military hyperthyroidism as well as to those cases occurring in civil practice. In the absence of a pre-existing simple goitre, in the absence of pressure symptoms or of malignant changes in the thyroid gland, all of which are exceptions and rarely exist in true Graves's disease, practically every case of exophthalmic goitre is curable by the properly applied dietetic, hygienic, medicinal, electrotherapeutic and psychotherapeutic measures, if persisted in with patience, skill, and diligence by the medical adviser, for the proper length of time.

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1714 NORTH SEVENTH STREET.

EPIDEMIC POLIOENCEPHALITIS (LETHARGIC ENCEPHALITIS).

Preliminary Report of the Committee.

By ISADOR ABRAHAMSON, M. D.,
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NUMBER OF CASES AND SEASONAL INCIDENCE.

The earliest definite account is obtained from an epidemic of sleeping sickness that occurred in Tübingen in 1712. The nona (epidemic) of 1890, occurring in Northern Italy and Hungary, undoubtedly had many true cases of this disease. The epidemic in Vienna occurred during the winter of 1916-1917. The number of cases is not obtainable. Von Economo, who studied this epidemic, labeled the disease lethargic encephalitis. The Australian epidemic occurred during the spring of 1917. The total number of cases reported was 114, as follows: Matthewson, seventeen cases, first case reported March, 1917; Anderson, fourteen cases, first case reported February, 1917; Breinl, nine cases, first case reported March, 1917; Litchfield, one case, reported April 13, 1917; Burnell, sixteen cases, first case reported February 28, 1917; Cleland and others, fifty-seven cases, reported August 25, 1917.

The British epidemic occurred during the winter and spring of 1917-1918. The total number of cases reported was 263; among these, 137 cases were regarded as poliomyelitis and 126 cases as lethargic encephalitis. Harris, seven cases, first case reported March 27, 1918; Hall, ten cases, first case reported March 1, 1918; Dobson, one case, reported April 2, 1918; Batten and Still, four cases, first case reported February 27, 1918; Brockbank, two cases, reported April 9, 1918; Carey, one case, reported April 10, 1918; Lord, one case, reported April 8, 1918; McCaw, Perdran, etc., six cases, reported March 24, 1918; Smith Anderson, three cases, reported March 1, 1918; Parkes Weber, two cases, reported May 6, 1918; Wilson, seven cases, reported March 1, 1918; Millard, thirteen cases, reported November 22, 1917.

The French epidemic occurred in the spring of 1918. Sixteen cases were reported and investigated. The total number was far in excess of that amount.

The statistics are incomplete for the epidemic in the United States. I have been able to gather up to date the following: Bassoe, Chicago, eleven cases; O'Neill, New York, two cases; Kennedy, New

York, seven cases; Tilney and Riley, New York, twenty-six cases; Mayer, Pittsburgh, four cases; Mills and Wilson, six cases; Rothenberg and Louria, Brooklyn, twenty cases; B. Sachs, private cases, fourteen cases; Abrahamson and Strauss, fifty-two cases.

At this time it is impossible to follow the path of the epidemic over the world or in any country. It is of note that only two of my cases occurred in one family. An important difference between the epidemic in foreign countries and in the United States is that lymphocytosis of the spinal fluid so common here has been the exception abroad. The reason of this astonishing variation is being studied.

NOMENCLATURE.

Various names have been given to this disease. Epidemic encephalitis, lethargic encephalitis, influenza encephalitis, pontobulbar encephalitis, epidemic stupor, and other names have been applied. Recently lethargic encephalitis has held sway.

The name epidemic polioencephalitis seems the best for the following reasons: 1. Encephalitis, because in the vast majority of the cases the brain is mainly affected. 2. Polioencephalitis, because nuclear involvement dominates the pathological picture. 3. As a companion disease to epidemic poliomyelitis both have been with us in sporadic form since time immemorial, and both are essentially nuclear diseases. During epidemics, in both the inflammation spreads beyond the nuclei involving the white matter, the meninges, and the nerves.

The term lethargic should be dropped for the following reasons: 1. The encephalitis itself is not a lethargic but a very active pathological process, subject to surprising remissions and exacerbations within short spaces of time. 2. Lethargy characterizes a minority of the cases; in fact many patients suffer from distressing insomnia; others present all the banalities of mental excitement and confusional states. 3. The term is apt to become popular among physicians in general practice and the association of lethargy and encephalitis be so fixed in their minds that the majority of the cases may be overlooked owing to absence of the lethargy. 4. In the popular mind and in the lay press, there is already a tendency to confound polioencephalitis with trypanosomiasis gambiensis. 5. In nonepidemic periods sporadic cases in which there is apt to be little if any lethargy will be more readily recognized and better studied.

Epidemic polioencephalitis is a distinct disease and one which until recently has escaped differentiation and recognition. 1. A definite pathological anatomy has been established by such observers as Von Economo in Vienna, Walsh in Australia, McIntosh and Wilson in England, and Marinesco in Paris. Their findings have been corroborated by many, and here in the United States by Bassoe, Tilney, Strauss, and others. 2. Experimental evidence substantiates this.

Von Wiesner isolated a diplococcus from the leptomeninges and with it inoculated monkeys producing the disease. English and French observers failed to corroborate this work; their experiments on monkeys failed. Strauss, Lowe, and Hirshfield, at Mount Sinai Hospital, have successfully inocu-

lated monkeys, producing the disease both clinically and pathologically. Scrapings were made from the retropharynx in a case of poliomyelitis. The filtrate was injected intradermally into the cranial cavity. The virus is a filterable one. It can be accepted that we are dealing with a distinct disease entity, in fact, in the light of our present experience, many observers are going over their old records and unearthing cases that belong to this group.

RELATIONSHIP OF EPIDEMIC POLIOENCEPHALITIS TO INFLUENZA (SPANISH) AND POLIOMYELITIS.

In Europe epidemic encephalitis was confounded with botulism, attributed to the great ingestion of preserved foods during the war, and with poliomyelitis. In Australia it was confounded with sleeping sickness and botulism. It can be definitely predicted that the disease is not botulism. As to influenza, on the European continent, in England, and in Australia, the epidemic of poliomyelitis antedated that of influenza by a considerable period. Influenza was not at all considered in the differential diagnosis in these areas. But in the United States poliomyelitis followed at the end of the influenza epidemic. Some of the earlier cases, such as those reported by Mayer, of Pittsburgh, and others as influenzal encephalitis, were no doubt this new disease. Moreover, a large number of our patients gave a history of having had influenza two or more months before the onset of the poliomyelitis. Others gave a history of a febrile disease occurring only a few weeks before, labelled, as almost all febriculae were during and after the epidemic, influenza. All these diagnoses were made without bacterial evidence. Such fevers, I think, marked the onset of the poliomyelitis. Furthermore, in the past a diagnosis of influenzal encephalitis or meningitis was made only on finding the bacillus of Pfeiffer in the spinal fluid. In none of our cases was the Pfeiffer bacillus found though examinations were regularly and carefully made.

The pathological anatomy of influenzal encephalitis is different from that of epidemic poliomyelitis, though certain similarities exist. Besides, when epidemic poliomyelitis reached its maximum, influenza was at its lowest point; and, conversely, at the height of the influenza epidemic cases of encephalitis were rare. From these and other reasons, it can be definitely concluded that no direct relationship exists between influenza and epidemic poliomyelitis.

EPIDEMIC POLIOENCEPHALITIS AND EPIDEMIC POLIOMYELITIS.

Between these diseases, a differential diagnosis, while it is more difficult to make, is nevertheless equally demonstrable. Pathological anatomy shows in brief that the morbid process in poliomyelitis is much more intense; there is a greater destruction of ganglion cells, more neurophages, a polynuclear leucocytosis instead of a lymphocytosis; and the cord is usually the seat of the greatest involvement.

Epidemiology.—There has been very little, if any, poliomyelitis during the heyday of this disease. At the Mount Sinai Hospital and dispensary and in private practice I have not met with a single con-

ventional case of acute poliomyelitis during this period. And I am certain that the experience of other observers will bear me out on this point. With so many cases of epidemic poliomyelitis, surely a few cases of acute poliomyelitis with its well known symptomatology should have been in evidence if there was any connection between the two. S. P. James studied the English epidemic, with the statistics of the whole of England at his disposal; in fifty-seven sanitary districts between January and June, 1918, in which the new disease was reported, twenty-five had not a single case of poliomyelitis, and poliomyelitis was plentiful in districts where poliomyelitis was rare. The large number of cases of epidemic poliomyelitis among adults and the few cases among children is noteworthy. Sporadic poliomyelitis is not as severe, as fatal, or as frequent as poliomyelitis. The clinical differences between the two are manifold.

Poliomyelitis acuta has a short prodromal period (one to three days), an abrupt onset, commonly convulsions, stupor, and rarely mental symptoms; speech is seldom involved; affects essentially the spinal cord and rarely the brain (if the latter is involved the cord is usually involved at the same time); is characterized by very manifest paralysis, atrophy, and electrical changes, except in abortive cases: this paralysis reaches a maximum early in the disease and is commonly not bilateral; remissions and exacerbations are exceptional and the paralysis is more or less chronic.

Epidemic poliomyelitis has a much longer prodromal period (up to a few weeks); onset usually gradual; convulsions the exception; stupor and lethargy common; distinct mental changes; speech is affected; cerebral involvement the general rule, spinal involvement the exception; transient paralyses are common; course is progressive, maximum paralyses scarcely ever early in the disease; bilaterality is the rule; marked paralyses, atrophy and electrical changes are the exceptions; paralyses clear up in the great majority of cases within a month or two after the onset. Parkinson syndromes, so common in this affection, I have never seen follow poliomyelitis. As to the clinical manifestations, syndromes of all kinds can be established. We must bear in mind that we are dealing with an infectious encephalitis, the infection originating in the nasopharynx, proceeding by the lymph streams to the basilar cerebral vessels, and then spreading throughout the brain stem, ganglia and cortex, and also involving the upper cord, the meninges and the nerves.

Dependent upon the activity of the virus, and the extent of the involvement, various syndromes make their appearance. It follows that those portions of the brain immediately supplied by the cerebral and basilar arteries will suffer first and most severely in the majority of cases. Such in truth is the case. There are no doubt instances in which the disease or the active agent may be localized to the nasopharynx, without cerebral signs; such instances provide a group of carriers. There are also cases with slight involvement of the nuclei of the third nerve—the nuclei which seem to be especially sus-

ceptible to the disease agent. But in contrast to those mild cases, we find the severest types of encephalitis with extensive and profound implication of the brain stem, basal ganglia, and cortex. Of exceptional interest, I shall only mention the clinical pictures of acute Parkinson's disease (thirteen in my series) and of acute psychoses (seven in my series), which are sometimes seen in this disease.

We are not yet in a position to give a definite pronouncement regarding the prognosis in this affection.

The mortality among my cases was about ten per cent. Complete recoveries have so far occurred in only twenty per cent. of my cases. The remainder are progressing at varying rates toward recovery, but whether that recovery will ultimately prove partial or complete I cannot yet say.

129 EAST SIXTY-NINTH STREET.

THE USE OF APOTHESINE ANESTHESIA IN TONSILLECTOMY.

By JOSEPH COLEMAN, M. D.,
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In a recent paper (1) I discussed in a preliminary way my observation on the use of apothesine anesthesia in ten tonsillectomies. The object of the present report is to go more fully into the general consideration of the subject of tonsillar and peritonsillar local anesthesia and to report upon thirty additional operations for tonsillectomy.

Chemically, apothesine is based on the same principle as novocaine, which is indeed the principle underlying the structure of nearly all local anesthetics which have from time to time appeared and essayed the rôle of substitutes for cocaine. These substances include orthoform, nirvanin, holocaine, acoin, anestheline, stovaine and alypin. One by one they came and disappeared. They all failed to obtain universal adoption because one or more of the following objections applied to them: 1, They were not equal to cocaine in producing anesthesia; 2, the toxicity was not less than in cocaine; 3, irritated the tissues and interfered with primary wound healing; 4, incapable of combining with adrenalin; 5, insoluble in water; and 6, not possible to sterilize by boiling.

It has long been known that the anesthetic properties of cocaine are due to its peculiar molecular structures. This molecular structure is called, in technical chemistry, an ester. To simplify this, let me point out that an ester is similar to a salt of a metal, but that the metal or positive radical is replaced by a hydrocarbon or an alcohol radical. In short, an ester is the combination of acid and alcohol radicals.

Cocaine falls in this category because its molecule contains the radicals of benzoic acid and methyl alcohol. Apothesine, as I have intimated, follows this principle and is essentially a combination of the radicals of cinnamic acid and propyl alcohol. Hamilton (2) showed in a careful piece of work on laboratory animals that apothesine is equally as efficient as cocaine in inducing local anesthesia both by intradermic and perineural injections. He also

showed that, by the intradermic method which is analogous to the injections I make in tonsillectomy, novocaine, the nearest rival to apothesine in the field of local anesthesia, was less than half as efficient as apothesine. When you consider in conjunction with these facts that apothesine is about one seventh as toxic as cocaine or, for all practical purposes, relatively nontoxic, there need be no equivocation in saying that apothesine is the local anesthetic of choice.

When isotonic solutions of apothesine in sodium chloride or Ringer's solution are injected into any tissue, there begins an osmotic interchange through the walls of the tissue cells between the protoplasmic salts and the salts contained in the injection solution. When a sufficient quantity of apothesine has diffused into the bodies of the cells it would appear that a loose chemical union is effected between the apothesine and the protoplasm of the cells. This so inhibits the normal function of the protoplasm as to block entirely the transmission of the sensory impulses.

There are several points in the technic of tonsillectomy that I brought out in my preliminary report and which I would emphasize now. Apothesine, plain, acts as well as apothesine in combination with adrenalin, but the hemostasis resulting from the use of adrenalin is an advantage not to be overlooked. Dissolve a sufficient number of tablets in three drams of saline solution to make a two per cent. solution of the anesthetic. A solution of this strength has proved satisfactory in my cases but I have no doubt that complete anesthesia can be induced by the use of weaker solutions. At a recent meeting of the Medical Society of the County of New York, Wiener, in his report of 250 major operations under local anesthesia, told of one case where his supply of apothesine had run down and the best he could make up was a solution of one third of one per cent. His patient had absolute anesthesia throughout the operation which was a laparotomy. The anesthetic solution as well as the syringe and needle should be boiled to insure sterility. The needle I use is three inches long and slightly curved at the point. The point of the needle is inserted at the upper end of the anterior pillar of the fauces and should just penetrate the mucous membrane and not go deep into the pillar. The needle, although beneath the mucous membrane, should be so superficial as to be visible to the operator. Injection of about five minims is made at this point. The effect of the injection is to raise a circular blanched bleb radiating from the point of emergence of the solution from the needle. The needle is withdrawn and inserted into the lower portion of this bleb and another injection is made. This will make a second bleb, encroaching on the first but extending further down on the pillar. This procedure is continued until the entire anterior pillar is covered by contiguous blebs. Great care must be taken to thoroughly infiltrate the junction of the anterior pillar with the base of the tongue because this is a sensitive region. The injections are now made into the posterior pillar in the same way. The tonsil should not be injected as it is entirely removed from its peritonsillar relations. Both

tonsillar regions should be anesthetized before either tonsil is removed. Even with extreme deliberation both sides can be anesthetized in less than five minutes, while the time allowed for the administration of a general anesthetic is at least ten minutes. I mention this to forestall the plea of some surgeons that they do not have time to do this operation under local anesthesia. The junction of the anterior pillar and the tonsil is now incised. The tonsil is grasped by the forceps and held under tension while a curved dissector separates it from all its attachments until it hangs only by a pedicle at its base. Snare wires are now placed in position and the excision is completed. This method for obvious reasons is not applicable to children. Since my last report I have performed thirty tonsillectomies on adults, using apothesine and adrenalin anesthesia. Some of these were done in my office and others in the Nose and Throat Clinic of the University and Bellevue Hospital Medical College. Anesthesia was always perfect and invariably lasted more than two hours. This anesthetic does not interfere with primary healing of wounds. In this series of thirty cases and in my original ten cases there was a consistent absence of sloughing. Hemorrhage in these patients was negligent. For the most part it consisted only of slight oozing but the field of operation was never obscured. This of course was due to the vasoconstrictor action of adrenalin.

It is not my intention to burden you with a long recital of case histories. I have selected three recent cases which I shall outline to you very briefly:

CASE I.—Mr. M., aged twenty-five. Bronchial asthma of eight years' duration, hypertrophied tonsils, widely dilated crypts from which, on slight pressure, a foul smelling detritus was squeezed. This patient was very timorous before operation (performed December 26, 1918) but perfectly quiet during the operation, and replied to repeated inquiry that no pain was felt at any stage of the procedure.

CASE II.—Mrs. R. H., aged forty-two. Sinusitis, chronic pharyngitis and laryngitis, hypertrophied tonsils. This patient was extremely nervous. Operation on January 9, 1919, consisted of a complete enucleation of the tonsils. In spite of her great fear she became placid and confident when instrumentation did not result in pain.

CASE III.—Miss D. L., aged twenty-three. This patient had a submucous operation performed two years ago under cocaine anesthesia and no pain was felt. She was extremely apprehensive and fearful because I was about to use a different anesthetic. Behaved perfectly, however, during tonsil enucleation and had absolutely no pain during the entire procedure. This patient was operated upon January 13, 1919.

In the cases just outlined the patients were neurotic and almost any sensation was interpreted as pain. Their behavior was eloquent of the desensitizing powers of apothesine. As between apothesine anesthesia and general anesthesia for the operation of tonsillectomy in an adult, I wish to say that in the light of our present knowledge of local anesthetics and local anesthesia it is difficult to find jus-

tification for the use of a general anesthetic and the subjection of the patient to its concomitant inconveniences and possible dangers.

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59 WEST NINETIETH STREET.

THE EFFECTS OF INFLUENZA ON PULMONARY TUBERCULOSIS.

By B. STIVELMAN, M. D.,
Bedford Hills, N. Y.,

Medical Superintendent, Montefiore Home Country Sanatorium.

For reasons inadequately explained, it has been handed down to us from time immemorial that an attack of influenza is most dangerous in the tuberculous, and that when a fatal issue is averted the pulmonary condition is very frequently aggravated, so that a closed case may become open, an arrested lesion active, and an active case progressive.

It has also been stated that tuberculosis frequently follows in the wake of influenza, notwithstanding the lack of authentic evidence in support of such assertions gathered in the years following the previous pandemics of influenza. Many of us, perhaps, do err at times on the side of caution in declaring patients tuberculous just because they had recently been ill with influenza and now present indefinite physical findings and subjective symptoms. Recently, however, many observers have recorded their experience, which is definitely opposed to the views held prior to this epidemic. To these data we wish to add the records of our observations during the influenza epidemic at our sanatorium, together with a report of the status of all patients so affected five months after the epidemic.

That the pandemic had reached New York city became apparent on October 6, 1918, and it was on this day that a reasonably rigid quarantine was established at the sanatorium, which is situated forty miles north of New York city. Visiting physicians, mail boy, and chauffeur were the only ones not affected by the quarantine and they remained free from influenza. From this date, sporadic cases occurred in the neighboring villages, but it was not until November 25th that the pandemic was well under way in the nearest village, which is a half mile from the institution, and two days later it was apparent that the sanatorium would not be spared when the first four patients came down with influenza.

In spite of the careful isolation of these patients, the disease spread rapidly, attacking patients in remote wards and tuberculous employees in their quarters, so that by December 19th probably all those susceptible were affected. Out of a total number of 225 tuberculous patients and employees, fifty-three (23.5 per cent.) were ill with influenza. This compares favorably with the twelve cases (twenty-four per cent.) of influenza that occurred among the fifty nontuberculous employees of the institution who were practically under similar housing conditions. Of the fifty-three patients affected,

ten (18.8 per cent.) were suffering from incipient pulmonary tuberculosis and forty-three (81.2 per cent.) were moderately and far advanced cases. But it must be pointed out that during the epidemic the proportion of patients at the sanatorium suffering from incipient tuberculosis was 22.4 per cent. and those affected with either moderately advanced or far advanced tuberculosis 77.6 per cent.; so that it may be considered from the evidence on hand that in advanced tuberculosis the susceptibility to the infection is not greater than in early tuberculosis.

Definite evidence of bronchopneumonic consolidations, confluent or otherwise, was obtained in fourteen of the tuberculous cases, an incidence of 24.4 per cent., and in three nontuberculous cases or twenty-five per cent.

All the nontuberculous patients recovered uneventfully, but six fatal issues occurred among the tuberculous, a mortality of 11.4 per cent. It must be stated, however, that among the fatal cases¹ one patient was suffering from advanced hyperthyroidism with marked cardiac symptoms; another had a complete artificial pneumothorax on the right side, and a third suffered from marked cardiac displacement and myocarditis. In the remaining three fatal cases the patients died from exhaustion due to marked reactivation of the tuberculous lesion two months after the onset of influenza.

Careful observation for five months and reexamination of all patients affected with influenza at the end of this period revealed the striking fact that all but two have done well generally. No increase in the tuberculous lesion could be found; the gain in weight more than balanced the loss during their acute illness; none of the complications common in the tuberculous could be noted; their constitutional symptoms were in abeyance, and their capacity for their usual assigned exercise was unimpaired. Two progressive cases among a group of forty-eight tuberculous patients is a better proportion than normally found in ordinary sanatorium practice.

Clinically the onset and course of influenza in the tuberculous differed in no essential particulars from that among the nontuberculous. The disease was ushered in with chill, fever, headache, pain in the throat and lumbar region, hyperpyrexia up to 106.5° F. were occasionally noted, as were also epistaxis and blood streaked sputum. The respiratory symptoms were especially marked. Dyspnea and unproductive cough during the first two or three days of the disease were most frequently observed. Cyanosis was quite frequent, but generally the pulse rate was comparatively slow. On physical examination marked congestion of the lower lobes was most frequently observed and pneumonic patches, although often discovered, were at times diagnosed with difficulty on account of the pre-existing lesion. In six cases definite evidence of lobar consolidation was noted. The blood examination invariably disclosed a leucopenia in spite of the complicating pneumonia, with an increase in the total number of lymphocytes.

It is interesting to note that although the sanatorium draws its cases from the crowded and poorer districts of New York city where influenza was particularly prevalent, we have not yet been called upon to admit a larger number of applicants than in normal times. In fact the waiting list is smaller than in many years. We must also admit that the number of patients discharged nontuberculous from our institution has materially increased, due to the fact that many cases exhibiting indefinite basal signs, most probably the remains of influenza, have been erroneously diagnosed as being due to pulmonary tuberculosis and sent to us for treatment.

SUMMARY.

Although the cases observed which form the basis of this communication are too few in number to make it possible to draw definite conclusions, the following facts are nevertheless instructive:

1. The epidemic of influenza appeared at the sanatorium several weeks later than at New York city, which is forty miles south, and only forty-eight hours later than in the nearest village, a half mile from the institution.

2. Tuberculous and nontuberculous subjects seem to have been equally susceptible to influenza, the incidence in each case being twenty-four per cent.

3. Early and advanced cases were equally affected.

4. Pneumonic consolidations occurred as frequently in the nontuberculous as in the tuberculous.

5. There was a mortality of 11.4 per cent. due to the epidemic.

6. Careful observation for four months, and reexamination of all patients so affected at the end of this period, showed that all the patients but two were none the worse for their experience, their general condition being as good as might have been expected normally.

7. So far there seems to be no increase in the number of tuberculous patients seeking admission to our sanatorium, as a result of influenza, and more cases are erroneously sent to us for treatment on account of basal lesions than in corresponding periods of the past two years.

Spontaneous Nephritis by Experimental Lesions.—Arthur L. Bloomfield (*Bulletin of the Johns Hopkins Hospital*, May, 1919) attempted to produce chronic nephritis by first injecting streptococci into the renal artery, and after two weeks a series of intravenous injections was begun, the dose and time between injections varying according to the animal's reaction. The injections were given in such a way that the animals lost weight, and seemed ill. The injections varied from one to nineteen in different cases, covering a period up to fifteen months. Aside from a spontaneous nephritis no definite lesions could be produced, as the kidney structure did not differ from that of untreated controls. Apparently the immediate injury was promptly repaired before the beginning of an advancing lesion.

¹Already reported by Dr. Alfred Meyer in the *Medical Record*, April 12, 1919.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CXCV.—How do you treat burns? (Closed.)

CXCVI.—How do you treat infected wounds? (Answers due not later than July 16th)

CXCVII.—How do you treat fracture of the femur? (Answers due not later than August 15th.)

CXCXIII.—What is the proper equipment for a rural physician? (Answers due not later than September 16th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of \$25 for the best answer to Question CXCVI has been awarded to Dr. Melville A. Hays, of New York, whose paper appears below.

PRIZE QUESTION CXCVI. THERAPEUTIC USES OF ALCOHOL.

By MELVILLE A. HAYS, M. D.,
New York.

Alcohol normally exists as a constituent of the human body, but, unlike other substances, cannot be stored up in the tissues in any considerable quantity, and must therefore be taken into the body in such quantities and at such times as will definitely serve the requirements of the organism for the specific purpose in view. The proper use of alcohol is a blessing, while its abuse is an undisguised curse.

In order to bolster up their own cause, prohibition advocates, distorting medical statements and facts, give out the results of the intemperate use of alcohol to show the necessity for its suppression, but they always fail to state the beneficial effects of its proper therapeutic use; in fact, most of their arguments are a bitter attack upon the religion in which they profess to believe.

Derivatives of opium, *nux vomica*, lead, arsenic, mercury, aniline, and other substances too numerous to mention are all beneficial to mankind when used in proper therapeutic doses in suitable cases, but they each and every one are poisons *per se* and will produce harmful, and even fatal effects when improperly used or given in too large or too frequent doses; the same is equally true of alcohol.

Externally, alcohol is antiseptic, disinfectant, refrigerant, astringent, anhidrotic, rubefacient, and slightly anesthetic, while internally, in proper doses, it is a cerebral, cardiac, and general stimulant, slightly antipyretic, and even hypnotic.

Internally, in small quantity and properly diluted alcohol causes dilatation of the gastric vessels, reddening of the gastric mucous membrane, stimulation of the gastric glands to increased production of gastric juice, increase of the activity of the gastric movements, and produces a general feeling of warmth and comfort; appetite is increased and digestion is promoted. The adult human organism can assimilate and oxidize a certain quantity of alcohol, averaging about one and one half ounces in twenty-four hours, this oxidation yielding force which is utilized as energy or power—nervous, muscular, and glandular; it is a food which supple-

ments or replaces other foods and serves as an aid in maintaining the body weight.

Externally, alcohol, suitably diluted, serves an important function in preventing inflammation of the tissues in contusions, sprains, and other slight injuries. It is also an excellent application to prevent bedsores and cracked nipples, its mode of action in these cases being the hardening of the tissues by the extraction of water therefrom and coagulation of the tissue albumin; it may also be used as a gargle or spray for its astringent effect in certain inflammatory conditions of the throat. Sponged on the body, it cools the skin, checks excessive perspiration, and aids in the reduction of fever.

Aside from the necessary use of alcohol as a solvent and menstruum in pharmaceutical practice, alcohol taken internally, in small doses and suitably diluted, at suitable intervals, increases the appetite, aids digestion, controls certain forms of vomiting, relieves diarrhæa (astringent effect of brandy), checks colds, acts as a tonic in convalescence from acute disease, serves as a food, reduces perspiration, promotes sleep, acts as a heart stimulant in the depression due to such diseases as cholera, typhoid fever, and pneumonia, and serves as a valuable antidote for poisoning by snake venom and other powerful cardiac depressants.

In support of the necessity for the use of alcohol, Lawson Tait declared that he was "fully persuaded, after thirty years of life as hard in work and as full of responsibility as well could be, that the moderate use of alcohol is a necessity in our modern life," while Robert Farquharson stated, "All stimulant is unnecessary for the young and for people living perfectly healthy lives, but, under the strain and struggle of modern civilization, few of us are placed under normal physiological conditions and a little alcohol helps us to round the corners and plane away the asperities of life. In turn it may be a stimulant, or a tonic, or a sedative, or a digestive, or an actual food; and unless we run on into excess, no physical damage can possibly be done to our tissues."

In spite of any statements or arguments to the contrary, the writer asserts, without fear of contradiction, that alcohol stood out as a shining light

in the therapeutic field in the recent influenza epidemic with its accompanying pneumonias, many lives being saved by its use. It is understood, of course, that in the foregoing statements concerning the use of alcohol, the external use of alcohol is in its own form, while the internal use is in the form of whiskey, brandy, and the light wines.

Dr. Beverley Robinson, of New York, says:

This is and has been for many years, an important and absorbing question. To the scientist today and to the younger physicians who follow closely in his footsteps, alcohol has relatively little therapeutic value. On the other hand, to the older practitioner of medicine it is frequently very serviceable; at times simply invaluable. I regret to add here that to my mind much harm was done to the proper appreciation of alcohol in medicine and surgery by the unqualified statement two or three years ago of the president of the American Medical Association, who affirmed that he knew of no cases of disease in which alcohol could not be substituted wisely and efficiently by one or another drug.

Personally, I wholly disagree with this statement, which was spread broadcast, and I consider its effect as most prejudicial to the rational practice of medicine and surgery, in many instances. Those who proclaim the uselessness of alcohol in the treatment of disease assert that its power to stimulate is very evanescent at best; indeed, that blood pressure is rather lessened than increased by its use. Further, they claim that the secondary effect of alcohol is to depress the system and render recovery from disease less rapid, probably more uncertain and precarious. Again, they point with assured conviction to the terrible effects alcohol has on many of the important organs of the body when given in large, or continuous doses. To all of this I enter here an earnest protest, unless the statements are modified very much, or indeed essentially or wholly changed.

In insomnia and in many other nervous ailments, acute, or chronic, alcohol in the form of good old brandy or whiskey, given moderately and diluted, at meals, or at bedtime, or both, is decidedly curative, with many patients. It is true, there are some exceptions, but they are relatively a small proportion as compared with the aggregate.

In pulmonary affections of the gravest sort, acute, or chronic, good brandy or whiskey are at times simply without a peer in rapid curative effects. I have saved not a few patients at the point of death in pneumonia by giving frequently repeated and sometimes large doses of these stimulants, when without them, I am confident, death would have surely and very rapidly occurred. In advanced pulmonary tuberculosis, or even in the first, or second stages, it is positively criminal in many instances not to give an ounce or two of whiskey, diluted, to the sufferer three or more times in the twenty-four hours, and this treatment should be continued for many months.

In infectious diseases, such as diphtheria, typhoid fever, the eruptive fevers; in septicemic affections, primarily caused by maltreatment, or by wounds, good whiskey, or brandy, is often indispensable in

treatment. In the late epidemic of influenza, many of the strongest affirmations in behalf of the beneficial therapeutic uses of alcohol internally come to us from those who have had in the cantonments or base hospitals the widest, most extensive opportunities of making and strengthening a healthy and desirable judgment in this regard. In prolonged or delayed convalescence from acute disease in almost hopeless chronic ailments, from a purely curative standpoint, old wines like port, bagnols, burgundy, bordeaux, are surer in their permanently curative effects than any drugs of which I have knowledge.

For local applications in many surgical injuries or local infections, I know of no remedy equal to alcohol, with or without the addition of camphor. The great French surgeon, Nelaton, affirmed and practised it fifty years ago. In the Spanish-American war in 1898, our famous surgeon Nicholas Senn reaffirmed the great value of alcohol thus used. Since my early student days, I have never seen any surgical dressing more useful and less objectionable from every viewpoint than alcohol. It is at once mildly anesthetic, cleansing, deodorant and antiseptic and there is absolutely no danger from its frequent or prolonged use, as there is from carbolic acid, or bichloride of mercury. Of course in the use of alcohol internally common sense must be used and a halt should be called when given unduly and without good effects being appreciable or readily shown. Again, I am not aware that supplementary and useful drugs may not be used at the same time alcohol is given and without any disadvantage to the patient. These drugs may be temporary stimulants to the circulation, such as ammonia, camphor, strychnine, strophanthus, or systemic tonics like iron, quinine, arsenic, and the phosphates of lime and soda.

Of course in the use of alcohol in the form of brandy, whiskey, wine, or beer, intelligence, observation, experience, even tact and good judgment, must be individually applied, just in the same degree that all medication must be thus governed. As good physicians and surgeons, we must beware of regarding disease as an entity; we should rather always remember and practise, with the ever present judgment, that we have to deal with an individual suffering from a disease and that he or she must be governed or directed according to age, temperament, constitution, and circumstances, many of which we cannot change, but must seek to modify or help as best we can, when our professional doing is sought and required.

A final word is this and it is a most important one. Bad whiskey, brandy, wine, or beer, do untold harm to brain, heart, kidneys, stomach, and liver, but good old brandy, whiskey, wine, and beer in moderation do no such harm and largely owing to the esters they contain are our most valuable remedies in disease, acute or chronic, when advisedly prescribed and taken. From what I have just written, as an old and experienced practitioner, it may be rightly inferred how absolutely I am opposed to the prohibition insanity, which has taken such a disastrous hold on the American people.

Dr. G. Reese Satterlee, of New York, says:

External uses.—Alcohol is an antiseptic, cutaneous stimulant and dehydrant. As an antiseptic, its value is receiving greater favor, probably more because of practical results than from experimental laboratory tests for bactericidal properties. It may be used alone in eighty to ninety-five per cent. solutions, or as the tincture of iodine, which is very popular. Iodine has the advantage of coloring the skin and thus marking the sterilized areas. Alcohol should be applied with friction so as to remove the bacteria with the superficial layers of epidermis. Alcohol is of much value as a chemical antidote to carbolic acid, when applied immediately, neutralizing the caustic effect of the latter on skin and mucous membranes. Alcohol is applied at once after cauterizing infected wounds and appendix stumps with carbolic acid.

For sterilizing hypodermic needles, scalpels, and sharp instruments, ninety-five per cent. alcohol is very efficient but has the disadvantage of rusting and dulling instruments if used for any length of time. In first aid work, alcohol is a very useful antiseptic, especially in the form of tincture of iodine for small cuts and wounds. Gauze saturated with alcohol makes a good emergency antiseptic dressing.

As a cutaneous stimulant, alcohol is extensively used as an eighty per cent. solution and should be applied with friction. As an evaporating solution, alcohol produces cooling and soothing effects to painful, inflamed areas, painful joints, and neuralgias. A protective dressing will prolong its effect, which can be intensified by the addition of ether. As a dehydrant, alcohol is efficient in hardening the skin in bed patients, preventing chafing and bed sores, but it should be used with care in dry skin and in chronic skin affections. For preserving pathological specimens, fresh tissues can be placed immediately in eighty per cent. alcohol.

Internal uses.—Alcohol should never be given internally in solutions stronger than fifty per cent. and then diluted. Its use can be divided according to temporary and permanent effects. Its principal value is that of a rapid, diffusible, cardiac stimulant, given by mouth as whiskey or brandy. The dose for adults is one half to two ounces and repeated every half hour to four hours, according to the urgency of the case. Where administration by mouth is impossible or inadvisable, alcohol can be given by rectum or hypodermically. If given by rectum, it should be very well diluted. The hypodermic dose is one half to four drams of whiskey or a fifty per cent. solution, according to necessity.

The conditions in which alcohol is useful as a cardiac stimulant are shock, medical or surgical, and prostration from hemorrhage. It is of value in the cardiac failure of pneumonia, especially in alcoholic subjects, in sudden collapse in sepsis, and in numerous infectious diseases, notably typhoid fever, scarlet fever, and diphtheria. Extreme care should be exercised in its administration in cardiac and arterial disorders and in hemorrhage where overstimulation may do harm. In prolonged cases of wasting febrile disease, weaker solutions con-

tained in milk punches, egg noggs (rum, whiskey or brandy), sherry, port, etc., are of value as a stimulant and food.

Alcohol, in large and frequent doses, is very useful in preventing the onset of delirium tremens. It is a wise precaution to administer whiskey during an acute illness, shock, or fracture in a subject with an alcoholic history. It is also very valuable in the control of delirium tremens, where it should be pushed to the limit. As a gastric sedative, champagne is often of value in post operative weak stomachs or in seasickness.

(To be concluded.)

Characteristics of Primary Malaria in Children.

—P. F. Armand-Delille (*Bulletin de l'Académie de médecine*, April 1, 1919) asserts that hitherto the initial malarial attack in children has often been overlooked, and that its clinical features have not yet been precisely described. While in service in the Saloniki region he observed among children numerous instances of continued fever with gastric disturbance, closely resembling the condition met with in soldiers who had just acquired malaria, and blood examination in these children revealed numerous malarial parasites. The disease seemed to affect most children in their second or third year, sometimes even in the first year. Many children of two or three years already exhibited chronic malaria with splenic enlargement. The initial attack, when untreated, sometimes continued for several weeks; as in all malignant cases harboring the *Plasmodium falciparum*, it was in some instances very refractory to quinine treatment. The attack generally began insidiously, with elevation of temperature accompanied by somnolence or even diurnal prostration, alternating with sleeplessness and restlessness at night. Children three years old complained of headache. At the same time the facies showed changes indicative of poor health and fatigue. An anemic appearance rapidly supervened. There were always digestive disturbances—*anorexia* coupled with marked thirst which led the child to take the breast with avidity only to abandon it a few minutes later. A few patients vomited and many had constipation, except infants, who sometimes had stools of a dysenteric appearance. The tongue was always coated and the abdomen distended. The spleen soon extended two or three fingerbreadths below the costal margin. The pulse was rapid, and the temperature ranged between 38.5 and 39.5° C., seldom reaching 40°. The blood showed anemia and parasites, generally in the form of schizonts of the *Plasmodium falciparum*. When escaping detection, this condition sometimes finally reduced the child to the condition of acute primary cachexia through adrenal insufficiency, described by Paiseau and Lemaire, followed by death. Yet in many cases of intermediate intensity the patients recovered from the primary attack. Because of the relative infrequency of the parasite in the blood cells in these patients—probably due to a marked macrophagic activity of the spleen in children of this age—it is often of advantage to use the Leishman thick drop method in examining the blood.

Editorial Notes and Comments

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NEW YORK, SATURDAY, JULY 5, 1919.

THE GREAT OUTDOORS IN THERAPEUTICS.

The official figures are not available as yet and doubtless will not be for months to come, but the records in something like one hundred thousand cases seem to show that the average gain in weight of our soldiers who went to France was about fourteen pounds. It is easy to understand that such a gain in weight in the midst of the active life which they had to lead was not due to an accumulation of the sluggish tissue fat, but an increase in the amount of active tissue muscle. The health of the men was greatly improved. Practically all who are unwounded come back in much better health than when they left and with strength and muscle energy to spare, which in most cases would have seemed almost impossible for the particular individual to acquire at home. These men are all to be compared to trained athletes on whom the care of a special trainer or athletic director, with the diet of a training table, has been lavished at great expense and with almost endless solicitude. They are perfectly fit, and though many of them, we might say most of them, were not such specimens of humanity as ordinarily would be considered worthy of the training table and the trainer, they all have been lifted into that class.

We wonder if this precious lesson is going to be lost. The all important factor in this wonderful improvement of health was simply the outdoor life,

and nothing else. Apart from that, the young men existed under what ordinarily would be considered extremely unsuitable circumstances for improvement in health. Their sleep was often disturbed, they ate irregularly, the food was not very palatable, they were glad to get beans and bacon, served cold under conditions that would be most unappetizing at home, and only too often they were so hungry that it was hard for them to believe that they were getting enough to eat. The United States military authorities were doing their best and in the camps before sailing and whenever it was possible abroad, that is, at times of release from the fighting line, the men were fed very well, but during the actual fighting they just had to do the best they could with hard tack and "corned willy" and sometimes only coffee and bread and whatever else that was available. They were doing the hardest kind of physical work in the midst of great personal danger and often actual sufferings that would seem to demand an abundant, nutritious diet, and yet they got along successfully with just what came to them.

Trench life, which constituted the principal part of existence for the young men who went over to France to fight, has been described as "living in an open ditch in the open fields." Certainly the cave man, living as he did in rather deep galleries in the hillsides and therefore thoroughly able to avoid extremes of temperature and, above all, to get away from dampness, was ever so much better off, so far at least as shelter was concerned, than the soldiers of the twentieth century for the past five years. The French soldiers are said to have put on even more weight than the Americans, they were longer at it and received more benefit, beside they were a little older on the average and therefore had more tendency to gain in weight. Many of our American soldiers had come from comfortable homes, and yet when required to take up the cave man existence of our earliest European ancestor, almost without preparation, they reacted finely to it. Instead of being harmed by it as nearly everybody prophesied would surely be the case, they were greatly benefited.

One young man wrote home to his mother, to quote from an article by Miss Repellier in the *Century*, that he had not had dry feet for six weeks and had not slept in a dry bed for six months; that they were giving him things to eat that at home he would not have looked at, but his appetite was proving quite equal to them and he never felt so fit in his life. That young man is said to have come

from a family that was perilously rich and where it seemed almost inevitable that he would be spoiled. The army does no spoiling, however, but very soon gives a man some idea of his own powers in both health and strength. This experience instead of being unique was almost universal.

We have come to the time of year when physicians are consulted as to what sort of a vacation young folks should have. There are many fathers and mothers in America who are willing to do anything possible to have their children enjoy the best possible sort of a vacation that would add to their health and strength. Well, here is a lesson in vacations. They should be taken out of doors, put at hard work, in plain and simple surroundings, and they should be given abundant food. Nothing else is necessary except that they should get up and begin the day about five and then get to bed about nine. It is extremely hard to get young folks to bed at nine, but where they get up at five there is no trouble. The order of the old saw should not be early to bed early to rise, but early to rise and then the early to bed follows naturally and requires no special effort.

Three years ago we had the experience of sending 100,000 of our young soldiers to the Texas border during the hot summer months. They left shortly after the end of a northern winter to swelter in what was practically a subtropical climate, and most of us were afraid that they would surely be injured. Instead of that they all came back in better health than when they went away, having gained on an average of ten pounds. Manifestly hard work and the outdoor air is good for young adults no matter in what climate it may be. The gospel of fresh air as the most important element, not only for the preservation but for the improvement of health, has thus had two chapters added to it that are most significant.

THE DIAGNOSIS OF EXTRASYSTOLIC PSEUDOBRADYCARDIA.

In many subjects extrasystoles are accompanied by distinct subjective signs, such as palpitation and a sensation of precordial shock with distress. But there are also patients with extrasystolic pseudobradycardia where such sensations are not experienced so that in reality it is on the objective signs that one must rely in order to detect the extrasystoles. If one hand is placed over the precordial region, and the pulse is taken with the other, one may perceive another beat after the heartbeat to which the radial pulse corresponds—the extrasystolic one. And one will even be surprised at the energy at the short and rapid apex shock. This can perhaps be explained by the fact that the heart is still near the

thoracic wall on account of the shock of its apex during its last normal contraction. If an extrasystole occurs, the heart will strike the nearby wall.

Auscultation of the heart while the radial pulse is taken will reveal the existence of extrasystoles. Under these circumstances cardiac sounds will be heard, some of which are not accompanied by a radial beat. But when the extrasystole occurs more or less late after the normal systole, different sounds will be perceived by the ear. If the extrasystole occurs in full diastole, two other sounds will be heard following the two sounds of the normal cardiac cycle which corresponds to the extrasystole, giving a four time rhythm.

If the extrasystole occurs earlier in the diastole—close upon the normal systole—the ventricle still contains too little blood to raise the sigmoid valves and throw the blood into the arterial system. The sound corresponding to the closure of these valves will not occur at once and only the sound due to the closing of the auriculoventricular valves will be heard. Therefore, following the two sounds of the normal cardiac revolution, only a third sound will be perceived, due to the extrasystolic contraction, and then there will be a three time rhythm, followed by a long silence in relation to the compensatory rest.

This variety of extrasystole which gives rise to the three time rhythm is particularly interesting, because it is the one which does not show itself in the pulse beat and therefore may be erroneously considered as a bradycardia. However, Vaquez has pointed out that in certain cases where the heart offered a four time rhythm, the two latter sounds are due to the extrasystole, only one arterial pulsation being counted in relation to the true systole. These are instances where the extrasystole has forced a considerable quantity of blood, enough to raise the sigmoid valves, but not enough to provoke a radial beat.

The third sound, in the three time rhythm of extrasystolic origin, is of particular intensity, a phenomenon which, according to Potain, is related to the energetic closing of the auriculoventricular valves. Vaquez points out that these valves are progressively raised by the afflux of blood into the ventricles during diastole, so that at the time of the systole they are already partially closed and the small displacement caused by their closure takes place without giving rise to a sound. But if a hasty extrasystole occurs at the instant that the ventricle is still empty, the valves suddenly pass from one extreme position to another, they undergo both a rapid and extensive displacement and strongly striking each other they give rise to a sound of unusual force.

Finally, in cases where doubt still exists after the clinical examination, simultaneous tracings should be taken of the apical shock and radial pulse. In comparing the cardiogram with the sphygmogram, the presence of extrasystolic beats can be detected, evident on the cardiogram but not on the sphygmogram tracings, and for still stronger reasons are imperceptible to the finger on the radial artery. By these means the demonstration of an extrasystolic pseudobradycardia will be made.

CLIMATE AND HEALTH.

Professor Huntington, in his latest book, *World Power and Evolution*, very boldly, and to his own satisfaction, holds that the weather is the main factor in health, individual and national. He takes the death rate as the correct index of health of a people and presents graphs comparing the ups and downs of health, (as shown by this indicator) with contemporaneous variations in the results of civil service examinations, school attendance, liquor consumption, New York bank clearings, general prices, immigration, and yield of crops. It only remains to show that the death rate depends on the weather and the fluxes in all human affairs are explained. As presented, there seems considerable agreement among the fluctuations in the apparently not much related phenomena, but on close analysis it is not so easy to connect them.

The curve representing the fatness or leanness of crops should evidently have no relationship to the health curve, for the death rates are those for New England and New York while the crops are raised chiefly in the West, and weather conditions in the two sections have little in common, beside the ups and downs of the death rate in New England does not correspond with its variations in the country at large. It takes considerable explanation also to make the tides of immigration agree with health conditions as represented by the death rates in a few Eastern States.

Huntington tells of the effect of sickness in monetary loss, absence from work, poor work, etc., but mentions among the most common minor ills, "head-aches, backache, stomach disorders, shaky nerves, and colds," only one of which can safely be laid to the door of the weather.

More convincing arguments for the connection between climate and health are the "climograph" studies made as to the relation of average temperatures and humidities of a place to the death rate. According to these, the human race seems to have best health when the average temperature for day and night together is 64 degrees, perhaps 70 de-

grees at midday and 55 degrees at night, and a relative humidity of about 80. This being the case, one would expect the best mental work of the world and the maximum of business to be transacted where these ideal conditions prevail. Huntington finds, however, that the Hawaiians and some other peoples who live in this sort of climate do not reach a high level of mental development. He says that while 64 degrees is the optimum for physical good, there is another optimum temperature for mental work, and that, as shown by West Point examinations, is 40 degrees. This seems a most remarkable statement, for mentality is not merely a human attribute. Has Nature so erred that she should hitch a mental and a vegetative machinery together which do not gibe as to their reactions to weather? Is a tropical animal less cunning than one of the temperate zone? Also, were the West Point examinations conducted in a room at 40 degrees? Certainly not.

The author goes on disappointingly—"a high civilization cannot be based upon physical well being or mental well being alone. The two seem equally necessary, therefore the best climate would apparently be one in which the winters are cool enough so that there are several months with frost, while the summers are warm enough so that there is a considerable period when the thermometer approaches 70 degrees at noon." His problem today is to avoid harm to his body and yet live where the climate is cool enough to stimulate his mind. Huntington, with licensed imagination, proceeds to connect all the great fluctuations of civilization, from the beginnings of that elusive thing down to the great war, with climatic conditions.

There is no question about the influence of climate upon health, but the wholesale generalizations upon the subject in this book, while interesting, go far beyond the realm of present day science. Their only practical application is in the way of improving ventilation, in avoiding superheating and, if Huntington's climographs prove anything, in maintaining a considerable degree of moisture in our winter quarters.

CUSTOM AND TRADITION.

We are reminded of the many statements in medical works having little or no foundation in fact, but which are accepted as gospel truth and handed down without investigation from one writer to another. What, and how many, these statements are, especially with regard to therapeutic practices, heaven only knows and we would dread to have disclosed all at once. Disclosed they will be in time, but that time seems

needlessly slow and long drawn out. If medical authors could somehow be held responsible for their statements the casting out of dead and harmful timber from their works would be accelerated. As it is, the amount of matter that bears the stamp of the author's own experience, and therefore originality, is, in most books, and must be in any large work, exceeding small. The great bulk of his matter is a repetition of what has stood, possibly for centuries, unexamined, for truth. For example, in textbook after textbook of pathology the statement was formerly (perhaps is still) made that emphysema was produced by glassblowing and playing upon wind instruments, though investigation showed that, unless in one instance of such exercise following too soon after pneumonia, there was no ground other than guesswork for such an assertion.

There is a present tendency, happy for all concerned, for authors to issue monographs, instead of compilations, containing but a few pages of original matter for which the writer can vouch. Considering the expense of medical works as well as the little time the physician has for reading, it is fortunate that he is not obliged to cumber his shelves with reprintings of traditions which may not be reliable. A medical library a few years old is valueless enough from every standpoint, and anything which will add to its worth should be welcomed. While the physician does well to give due weight to tradition and to authority, he should at the same time be ready to question any and every statement as to its foundation. There are a great many fine theories and many hoary practices in modern medicine that need to be faced by what Professor Huxley styled "naughty facts." Ross in his studies of tumor cells found that the proportion of salts influenced their growth to a certain extent. About the only suggestion of cause and effect as yet suggested for the origin of cancer is in diet, and apparently excessive diet. If this guess is correct it would seem that an overworked kidney might follow the excess of food and a disproportion of salts in the blood might be the final cause of cell anarchy.

ALCOHOL IN PRESCRIPTIONS.

The rulings of the Internal Revenue Bureau on the status of alcohol in relation to prescriptions have been set forth in a message from Commissioner Daniel C. Roper to the collectors of internal revenue in the form of instructions to collectors. These instructions give a legal position to the use of alcohol by physicians. The instructions are somewhat complicated and necessitate the unwinding a quantity of red tape in their fulfillment. The

portion of the message which directly concerns physicians is as follows:

Physicians may prescribe wines and liquors, for internal use, or alcohol for external use, but in every such case each prescription shall be in duplicate, and both copies be signed in the physician's handwriting. The quantity prescribed for a single patient at a given time shall not exceed one quart. In no case shall a physician prescribe alcoholic liquors unless the patient is under his constant personal supervision.

All prescriptions shall indicate clearly the name and address of the patient, including street and apartment number, if any, the date when written, the condition or illness for which prescribed, and the name of the pharmacist to whom the prescription is to be presented for filling.

The physician shall keep a record in which a separate page or pages shall be allotted each patient for whom alcoholic liquors are prescribed, and shall enter therein, under the patient's name and address, the date of each prescription, amount and kind of liquors dispensed by each prescription, and the name of the pharmacist filling same.

Any licensed pharmacist or druggist may fill such prescription:

1. If his name appears on the prescription in the physician's handwriting.
2. If he has made application and received permit, Form 737, in accordance with the provisions of Treasury decision 2,788.
3. If he has qualified as retail liquor dealer by the payment of special tax.

No such prescription may be refilled.

News Items.

D. S. C. Awarded.—Award of the Distinguished Service Cross has been made to Captain Albert W. Lindberg, of Hillsboro, L. I., Medical Corps, United States Army, for extraordinary heroism shown in performing an amputation in No Man's Land while under heavy fire.

Another County Tuberculosis Hospital.—Herkimer County has sold \$150,000 in bonds for the construction of a county tuberculosis hospital, to be erected three miles east of Salisbury Centre and six miles from Dolgeville. It is expected that construction will be begun early in the summer.

Fund started for Italian Hospital.—A campaign has been launched in Philadelphia to raise \$200,000 for the erection of the Italian Hospital of Christoforo Colombo, which will be established in that city in conjunction with an Italian orphanage. The institution will be under the management of the Catholic Archdiocese of Philadelphia. An additional \$300,000 will be solicited later to build the orphanage.

Bequests to Hospitals.—The will of Augustus D. Juilliard, of New York, contains bequests to hospitals in the following amounts: New York Orthopedic Dispensary and Hospital, \$100,000; Society of the New York Hospital, \$100,000; Lincoln Hospital and Home, \$100,000; Tuxedo Hospital, Tuxedo Park, N. Y., \$100,000. Mr. Juilliard was a member of the board of directors of the New York Hospital.

The sum of \$25,000 is divided among several hospitals by the will of Edward Holbrook, late president of the Gorham Manufacturing Company, of New York, as follows: Stamford Hospital, \$10,000; Rhode Island Hospital, \$10,000, and the New York Polyclinic Medical School and Hospital, \$5,000.

Case of Encephalitis Lethargica.—It is reported that Hilda Kari, a Finn, died June 26th in Bellevue Hospital, New York, after a sleep that lasted three months and five days, with only a few intervening moments of consciousness. Physicians diagnosed the case as encephalitis lethargica. The patient was brought to the hospital on March 21st. Every effort was made to restore her to consciousness, but the most drastic treatment did no more than to make her open her eyes for a few moments.

Shell Shock Cure.—Instances where a man who had lost his power of speech recovered it when he put the wrong end of a cigarette in his mouth, had cold water poured on him, or fell out of a boat and was obliged to call for help were related by Dr. R. Tait McKenzie, director of physical training at the University of Pennsylvania, at the Middle Atlantic Physical Directors' Conference last week in Philadelphia. The speaker emphasized the need of distinguishing between men suffering from shell shock and those who were merely scared. During the war Doctor McKenzie served as a major in the British Royal Medical Corps and was in charge of the convalescent depot at Heaton Park, Manchester, England.

Wisconsin Health Legislation.—Among health bills, either fully enacted or passed by both houses of the Wisconsin Legislature, are the following: Classing chancroid as a venereal disease, prohibiting druggists from prescribing therefor, and the circulation of advertisements of cure; requiring every municipality to establish one or more public comfort stations; creating a department of occupational therapy at county tuberculosis sanatoria; prohibiting the use of vehicles for purposes of prostitution (a measure for venereal disease control). The bill fostered by the State board bringing all water and ice supplies and sewerage works under control of the State board passed the lower house and its final enactment is believed certain.

Rockefeller Foundation in France.—The third installment of the review of the work of the Foundation, sent out for publication on June 29th, relates the crusade against tuberculosis in France of the commission for the prevention of tuberculosis of the Rockefeller Foundation and the Tuberculosis Bureau of the American Red Cross. Arriving in France in July, 1917, the American crusaders found almost every kind of agency known to modern medicine and public health administration as effective in combating tuberculosis, but there was no efficient, cooperative, centralized organization among French doctors for a united and comprehensive attack on tuberculosis. A campaign was begun which utilized the principles of effective "selling" with regard to science. A "medical tank" bearing signboards that rolled over the roads of France; lectures, posters, moving pictures, newspaper articles, postcards, games, and demonstrations were among the devices used for publicity in 141 towns of 3,000 or more population. It is hoped that a new ministry of health may be created which will take over the central supervision of the machinery that is being set up, so that the foundation can withdraw from France confident that the work will go on.

Standardization of Public Health Degrees.—At a meeting held recently at Yale University measures were considered for standardizing the various degrees and certificates offered by the Public Health Service. The following resolutions were adopted:

1. That the degree of doctor of public health (for which the abbreviations should be Dr. P. H.) for graduates in medicine should normally be awarded after two years of work done under academic direction, of which one year at least should be in residence; and that the requirements for the degree should include class work, practical field work, and an essay based on individual study of a particular problem.

2. That the degree of doctor of philosophy or doctor of science in public health or hygiene should be conferred upon students who hold the bachelor's degree from a college or technical school of recognized standing, and have satisfactorily completed not less than three years of graduate study. It is understood that this degree is based upon the fundamental sciences associated with hygiene and public health, including a knowledge of physics, chemistry, general biology, anatomy, physiology, physiological chemistry, pathology, and bacteriology, in addition to the thesis and other usual requirements for the Ph. D. or Sc. D. degree.

Representatives of Johns Hopkins University, the Massachusetts Institute of Technology, Harvard University, Yale University, New York University, and the University of Pennsylvania attended the meeting.

Record of Diseases Combated in Army.—Statistics show beyond all dispute that the American Army was the healthiest and cleanest that ever fought, according to the Red Cross News Service. By far the greatest number of deaths from disease was due to pneumonia and influenza, deaths from this cause being placed at 8,000. There were only 1,000 cases of typhoid, fifty of which were fatal; venereal cases never exceeded four per cent., an exceedingly low figure in an army in the field. Dysentery was present at one time but was checked before it reached the epidemic stage.

When the American troops arrived in France there was great difficulty in securing hospital space and the first wounded were housed in all manner of buildings, from choice edifices of imperial foundation down to humble and none too clean municipal halls in French villages. At the close of the war there were 153 base hospitals, sixty-six camp hospitals, and twelve convalescent camps in France alone. The great Haviland china factory at Limoges was turned over to the Americans for hospital purposes and the library of Orleans was stripped of 100,000 books to make room for the narrow cots and operating tables. In Vichy hospitals were established in eighty-seven hotels, while seventy other hosteleries were similarly converted in and around Vittel and Contrexeville. Two of the outstanding features of American hospital work in France were the great hospital centres such as Mesves with 25,000 beds and the mushroom 1,000 bed "Type A" hospitals, that standardized all American built hospitals in France. The Army Medical Corps and the Red Cross were able to keep ninety-three and three quarters per cent. of the fighting forces effective for duty at all times, and of those remaining only 3.4 per cent. were incapacitated through disease. This is considered as being far above the average.

Leprosy.—*Public Health Reports* (June 20th) announces that during May two cases of leprosy of nodular type were reported at Boston. In the case of T. W. C., Chinese, male, aged twenty-two years, the disease was diagnosed clinically and verified bacteriologically. N. F., Greek, male, aged twenty-two years, absconded from the hospital and his present whereabouts are unknown.

"Review of War Surgery" Ceases Publication.—The *Review of War Surgery and Medicine* prefaces its June issue with the announcement that this is the last number. The publication was originated to furnish medical officers during the emergency with abstracts of original papers of importance and to publish special reports which otherwise might not gain circulation. Lieutenant Colonel M. G. Seelig and Major G. P. Muller, of the Medical Corps, have been in editorial charge.

More Nurses and More Hospitals.—New York State needs twenty-five hundred nurses in addition to the eight hundred now in service, according to statements made by Augustus N. Downing, assistant commissioner of higher education, before the closing session of the State sanitary officers and public health nurses at Saratoga Springs, N. Y. Mr. Downing declared that hospitals would soon be opened in the State where candidates could begin training as nurses with only one year in high school as a foundation.

Army Surgeons Fly Eighteen Hours.—It is reported by the *Army and Navy Journal* that a recent successful flight by army surgeons from Florida to Washington, a distance of 1,360 miles, was made in eighteen and one half hours of actual flying. This is the longest flight made by officers of the Medical Corps. Major S. M. Strong, post surgeon of Carlstrom and Dorr Aviation Fields, Florida, was in charge of the three airships which made the flight. Major Strong is working on an aerial ambulance and is hopeful of perfecting a machine with a capacity of from two to fifteen patients.

Model Health Centre.—A feature of the conference of New York State sanitary officers and public health nurses held recently at Saratoga Springs was a model health centre, which occupied a suite of six rooms in the Grand Union Hotel. Here was conducted a public tuberculosis clinic, a clinic for the examination and treatment of persons affected with venereal disease, exhibits of child welfare work, a completely equipped laboratory, and a fully equipped health officer's office. The idea underlying the health centre is to coordinate all health work done by various agencies, giving more efficient service and also saving both time and money.

Army Hospital Train Carries Gassed Soldiers.—An army hospital train in charge of Captain Frank H. Blaney, Medical Corps, recently arrived at the hospital at Fort Bayard, N. Mex., with 140 soldiers aboard who had been gassed in France, says the *Army and Navy Journal*. The train was equipped with every necessity for the care of the men, including in its personnel surgeons, army nurses, and twenty attendants. All the soldiers arrived safely though some were in so serious a condition that it was feared they might not survive the journey.

Red Cross Supplies to Siberia.—A shipment of Siberia of ambulance bodies and surgical supplies valued at \$348,850 has been authorized by the Red Cross. Major Kendall Emerson, of Worcester, Mass., who has just returned from the field, reported that the Red Cross Commission to Siberia is in most urgent need of a large quantity of gauze, nonabsorbent cotton, absorbent cotton, and other supplies.

Civil Service Opportunities.—The Civil Service Commission of the State of New York announces the following list of positions, examinations for which will be held August 2d: Diagnostician and epidemiologist, State Department of Health, \$3,500. Sanitary supervisor, State Department of Health, \$3,000. Director of laboratory, Department of Health officer, Port of New York, Rosebank, \$3,500. Men only. Surgeon, State Institute for the Study of Malignant Disease, Buffalo, \$3,000. Assistant physician, regular or homeopathic, in State hospitals or county institutions, \$1,200 to \$1,600 with maintenance.

Red Cross Aids Rumania.—Fifty carloads of surgical dressings were sent from Red Cross headquarters in Paris to Rumania where the Red Cross Commission found the hospitals almost devoid of supplies, according to Lieutenant Colonel H. Gideon Wells, of Chicago, American Red Cross Commissioner to Rumania. Colonel Wells stated that America's practical help came just in time and saved Rumania from starvation and the spread of typhus. The effort to get food, medicine, and the needed supplies in some measure to all parts of the country has been successful and work on restoration of the transportation facilities has progressed. The Red Cross is now distributing supplies from ten different points in the country. Typhus is still prevalent in parts of Rumania but the American doctors and nurses appear to have the situation well in hand.

Personal.—Dr. Walter T. Dannreuther, of New York, has been appointed assistant professor of gynecology in the New York Post-Graduate Medical School and Hospital.

Lieutenant Preston A. McLendon, Medical Corps, United States Navy, has been awarded the *Croix de Guerre* by the French government for zeal, bravery, and competence in dressing the wounds of the men during the enemy attacks of June 7-9, 1918, under violent artillery fire. He was on duty with the United States Marines.

Lieutenant William P. Gilmer, Medical Corps, United States Navy, has been awarded the *Croix de Guerre* for ability and bravery in dressing wounds and carrying wounded to the rear under an almost continuous bombardment. Lieutenant Gilmer served with the Marines.

Dr. Edward S. Godfrey, epidemiologist of the New York State Department of Health, has returned from France, where he has been connected with the American Red Cross in the capacity of chief of the health inspection service.

Captain Elbert M. Somers, recently returned from service as hospital superintendent with the American Red Cross in France, has resumed his practice in psychiatry in Brooklyn.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

SYPHILIS.

BY OLIVER T. OSBORNE, M. D.,
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So much has recently been written concerning this disease and its treatment that it seems wise to briefly itemize our present knowledge.

The menace.—Recent statistics show that this disease is on the increase both in military and civil life. Extragenital initial lesions are not uncommon. Hypertension; aortitis, aneurysm (generally); chronic nose, throat, and ear inflammations; brittleness of bones; chronic liver and stomach disturbances, and especially chronic spinal cord and cerebral disease are often due to syphilis. Hereditary syphilis is of frequent occurrence, even in families in whom it is not suspected. Dental stigmata are not pathognomonic of hereditary syphilis. All forms of disturbance of the nervous system may be caused by syphilis, from simple headache and insomnia to epilepsy, insanity, and paresis. Locomotor ataxia and paresis are always caused by syphilis.

Syphilis may be associated with almost any condition, from tuberculosis to acute meningitis. In about a fourth of the patients who have syphilis disease of the nervous system develops; locomotor ataxia is the most frequent of the nervous lesions, and is three times more frequent in men than in women.

Wassermann test.—This test is positive in practically all cases of active syphilis, and if present shows that whatever else the patient has, he probably also has syphilis. If the test is negative he may still have syphilis. If the blood is negative to this test, the spinal fluid may be found positive, especially in nervous syphilis. If both tests are negative, he may still have syphilis and the test may become positive later, after treatment. The Wassermann test may vary greatly in intensity of reaction and be absent during treatment, or even without treatment.

Lucin reaction.—This skin test seems to be indicative of syphilis, and is especially valuable in latent, tertiary, and hereditary syphilis, but the patient at the time the test is made must not have received iodine in any form. Nonsyphilitic patients will show this test positive if iodide has been given coincidentally or before the test is made.

TREATMENT.

1. All suspicious sores should be studied microscopically for spirochetes.

2. If spirochetes are not found, in two or three weeks in all suspicious cases a Wassermann blood test should be made.

3. A history of syphilis should always be sought in chronic disease, and if found, a Wassermann test made.

4. If the history is negative but the disease

causes suspicion of syphilis, a Wassermann test should be made.

5. Cachectic children or children with diseased conditions that may be caused by syphilis should be subjected to Wassermann and luetin tests.

6. Pregnant luetic women should receive active antisyphilitic treatment.

7. Syphilis being discovered or diagnosed, intensive treatment must be begun. The consensus of opinion today is that arsenic and mercury should be given coincidentally and intensively.

8. Arsphenamine should be given intravenously as soon as syphilis is diagnosed.

We cannot much improve, at the present writing, upon the treatment advised by Fordyce (*American Journal of the Medical Sciences*, October, 1916) namely, five or six injections intravenously of arsphenamine at intervals of about one week. At the same time he advises giving injections of mercury intramuscularly, every other day if it is a soluble form of mercury, or once a week if it is an insoluble form. His dose of salvarsan (now arsphenamine) is from .3 to .5 gram for men and .25 to .4 gram for women. He prefers the bichloride of mercury if he uses a soluble form, and gives twenty to thirty injections, either daily or every other day. If he uses the insoluble mercury he prefers the grey oil "in the form of mercurial cream of which five minims represent one grain, in a series of ten to twelve injections, or salicylate of mercury (forty per cent. suspension) in dose of one to three grains, gradually increased, ten to twelve injections constituting a course." After the course of arsenic and mercurial treatment he advises a rest period of six weeks, and then repeats the treatment, even if the Wassermann test has become negative.

9. At the present time many clinicians prefer administering mercury by inunctions. If such a method is used, the amount rubbed in should be definitely measured, and preparations of definite amounts may be obtained. This is not necessarily an unpleasant method, although it may be so for some patients. The administration of mercury by the mouth is now less and less frequent, though there is no question that some patients do well by this method; and some patients will not tolerate the pain of intramuscular injections, and do not wish the home publicity of the inunctions.

10. As previously stated, many cerebrospinal and visceral conditions are due to syphilis, and tests should be made to exclude that disease. Since 1912, when Swift and Ellis first presented their method of the intraspinal treatment for syphilis of the nervous system (which method has been further elaborated by a series of articles by these investigators and by others), many patients have been treated by intraspinal injections of salvarsan and salvarsanized serum (now arsphenamine and arsphenaminized serum), or by some modification of this treatment.

It has been shown that the best results are obtained when arsphenamine is also administered intravenously and mercurial treatment is given in conjunction with the arsenic treatment. Also, the old belief that iodides are of value in tertiary syphilis is still in evidence, and iodides are many times used as an added medication. It might here be parenthetically stated that there is no good proof that potassium iodide is of any greater value than sodium iodide in any condition for which iodide would be used, and in this era of scarcity of potassium salts the sodium salts should be preferred.

The development of the intraspinal treatment with arsenic by Swift and Ellis may be studied in the articles referred to by Dexter and Cummer (*Archives of Internal Medicine*, January, 1918). Neymann and Brush (*Archives of Internal Medicine*, August, 1918) present an up to date method of treating syphilis of the nervous system by mercurial injections, iodide by the mouth, arsphenamine intravenously, and the intraspinal administration of mercury. The limitations of these treatments and the symptoms that should cause the treatment to cease are well outlined in this paper. Although they especially outline the treatment of paresis, the same method is applicable to any form of cerebrospinal syphilis.

The usual care in administering spinal injections should be followed, namely, the patient should rest previous to the injection and afterward. There should be careful decision as to the amount of fluid to be withdrawn and the amount of injection to be given, and the force with which the injection is given. Serious headache may be caused, and very frequently nerve and muscle pains. This is especially true in locomotor ataxia. It has not been demonstrated which is the more beneficial in locomotor ataxia and paresis, mercurialized serum or arsphenaminized serum. It is hardly necessary to urge this intensive treatment in the early stages of locomotor ataxia and paresis as giving by far the better prognosis of preventing the progress of the disease; however, even in more advanced cases of locomotor ataxia improvement may be great and lasting.

11. Whatever may be the apparent cause of epilepsy, the Wassermann test should be made, both of the blood and of the spinal fluid, and this not only in those in whom epilepsy develops later in childhood or during adult life but also in the very young epileptic. Hereditary syphilis will probably be found to be a frequent cause of epilepsy, and with the Wassermann test positive, improvement or cure may result from antisyphilitic treatment.

Arsphenamine.—Arsphenamine is the American name for salvarsan. Meddis and Sterling (*Journal A. M. A.*, May 18, 1918) suggest that ten minutes before the injection of arsphenamine an injection of 1:1000 epinephrine solution should be given, to prevent a severe arsenic reaction. Arsphenamine may cause a rise of temperature (from 100° to 101°), vomiting, and diarrhea, and there may be dizziness and headache. These symptoms generally disappear in twenty-four hours. More serious disturbances caused by arsenic may be albuminuria, irritation of the optic nerve, irritation of the auditory nerve, neuritis, and inflammations

of the skin. Chronic arsenical poisoning may also occur from intensive arsenic treatment.

If a patient has optic nerve disease, chronic nephritis, or any serious disturbance of the heart, arsenic should either not be used at all, or only in very small doses. If optic nerve disturbance and loss of sight have been caused by syphilis, especially in locomotor ataxia, intravenous and intraspinal injections of arsenic may still be used with care, if deemed advisable, and generally without causing harm to the eyes. Such injections in these conditions many times prevent the progress of the optic nerve disease. However, when there is optic nerve disturbance the injections should not be given without consultation.

Boyd and Joseph (*Journal A. M. A.*, August 17, 1918) administer arsphenamine by intrarectal injections, and assert they have successful results, and that this method prevents some of the unpleasant symptoms which occur by the intravenous method. Official qualitative and quantitative tests for arsphenamine and neoarsphenamine have been issued by the United States Public Health Service termed "Report No. 472," and dated June 21, 1918.

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The Treatment of Gonorrhea in the Male.—

H. G. Irvine (*Medical Times*, May, 1919) says that all efforts at the beginning of an acute case should be directed toward getting the patient well without complications, rather than to seeing how rapidly he can be cured; in fact measures which insure the former are almost bound to insure the latter. If the patient reports after an exposure and there is no sign of disease, a prophylactic treatment such as that used in the army should be given, a freshly prepared two per cent. solution of protargol held as an injection at least five minutes. If infection is apparent examine entire genitalia carefully and have a microscopical examination made before treatment is instituted. Have the patient pass his urine into two glasses at each examination; unless there is a great deal of discharge the urine in the first glass goes to show the amount of pus secreted, while the clear or cloudy urine in the second indicates whether the posterior urethra is involved or not. In acute anterior urethritis the patient should keep off his feet as much as possible and avoid violent exertion. The diet should be light and simple with no liquor of any kind, soft drinks, or mineral waters. Weak tea and coffee are permissible, but plenty of pure water is best. No dressings should be placed on the penis that will impinge on the urethra and interfere with free drainage, but a small linen or rubber sack with tape to tie around the waist containing cotton or gauze to absorb the pus should be worn to catch the discharge. The glans and foreskin should be well bathed each time dressings are changed. Internal treatment is of little or no value. In some exceedingly acute cases where there is a great deal of pain during urination it is possible that from four to six ten minim capsules of sandalwood oil a day may render the urine somewhat bland and give some relief.

In cases with intense reaction, a profuse discharge and great edema, with severe pain on passing urine, routine injections should not be given.

A very mild injection of two or three per cent. argyrol or one eighth per cent. protargol may be administered, held for only a moment, and repeated every three or four hours. The glans and foreskin should be kept clean and the penis should be held in hot water for ten or fifteen minutes every two or three hours. Unless the above mentioned symptoms are present local treatment should be begun at once. It is of the utmost importance that the treatment be given correctly from the start; no patient seen for the first time should be given a prescription and a syringe and told to treat himself. The physician should make the first injection and should see that the patient understands its entire technic. If possible he should see the patient every day. No injection should be used that creates any amount of irritation. Solutions of argyrol and protargol must be fresh, they become irritating when a few days old. The patient should always urinate before the injection. The writer usually employs a three per cent. fresh solution of argyrol for the first injection, giving it himself, and gives the patient a one eighth per cent. or a one quarter per cent. solution of protargol to use himself. For a few days four injections are given daily, the physician giving one each day. The writer has never been able to use protargol up to two per cent., as recommended frequently, without irritation, while he has found that a one quarter per cent. solution does not irritate and accomplishes all that a stronger solution might. For the first week or two he considers irrigations to be either worthless or dangerous, as liable to cause complications.

When the case becomes subacute, shown by a urine clear except for shreds floating in it, and by a cessation of discharge to a point where it is gone, or confined to a tiny bit of thin, clear mucus, mild irrigation may be begun. He begins with a daily irrigation of 1:5000 potassium permanganate solution, the patient continuing his own injections night and morning. The permanganate is gradually increased to 1:2000, if everything is favorable, at the end of a week or ten days, while the shreds become smaller and lighter until only two or three mucous strings are seen in the average four or five hours sample. Now irrigation with 1:5000 silver nitrate is tried every other day, and, if there is no irritation, the strength is gradually increased up to 1:1000 to clear up the remaining catarrhal condition. About the end of the fifth week all signs of inflammation are gone and one may stop treatment, or more safely pass on to the instillation of drops of silver nitrate along the urethra with an Ultzman or Guyon syringe to clear up any localized inflammation that may persist, and also to act as a sort of test whether the case is cured. When shreds persist in the urine mechanical dilatation is needed, and for this purpose the writer prefers a dilator to a sound. The microscope is of little if any value in determining when a patient is cured, and after treatment has been stopped it is well to have the patient report for urine examination several times during the first two or three weeks.

Posterior urethritis results as a rule from lack of treatment or wrong treatment, but occasionally it occurs in spite of all precautions. Rest in bed is

indicated. Local treatment should be suspended, or limited to one or two injections daily of one eighth per cent. protargol or two per cent. argyrol, held only a minute or two. No irrigations should be permitted. An effort should be made to make the urine strongly acid, best by giving forty to sixty grains of sodium salicylate a day with plenty of water. Hot sitz baths will relieve the tenesmus. Most patients will do better with no additional treatment at this time, until the urine in the second glass is clear. When the posterior urine clears up quickly the treatment of anterior urethritis is started, but when it continues cloudy local treatment must be applied to the entire urethra. First we may try depositing daily two or three centimetres of a five or ten per cent. fresh argyrol solution by means of a small Guyon syringe with well lubricated catheter. If no improvement follows in three or four days posterior irrigations with 1:5000 permanganate should be attempted. If good results follow and the urine begins to clear after the permanganate has been increased in strength, the irrigation with silver nitrate, 1:5000, increasing gradually to 1:2000, may be begun every other day. Should the urine become clear instillations of silver nitrate may be used as in anterior urethritis. If these measures should fail the patient should be referred to a specialist.

Nonoperative Procedure for the Treatment of Cervicitis and Endometritis.—A. R. Hollender and W. M. Gratiot (*American Journal of Obstetrics*, April, 1919) point out that no suitable non-operative procedure for the cure of localized uterine disease had been known until recently when the bismuth paste method was suggested by E. G. Beck. Since then, many cases of cervicitis have been successfully treated without the curette. The method is simple. In cases with an erosion of the cervix, forty per cent. silver nitrate solution is first applied to the eroded surface and into the cervical opening by means of an applicator. One dram of Beck's bismuth paste—a mixture of ten per cent. bismuth subnitrate and ninety per cent. vaseline—is injected into the cervical canal either with a glass intrauterine syringe or a special metal syringe adapted for the purpose. If the cervical opening cannot be easily reached a rubber catheter attached to the nozzle of the syringe renders it easily accessible. In the special metal syringe used by the authors provision is made, by turning a screw, for gauging the amount of paste injected. The paste is used cold, for a liquid paste would easily ascend and carry infection into the Fallopian tubes. The uterine cavity is distended with the cold paste. Great care not to use undue force is required if a glass syringe is used. As a rule, from two to four injections weekly soon effect a cure. It is very important to take a history in every case before treatment; there is an absolute contraindication to injecting the paste into a pregnant uterus. In twenty-one cases treated since an earlier report, all but four of the patients have been discharged cured. Bismuth paste gauze is useful as a vaginal packing, and can be made fresh when needed by the physician by dipping long strips of gauze into a semiliquid paste.

Treatment of Migraine.—P. Pagniez, P. Valéry-Radot, and A. Nast (*Presse médicale*, April 3, 1919) had noticed two years ago, in studying a case of giant urticaria, that ingestion one hour before meals of a small amount of the food substance known to be causing the urticaria, entirely prevented subsequent occurrence of the latter. Subsequent experimentation with additional cases confirmed the original observation. The authors now report a successful application of the same principle to the treatment of a number of cases of severe, recurring headache, experienced likewise in conjunction with disturbances of the alimentary tract. Five histories are given of cases of migraine, of long standing ineffectually treated with all ordinary measures, in which, within a few weeks or days, upon ingestion of .5 gram of peptone in cachets one hour before meals, the headaches passed off for periods of several months. By a series of treatments, indeed, such patients could apparently be permanently freed of headaches which had rendered their lives burdensome for many years. The benefit obtained is seemingly to be accounted for on an anaphylactic basis, a small preliminary dose of a harmful substance tending to prevent its subsequent evil effects. As the peptone does not keep well in cachets, only a two or three days' supply of cachets should be prepared at a time. Care should be taken to secure a good specimen of peptone, those on the market being of very variable quality. In some cases the treatment is as complete a failure as it is strikingly successful in others.

Therapeutics of Pneumonia.—Alfonso Arteaga (*Revista Española de Medicina y Cirugía*, April, 1919) strongly advocates the application of wet packs to the thoracic wall with a counterirritant solution composed of three c. c. of turpentine and five c. c. of spirits of camphor in one litre of water, repeated every two to three hours. Two hygienic conditions are indispensable—pure air and sufficient humidity to avoid scanty tenacious sputum and the fatigue involved in its expectoration. Digitalis in the large doses recommended by Bernheim, Petrescu and others is not as desirable as the smaller doses advised by Landouzy; alcohol is not to be used as a specific but as a sustainer of strength, as in other infectious states. Collargol in Arteaga's hands has given admirable results when administered by mouth in glycerin and egg albumen. While vaccines have proved efficacious in the prophylaxis they have not as yet been found reliable in the treatment of the actual disease. Serum therapy against Types I and II as evolved by Cole, of New York, has given a reduction of mortality of from twenty-five per cent. to 6.6 per cent. in Type I and from sixty-one per cent. to twenty per cent. in Type II. In secondary pneumonias supportive treatment is the keynote and various sera, such as antiphtheritic, antistreptococcic, or plain horse serum, have been advised to produce leucocytic activation and increased phagocytosis, but this action is uncertain. Patients might be benefited by an autogenous vaccine, beginning with small doses and increasing to the maximum dose short of severe reactions.

Care and Treatment of Malaria.—Ronald Ross (*Lancet*, May 10, 1919) reports upon the treatment of more than twenty battalions of soldiers returned to France from the Eastern fronts, all heavily infected with malaria. The plan of treatment was so successful that all the units were able to enter the firing line after it was completed. The treatment required about ten weeks and comprised the following regime: All the men and officers, whether known to be infected or not, were compelled to take the full course. When the men were on parade each was given a daily dose of the sulphate or the hydrochloride of quinine in solution, and the dose was taken under supervision. For the first two weeks the daily dose was one gram (fifteen grains). For the next eight weeks a dose of 0.6 gram (ten grains) in solution was given daily for six days out of every week. In this way each man received fourteen grams (three and a half drams) in the first two weeks and thirty grams (one ounce) during the ensuing eight weeks. During the whole course of treatment various forms of physical exercises, including games, sea bathing, and route marches, were permitted, but during the first two weeks no man was allowed to be occupied with military duties for more than four hours daily, and these not consecutively. After that time the number of hours for work was increased until at the end every man was doing full work. Every man was also required to spend one night in the open without blankets as a final test of his fitness. The food ration allowed throughout was a very generous one. The occurrence of a relapse required the man to report at once and be admitted to a field ambulance or detention hospital where 2.6 grams (forty grains) of quinine were given in solution in four equal doses at four hour intervals, this dose being repeated once every twenty-four hours for five days, at the end of which time he was discharged to his unit to begin the regular course of treatment from the first. An alkaline laxative was given twice or thrice weekly during the ordinary course and daily to those during relapse treatment.

Treatment of Bacillary Dysentery.—Luigi Nelli (*Gazzetta degli Ospedali e delle Cliniche*, March 30, 1919) describes his results in the treatment of 700 cases of dysentery, 500 of which proved to have infection by Shiga's bacillus and the others merely a dysenteriform enteritis. The mortality in the bacillary cases treated by serum was 1.27 per cent., whereas those treated without serum showed a mortality of 28.6 per cent. The action of the serum was to improve the general condition, diminish complications, shorten the course of the disease, and prevent recurrence. Nelli gave sixty to eighty c. c., in bad cases repeating the injection, with fifty to sixty c. c. daily for two days and then on alternate days. Not more than three injections were needed to cause improvement and not more than five or six for a complete cure. The only other measures used were symptomatic with purgation with oil or salines, hot flaxseed poultices to the abdomen, and the oral administration of laudanum. The serum proved equally efficacious in those forms of dysenteriform enteritis not due to Shiga's bacillus.

Miscellany from Home and Foreign Journals

The Influence of the War on Surgery.—Joseph A. Blake (*Annals of Surgery*, May, 1919) felt disappointed in the experience which had been gained from the observation and treatment of war wounds. There had been little new knowledge obtained. Principles already known had been confirmed and the chief progress made had been in stabilizing treatment rather than in the making of new discoveries. Fruitful investigations and observations had taken place chiefly in the study of some of the infections and shock. But the underlying principles of wound treatment had been adopted prior to the war. When it was considered that the processes of wound repair were essentially alike and had been studied for years there was little ground for disappointment. The desire to improve on the accepted methods of wound treatment had exerted a profound psychological influence upon surgeons in the first years of the war. It had caused them to discard facts and embark upon a wild empirical search for a panacea for wound infections. Many of the older experienced surgeons in antiseptic surgery were involved in this feeling as well as the younger and ignorant surgeons. Only during the last two years had the aseptic principles of wound treatment been reestablished. This was due in a great measure to the work of the French surgeons.

At the beginning of the war it was thought that the majority of wounds would result from small arms. It was also thought that rifle bullets would produce clean perforations, and it was thought that there would be few operations and only small dressings would be required. When the wounded finally appeared with large, lacerated wounds containing foreign and infectious material the call came for some means to combat the resulting infections. The antiseptic era was revived. Phenol, Labarraque's solution, iodoform, metallic salts, alkaloids, as well as the aromatics of the ancients reappeared. This period was one of retrogression. Antiseptics are of value but they should be used as adjuncts instead of being considered the basis of treatment, particularly when proper surgical technic is impossible. Prior to the war a contrast was shown between the work of the older surgeons who operated with speed and dexterity and left clean cut surfaces while the younger surgeons, not so sure in their knowledge of anatomy, often used blunt dissection and left wounds containing shreds of devitalized tissue. While the older men often introduced bacteria the wounds healed more rapidly than those made by the younger men, for the bacteria did not find a suitable media for growth. This vital point, while understood before the war, was often overlooked. War wounds are prone to infection from the debris carried in and by the dead and injured tissue they contain.

The treatment of these wounds passed through three stages during the war. The first was débridement in which the evolution of the wound was characterized by prolonged elimination and suppuration. The second stage of the treatment con-

sisted of the use of substances which dissolved or destroyed tissue. This was applied chiefly in the form of Dakin's solution by the Carrel method. This treatment is indicated for wounds where the complete operative treatment cannot be applied. The third stage, or stage of rational treatment, was based upon the principle that well nourished tissues can withstand and eliminate infection. This consists of paring the wound surfaces, removing all devitalized tissue and foreign materials, and immediate closure or leaving the closure for a future date.

Gas gangrene has been proved to be a disease of muscle tissue, due to the work of Kenneth Taylor, which could be checked by the excision of traumatized muscle fibres. The study of gas gangrene has shed new light upon the entire question of anaerobic bacteria.

It had been found that the protection from tetanus antitoxin could only be depended on for from twelve to fourteen days. This had explained the so-called late tetanus and the necessity for prophylactic treatment. The study of the wound flora had shown the organisms present for a long time, the granulation tissue of the walls of the wound offering protection, but absorption could occur during operations or other manipulations. This was to be avoided by the administration of antitoxin whenever any intervention which would break down the natural barriers was planned.

The study of surgical shock had added to our knowledge. Shock was one of the chief causes of early mortality in battle casualties and was frequently encountered in civil practice. It is characterized by progressive depression of the vital forces as shown by weakness of the systemic and cardiac muscles, lowering the body temperature, and death. Hemorrhage causes similar symptoms and hastens the development of shock, but shock may exist without hemorrhage. The work of Cannon has shown shock to be due to a diminution in the normal alkalinity of the blood caused not only by a deficient oxidation but also by the absorption of acid substances produced by the catalysis of the injured muscle tissue. Anything which increases acidosis adds to shock with a lowering of the blood pressure, and so a vicious circle is quickly formed. The application of external heat to the body will prevent and at times arrest shock. But if the blood has lost its alkalinity it must be restored by the addition of fresh blood. Alkaline solutions are not as satisfactory. As a result of the amplification in the technic, blood transfusion had been frequently used. After a complete study of the use of anesthetics in shock the use of nitrous oxide with oxygen had proved to be the most satisfactory.

Progress had been made in the treatment of chest wounds. It had been found that the lungs could be manipulated with safety if the wounds of the thoracic cavity were closed in order to prevent the decompression of the lung and consequent lack of oxidation which would cause shock and finally

death. In order to prevent infection it was necessary to carefully remove all debris from the wound. Even if the wound was to remain closed for a few days only this would enable the patient to recuperate so that he could undergo a more thorough operation at a future date.

At the beginning of the war little was known about the proper handling of war fractures. Civilian fractures had received scant attention and they differed from war fractures as they were not caused by direct blows and did not have the same degree of injured tissue and infection. The early treatment had been based upon immobilization of the joint and the articulations on either side of the fracture. Plaster of Paris with openings for the wounds had been used, but this had caused infection and swelling. This treatment had finally been substituted by suspension and traction, which gave the patients more comfort, simplified the dressing, prevented ankylosis, and saved much time.

An improvement had also been made in the transportation of fracture cases from the battle fields. The Thomas splint was used extensively. The Poulliquen splint, a combination of the Delorme gutter and the long Liston splint, was considered the best for fractures of the lower extremity. The Willems treatment had revolutionized the treatment for fractures of articulations. The kinematic operation devised by Vanghetti was an innovation in amputations. The stump in this operation was arranged so that the muscles would directly activate the artificial limb. The guillotine operation is condemned and considered a reprehensible practice. It is hoped that the stimulus of the Interallied Surgical Conference will not subside.

Latent Infection of Healed Wounds.—Kenneth Goadby (*Lancet*, May 24, 1919) presents a continuation of his earlier work, reviewing the findings in a total of 226 wounds studied with reference to the presence of latent infection. The wounds studied included both healed and unhealed and those with cavities containing metal fragments, soft tissues and sequestra. Forty-four of the wounds contained *Bacillus welchii*, seventeen being completely healed and twenty-seven unhealed. Anaerobic streptococci were found in 140 cases and aerobic in eighty-nine; fifty-seven per cent. of the healed wounds contained anaerobic streptococci, twenty-nine per cent. aerobic while of the unhealed wounds sixty-seven per cent. gave anaerobic and fifty per cent. aerobic streptococci. The classification of the streptococci into aerobic and anaerobic merely indicated that the organisms found grew under the named condition more favorably than under the opposite, but in most cases they would grow under both. Organisms of the colon proteus group were not often found in wounds less than 100 days old, while they were more frequently present in those between 100 and 400 days old. Since streptococci are not found in more than twenty per cent. of recent wounds it is evident that their presence in these older wounds is due to infection at some subsequent period of their treatment. Such secondary infection is probably largely

unavoidable. The large majority of the cases studied were in patients undergoing late operations for the removal of sequestra or the freeing or suture of nerves, and forty-seven per cent. of the operations were followed by severe temperature reactions lasting from one to seven days. In some there was local suppuration. In no instance was there clinical gas gangrene despite the fairly frequent occurrence of *Bacillus welchii*. Histological examination of wounds caused by shell fragments showed that in practically every instance there had been some degree of gas infection, though in no instance had this been diagnosed clinically. In view of the high percentage of instances of latent infection of old wounds an effort was made to reduce the frequency of postoperative "flares" by preliminary immunization with a sensitized polyvalent streptococcal vaccine. Such immunization proved of great value, for in fifty cases so treated in only sixteen per cent. postoperative temperature reactions developed as contrasted with eighty per cent. giving such reactions in the group of non-immunized cases.

Relationship of Exophthalmic Goitre to Ovarian Insufficiency.—A. Tilmant (*Presse médicale*, March 27, 1919) asserts that of the two prevailing theories of the origin of exophthalmic goitre, viz., the nervous and the glandular, the latter is by far the more important. The thyroid constitutes a link in a glandular chain comprising the hypophysis, the thymus, the pancreas, and the adrenals. If a change takes place in the internal secretion of any one of these organs, this change will react immediately upon the other glands in the chain. Hallion, Parhon and Golstein brought about thyroid enlargement by the injection of corpus luteum extract, while Schauta, Peter, and Tinay demonstrated the rôle played by changes in the ovarian secretion in the causation of exophthalmic goitre. Recently the author had occasion to study six cases of exophthalmic goitre occurring in women of the same family. Goitre was apparently transmitted congenitally among the members of one branch of this family. Altogether, of seventeen persons in the family, twelve had goitres, some exophthalmic and others of unknown nature. Four males out of seven, or fifty-seven per cent., and seven females out of ten, or seventy per cent., had goitre. In the six cases of exophthalmic goitre in females referred to, the symptoms of Graves's disease appeared in conjunction with periods of ovarian disturbance—chiefly insufficiency—either partial or complete, as in relation to the menopause. These observations appear to support the ovarian theory of exophthalmic goitre. There seemed to exist in this family a hereditary predisposition, transmitted by one branch, consisting of a special fragility of the thyroid gland. Let a disturbance occur in one of the other endocrine glands and it reacts at once on the thyroid. Various causes may determine the appearance of irregular functioning of the thyroid, but the most important are toxic manifestations, acute or chronic infectious diseases, and hypersecretion or hyposecretion of the endocrine glands, acting through their or similar toxins.

Analogy of Puerperal Sepsis and Certain Surgical Infections.—V. Wallich (*Presse médicale*, March 27, 1919) points out that the streptococcus seemingly plays a preponderant infective rôle both in the puerperal uterine wound and in war wounds. In both instances it persists among the other microbic species present because the system is unable to vaccinate itself adequately against the streptococcus, as it does against the staphylococcus and other germs. The same peculiarity explains the frequently exclusive penetration of this organism into the blood stream. Such an explanation is far more satisfying than that based upon a supposed filtration of bacteria in the uterine mucosa. Where the streptococcal infection becomes general, the wounded subject shows repeated febrile exacerbations and remote localizations in the cellular tissues and joints, just as are witnessed in the late complications of puerperal infection. The varying severity of the streptococcal infections may depend, not only upon the nature of the germ itself but also upon the sensitiveness it encounters in the given subject, as Levaditi has recently demonstrated with the aid of the intradermoreaction. In both groups of cases the variations in the pulse rate closely follow the temperature ascensions in the evening and the morning remissions. Some have even recognized this peculiarity as a guide in the treatment of wounds, the procedures as regards frequency of redressing and cutting the sutures for infection being adjusted according to the behavior of the pulse rate. In relation to treatment the importance of dead tissue as a factor favoring infection has become manifest both in streptococcal puerperal and wound infection. In war surgery chemical destruction or removal with the knife of such dead tissue has proved essential, while in puerperal infection the corresponding measures are intermittent, or better continuous irrigation of the uterus and the use of the curette. Antistreptococcal serum has been used with noteworthy results by Levaditi in infected wounds and has also been employed in puerperal sepsis.

Enteritis Due to *Lamblia Intestinalis*.—Marcel Labbé (*Presse médicale*, March 27, 1919) notes that numerous observations during the war showed that lamblia intestinalis is pathogenic and frequently a cause of enteritis. He reports cases of enteritis due to combined lamblia and amebic infection and others due to the lamblia alone. Most of the cases exhibited a chronic enterocolitis, mild in degree but sometimes undermining the general condition sufficiently to require discharge from military service or lead to a suspicion of pulmonary tuberculosis. The onset in lamblial enterocolitis is seldom acute as in amebiasis; it is rather insidious, digestive disturbances, diarrhea, and pain making their appearance gradually. The process passes with any stage of transition into a chronic, attenuated form, characterized by alternating diarrhea and constipation and the expulsion of glairy stools. In but few instances are the stools of an actual dysenteriform type. Pain in the colon, tenderness of the bowel, and meteorism are less pronounced than in amebic dysentery. Fever is absent, and usually there is no blood or soluble albumin to be

found in the stools. Yet general nutrition is greatly impaired; the patient grows pale and thin, and is unable to regain strength. It is harder to rid the stools of lamblia than of the dysenteric ameba. Emetine, neoarsenobenzol, and bismuth salicylate are practically devoid of effect. The author practised lavage of the intestine with silver nitrate, Labarraque's solution, hydrogen dioxide, and iodine, and gave calomel and thymol internally; none of these agents seemed to act specifically. Transmission may occur in various ways, probably usually by direct contact, with overcrowding and uncleanness as favoring influences. In three instances soldiers returning home infected their families. Transmission may also take place through food, toilet articles, or water contaminated with feces. In the trenches the excreta of rats and mice, which frequently contain the lamblia, may have contaminated flour and bread. In brief, the lamblia must henceforth be put down with the pathogenic ameba, *Balantidium coli*, and the intestinal worms as a definite factor in enteritis.

Schistosomiasis.—Frank Milton (*Indian Medical Gazette*, April, 1919) mentions eleven different schistosomes that have been described, and after speaking of the search for this disease in India comes to the following conclusions:

1. Each species of schistosome has its own intermediary host, or hosts, its own particular locality or region in which it flourishes best, and its own symptom complex which it produces in its definitive host.

2. The region inhabited by any particular species is well defined, geographically, and in that region no other species can thrive.

3. In regions where two species do exist side by side, one is always markedly predominant and the other entirely subordinate.

4. Schistosome parasites are known to exist in a world wide belt from, roughly, 30° N. to 30° S. of the equator, and their presence as parasites of man has been recorded in practically every country within this belt with the exception of India.

5. Schistosomes are known to infect animals in India and it is probable that a species parasitic in man exists also.

6. It is highly probable that the symptoms due to the Indian parasite will be found to be different from those caused by the species at present known, but the fact that all known forms inhabit the portal veins and cause an extreme degree of eosinophilia in the blood of their hosts will probably be found to hold good for the Indian species also.

7. If this is so, the easiest way of hunting the disease down would be to make routine examinations of the larger vessels of the portal system in all postmortems performed on riverain peoples, and to collect and examine blood films from those living and working near or upon the main rivers.

8. If India is found to have a well established and flourishing species of its own, no other species of schistosome is likely to make headway in the country, and special measures directed towards the prevention of the introduction of *Schistosoma hematobium* or *Schistosoma mansoni* will become unnecessary.

Malaria and Wassermann Reaction.—J. Gordon Thompson and Claude H. Mills (*Lancet*, May 10, 1919) review the literature of the determination of the Wassermann reaction in the presence of malaria and divide the results into four groups. The first group includes records of those who found the reaction positive when malaria parasites were present in the blood, and generally for some weeks after they had been made to disappear by treatment with quinine; the second, records of positive reactions only when the parasites were present in the blood; the third, positive reactions only when there was a febrile paroxysm and then rarely; the fourth, universally negative reactions in malaria. An unsatisfactory technic for the reaction and undiagnosed syphilis account for the results in the first two groups. The authors then record the results of their own investigations, using the standard technic for the full Wassermann test in 130 cases of malaria, representing every possible stage of the disease. In only eight cases was the reaction positive, and syphilitic infection could be diagnosed positively in each of these cases. They therefore conclude that malarial infection never causes a positive reaction, irrespective of the stage of the disease. They also discuss the frequent difficulty of diagnosing obscure cases of acquired or congenital syphilis and emphasize the fact that they may readily be overlooked unless great care is observed. They state that the occurrence of a positive Wassermann reaction in a case of malaria is due either to the presence of syphilitic infection or to the use of a faulty technic.

Care of Children Before and After Tonsillectomy.—Charles Hendee Smith (*New York State Journal of Medicine*, May, 1919) says that tonsillectomy is very nearly a major operation and every child who has to undergo it is entitled to as thorough preparation, to as much thought, and to as careful aftertreatment as if his appendix was to be removed. After determining the need for the removal of the tonsils the greatest care must be exercised to make sure that the child is in condition to undergo the operation, and it is a safe rule to get every child into the best possible condition before permitting the operation. Careful discovery of the cause is essential in every case with malnutrition, followed by measures to improve the nutrition before the operation. The operation must never be performed on a child with evidence of active tuberculosis, and only under the best possible conditions when the disease is latent. Hemophilia must always be definitely excluded. Preparation for the operation is simple but must be carefully carried out. For the two days preceding operation .3 to 1.0 gram (five to fifteen grains) of calcium lactate should be given after each meal and liquid petrolatum containing one fifth to three fifths per cent. of menthol should be dropped into each nostril three times daily for several days. If the nasal discharge is at all purulent or if there is much nasal retention a ten or twenty per cent. solution of argyrol may be substituted. A simple laxative of milk of magnesia, cascara, or phenolphthalein should be given the night before the operation, and an enema an hour before the opera-

tion if the bowels have not moved freely. The best anesthetic sequence is gas ether chloroform. Post-operative care is simple but must be observed with rigidity. The child's pain must be relieved for the first few hours, for which small hypodermic doses of codeine phosphate are the best. The room should be dark and well ventilated, but free from draughts. The physician should always be prepared to combat late hemorrhage by the application of thromboplastin or kephalin. Water may be given after a few hours and the first feeding may be given four to six hours after operation, for which cold consomme or broth is excellent. Plain ice cream may be allowed a little later. The next day cereal and milk with soft toast are given, and then the full diet is restored rapidly. The child should be kept in bed for several days to a week, a mild mouth wash prescribed, and measures taken to keep the bowels well opened.

Modification of Open Ether Anesthesia.—J. Frederick W. Silk (*British Medical Journal*, May 24, 1919) after extensive trial of various combinations, recommends the use of a mixture of one part of chloroform with thirty-two parts of ether for anesthesia by the open drop method. This mixture has the following advantages: 1. Anesthesia can be induced rapidly, surgical anesthesia requiring not over ten minutes. 2. The patient objects very little to the mixture's being pungent and irritating, and there is less respiratory spasm and less lividity produced. Struggling is also much reduced. 3. The mixture seems to be quite efficient in producing complete relaxation. 4. It is far more economical than the use of pure ether. 5. The presence of the very small amount of chloroform does not make it any less safe than straight ether. Its use should always be combined with the preliminary injection of morphine and atropine, the latter especially to check the excessive flow of saliva and mucus.

Clinical Method of Determining Type of Meningococcus.—A. S. Gordon Bell (*Lancet*, May 24, 1919) describes a simple and quite accurate method for typing the meningococci obtained by culture from the spinal fluid in acute cases. The results can be secured in twenty to twenty-four hours, as compared with the seventy-two hours or more usually required. The spinal fluid is cultivated and a very concentrated emulsion of the organism is prepared. One drop of each of the four type sera is placed on a glass and with each is mixed one drop of the culture. The mixture is examined with a small magnifying glass and the type is indicated by the serum with which agglutination first appears. If the result is not clear, or is negative after five minutes, pools of each serum are prepared containing two, three, and four drops each of serum. To each of these one drop of the bacterial emulsion is added and the results noted as before. If again the agglutination is not specific pools are prepared containing three, six, and twelve drops of the bacterial emulsion and the test is again applied by adding to each of these one drop of type serum, three tests being made with each serum. The results should always be confirmed later by the slow method usually employed.

Blackwater Fever.—J. P. Williams (*Lancet*, May 24, 1919) observed ten cases of this malarial complication and noted that none of the patients had ever taken quinine as a prophylactic according to any regular scheme and that each of the patients had for the preceding several months suffered from repeated attacks of malaria, the treatment of which had been largely neglected. The treatment the author followed was the immediate administration of 20 cgm. of galyol intravenously and the intramuscular injection of 0.6 gram of quinine bihydrochloride. The galyol was repeated on the third day and the quinine every twelve hours until the more severe symptoms had been controlled, when the quinine was given three times daily, by mouth, in doses of 0.3 gram. Sternberg's mixture was found of considerable value in most cases, relieving the persistent vomiting and abdominal discomfort, neutralizing the hyperacidity and inhibiting gastric fermentation. Vigorous hydrotherapy was practised, the fluids being given by mouth and rectum, and a hot pack was applied for three hours and sometimes was repeated. In grave cases brandy was added to the rectal saline. Cleansing enemas and purgatives were avoided. All patients were kept strictly recumbent or semirecumbent for the acute period and for at least a week afterward. The diet was light and nutritious during convalescence and was given in small quantities at frequent intervals. All patients were sent for a period to a temperate climate after convalescence. In the ten cases thus treated eight patients recovered and two died, one of whom had syphilis while the other was not seen until the third day when the prognosis was almost hopeless.

Intratracheal Injections Through the Cricothyroid Membrane.—Robert Rendu (*Presse médicale*, April 3, 1919) recommends this procedure in patients requiring intratracheal injections who are confined to bed and dyspneic, e. g., in men exposed to vesicant gases; likewise, wherever exaggerated pharyngolaryngeal reflexes entail unusual difficulty in the execution of the ordinary intratracheal procedure or where the latter is unavailable owing to absence of a specialist or of the necessary armamentarium. The procedure described requires no instrument but a syringe and can be carried out by any practitioner. The injection is made exactly in the median line above the superior border of the cricoid cartilage. At this point there exists an open triangle, bounded above by the thyroid cartilage and laterally by the cricothyroid muscles, in which the tracheal lumen is separated from the exterior only by the mucosa, the cricothyroid membrane, and the fascia and skin—a layer of tissues hardly ten millimetres in thickness. A needle entering from ten to twenty-five millimetres is certain to be in the tracheal lumen; i. e., it is merely necessary to insert the needle a good finger-breadth—sixteen to eighteen millimetres. A two or five per cent. solution of gomenol in oil was injected in amounts ranging from two to five mls. A one per cent. menthol, two per cent. creosote or guaiacol, or two to six per cent. eucalyptol or myrtol preparation in oil might be used instead. Often an injection of one half mil of five or ten per cent. cocaine solution was made ten minutes

before the medicated oil was introduced. Any fluid injected should first be heated on a water bath so that it will be of body temperature upon leaving the syringe. Where the patient is in bed a pillow should be slipped under the shoulders to raise the anterior cervical region slightly. He should be warned to abstain from coughing or swallowing during the injection and from talking, breathing through the mouth, or from unnecessary coughing after its completion. After the injection the fluid can be made to flow into the right or left bronchus, if desired, by adjusting the patient's position. The method is the only one which insures that all the fluid to be injected shall actually enter the trachea. The author used it only in gassed patients and in influenza patients with bronchopulmonary complications, but it might also be of service in pulmonary tuberculosis, fetid bronchitis, pulmonary gangrene, asthma and similar conditions.

Hydatid Cysts Opening into the Bile Passages.—José Blanc Fortacin (*Revista Española de Medicina y Cirugía*, April, 1919) states that the diagnosis of hydatid cysts opening into the large bile passages is difficult and that they are often taken for cases of lithiasis. The history of this condition, however, is lacking and the symptoms and accidents rapidly reach their maximum intensity, which is not common in lithiasis. These accidents are of an infectious nature, which explains the perforation of bile passages whereby drainage occurs. Treatment of these cysts should have two objectives: The evacuation of the bile which has had its course interrupted, and the evacuation of the infected cyst. If the cyst is small it may be evacuated by choledochotomy; if it is large an incision should be made into the liver substance, thereby reaching the cyst by the best and most direct route. Evacuation of the cyst should never be made through the gallbladder.

Vaccine in Influenza.—F. T. Cadham (*Lancet*, May 24, 1919) found the predominant organism to be a streptococcus or diplostreptococcus, and from several strains of this organism, together with pneumococci and the influenza bacillus, a vaccine was prepared. Immunizing doses of this were given, each containing 300 million streptococci, 200 million influenza bacilli and 150 million pneumococci. The two doses were given with an interval of seven days. Of the soldiers admitted for influenza after the beginning of the inoculations none died who had received two doses. Among the 282 men who had received one or two doses influenza developed in only six per cent. and only 1.7 per cent. died, three of the five men who died having received their first dose of vaccine on the day of admission. Of 238 uninoculated men admitted at the same time pneumonia developed in seventeen per cent. and seven per cent. died. This vaccine was later modified by the addition of Rosenow's bacteria and it was given to the civil physicians for use, the results from the available figures, covering several thousand cases, showing that the incidence of pneumonia was about four times as high among those who had not been inoculated as among the inoculated and that the mortality rate among the former was about four times that in the latter group.

Some Forms of Irritable Heart.—I. Harris (*Lancet*, May 10, 1919) calls attention to the fact that the term "irritable heart" embraces a number of different conditions which are etiologically, clinically, and pathologically different and distinct. Two forms of irritable heart which have not been considered in contemporary literature are those due to pericardial adhesions and those resulting from colon bacillus infection. The former is one of the commonest forms and is due to the presence of pericardial or pleuropericardial adhesions and tuberculous or idiopathic pericarditis. The adhesions are not those which produce the classical symptoms of adherent pericardium, but they are those which develop by extension of inflammation from the structures and organs surrounding the heart. The development of adhesions or simple thickening of the pericardium results in some impairment of the heart's capacity to carry on its functions, especially under conditions of slight stress. The mechanical hemming in of the heart results in its remaining continually flabby and it cannot, therefore, meet the requirements of even ordinary work. The physical signs include definite absence of cardiac hypertrophy, the presence of a characteristic "murmur" near the left side of the sternum in the third or fourth intercostal space, or at the cardiohepatic angle. This murmur is audible at the end of systole or in beginning diastole, and does not stand in close relation to the cardiac sounds. The heart sounds in the areas mentioned are characteristically accentuated, and sometimes frictions can be heard. Chronic colon bacillus infection may cause irritable heart, as indicated by three cases cited.

Persistence of Cerebrospinal Fever Cases as Carriers.—Dennis Embleton and George H. Steven (*Lancet*, May 10, 1919) studied every patient passing through a large "carrier centre" during a period of two years, taking postnasal swabs from each patient at weekly intervals and not regarding any case as having ceased to carry until three consecutive weekly swabs failed to grow meningococci. They tried all of the suggested methods of treatment for the cure of the carrier state but found that it was very doubtful whether any method of local treatment was of any material value when once the meningococci had definitely infected the deeper tissues. They found that wide variations in the proportion of positive results could be obtained by slight differences in taking the swabs and determined that the most effective way of securing the organisms when present was by means of a swab made of stiff, eighteen gauge, brass wire. The swab should be applied to Lushka's tonsil and pressed in firmly enough to cause a slight blood stain on a second swab applied later. The first swab should at once be touched to a petri dish containing a special medium, and after incubation for eighteen to twenty-four hours the colonies are ready for subculture and identification. The type of organism was generally determined by agglutination, and when necessary the saturation test was applied. It was found that, with rare exceptions, the type of organism found in the throat was always the same as that which had been isolated

from the spinal fluid during the disease; that during convalescence the type of meningococcus remained constant; that reinfection by another type might take place under certain circumstances, but was rare. A man carrying one type of coccus was found to be relatively insusceptible to infection by other types. Out of 135 convalescents from cerebrospinal fever, 104 or seventy-seven per cent. were found to be carriers, and of those found negative a large number were admitted and examined before the standard of three consecutive negatives was adopted. Probably many of those would have been found to be carriers had proper examinations been made. The average duration of the carrier state was found to be six months.

The Lacrymal Gland in Anesthesia.—L. T. Rutherford (*Lancet*, May 10, 1919) points out the value in administering ether, and to a less extent chloroform, of careful observation of the lacrymal secretion. During the induction stage with excitement the glands are very active and pools of tears collect in the inner canthi; during the stage of surgical anesthesia the secretion is absent, and if the eyes are dried they remain so. The cessation of the secretion occurs at almost the same moment as the disappearance of the corneal reflex. The canthal pool is therefore a very valuable aid to the anesthetist, the ether being administered just to the point of cessation of secretion and being then withdrawn until the secretion just returns. Such a method avoids all danger of giving an overdose. Further the canthal pools are of great aid in determining the cause of dilatation of the pupils, for if the dilatation be due to an overdose the canthi are dry, while if it be due to impending vomiting the pools are present. In determining the presence of impending vomiting the canthal tear is of greater value than the corneal reflex, for that is absent in both overdose and in impending vomiting.

Nerves in Amputation Stumps.—Edred M. Corner (*British Medical Journal*, May 24, 1919) emphasizes the fact that nerves, as contrasted with other structures, have the peculiar power of regenerating, which in the case of amputation stumps leads to a wild growth of nerve fibrils throughout all of the structures. The immediate pain in an amputation stump is due to the injury of the nerves and passes away in a few days. The early pain is due to the growth of the nerves into the remaining structures, where if there is infection the nerve becomes subject to an infective neuritis. The practical points derived from these facts are to cut the nerves short at the amputation, to close the mouths of all divided nerves, and to take every possible means of avoiding infection of the wound. Remote pain is due to more complex causes, of which three factors are now known. 1. Infective inflammation and islands of fibrous tissue within the nerves. 2. The presence of foreign bodies within the nerves, such as silk and fibrous tissue. 3. The mental factor due to prolonged illness, hospital residence, lost job, and inability to take up new ways and interests. Therefore, silk should not be used in infective wounds; men should not be kept herded together longer than absolutely necessary; and the men should be got at work as soon as possible.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 1, 1919.

The Vice-President, Dr. REGINALD H. SAYRE, in the Chair.
EFFICIENCY AND SANITATION IN THE FEEDING OF
THE UNITED STATES ARMY.*

Lieutenant Colonel John R. Murlin, United States Army (by invitation), delivered this address, which was liberally illustrated by lantern slides and moving pictures of the various activities connected with the supply, inspection, and distribution of food at the different camps throughout the country. The lecturer's interest in the subject was aroused in the first instance by his own experience at the 1916 Volunteer Training Camp at Plattsburg, where, with many hundreds of others, he was the victim of food poisoning resulting from carelessness in the battalion kitchens. This brought very forcibly to his mind the necessity for care in the selection and sanitary methods of handling food in the army camps. When the United States entered the war he offered his services to the Quartermaster's Corps, but was told that he must attend a reserve officers' training camp in order to qualify. At the first reserve officers' training camp at Plattsburg, 1917, as a result of his expression of interest in the subject, he was asked to make a survey of conditions with reference to efficiency and sanitation in feeding the men in training. The report of this survey, telegraphed to the United States Food Administration, was sent to the surgeon general, and immediately afterward he was invited to go to Washington for the purpose of organizing the division of food and nutrition as a part of the Medical Department so they would be able to use the knowledge gained.

Previous to this war the quartermaster's department had had entire control of the feeding of the army; but the surgeon general considered that the proper feeding of troops was primarily a sanitary problem and as such should be supervised by the medical department. He succeeded in convincing the Secretary of War of his point of view, and as the result the division of food and nutrition was authorized to make nutritional surveys of all training camps in this country, of the rest camps in England, and to provide officers for similar functions in France. The nutritional surveys began early in October, 1917, and continued actively until July, 1918, after which time but few quantitative studies were made. A General Order published July 15, 1918, established the division of food and nutrition as a separate division of the medical department and authorized it to station nutrition officers permanently in each of the training camps having a strength of more than 10,000 men. Altogether forty such officers were sent to France and England and more than seventy were in active service in this country at the signing of the armistice. These officers were selected from the physiologists,

biochemists, food bacteriologists and food chemists of the country.

In September, 1917, the United States Food Administration called a conference for the purpose of considering the question of subsistence in the army, and particularly means of meeting numerous complaints that the Government was responsible for a large wastage of food in the training camps. Mr. Hoover reported at this conference that his program for food conservation was greatly interfered with by the prevalence of these reports. The conference consisted of representatives of the board of alimentation of the Council of National Defense, officers of the Quartermaster's Department, the Surgeon General's Office, the Navy, the United States Department of Agriculture and the United States Public Health Service. When practical measures for the control of food conditions in the camps came up before this conference, the program for nutritional surveys of the army camps was presented by the director of the division of food and nutrition and was approved by the conference.

Early in March, 1918, Major P. A. Shaffer and Colonel A. J. Carlson and four other officers were sent abroad to study the food problems of the army in England and France. In June, 1918, twenty more men were added to this contingent, and early in November a third party of ten. The work accomplished by these officers in England and France was very important. Major Carlson was left in charge of the work in England and at once investigated the food conditions in the rest camps for the American troops in that country. It was discovered that there had been much complaint on the part of the American troops that they were insufficiently fed. The British ration, which was the basis of feeding, contained at this time only about 3,000 calories; which seemed very small to men who had been accustomed to a ration containing 4,000 calories at home. It is to the credit of Colonel Carlson and of General Winters, chief surgeon, and of Major General Biddle, commanding officer, that measures were promptly taken to improve these conditions, and by July 1st all troops were receiving a ration substantially equivalent to that which they had received at home.

In France the work consisted of inspections of food stores as they arrived from America, inspections and supervision regarding the quality of food and quantity of rations along the lines of communication, in training areas, and in the actual battle zone. Much instruction in the proper use of rations was given to the mess personnel by these officers stationed with different divisions. A complete revision of the ration and the ration system was worked out in cooperation with the quartermaster's department and was put in effect on November 1, 1918. Attention was also given to the rationing of troops on special service and also to the food conditions in the hospitals, in rest areas, and on transports.

*Authority to publish granted by the Board of Publication, Surgeon General's Office.

QUANTITATIVE RESULTS OF NUTRITIONAL SURVEYS.

One of the chief benefits of the nutritional surveys was the quantitative determination of the actual amount of food consumed and wasted in the training camps. A survey party visiting a camp selected a number of messes which should be as nearly as possible typical for that camp. Inventories were made of the supply of food on hand in the mess storeroom at the beginning and at the end of a definite period, usually one week. Accessions to the stock during this time were also carefully noted and their quantities were expressed in actual weights. By the subtraction of the quantity on hand at the end of the period from the quantity on hand at the beginning of the period plus the accessions to stock, the quantity of food expended was determined and from this was subtracted the actual quantity of edible waste. Some results of these studies follow. Rations provided by army regulations in the various allied armies were shown. The United States ration, which was the basis of feeding in the army camps, is known as the Garrison ration. It provides in the neighborhood of 4,500 calories of energy. The British home ration, used in training, supplies about 3,400 calories; the Canadian, 3,000 calories; the French 3,600, and the Italian 2,800. For field operations the rations of most of the armies are more liberal than these, namely, British field and trench ration, 4,300; French strong ration, 4,000 calories; Italian combatting ration, 3,400; the United States field and trench ration (since November 1, 1918), 5,000 calories. For the first time the new ration adopted November 1, 1918, for the American Expeditionary Forces made a distinction between a summer and winter ration, the difference being about 400 calories.

In rationing the camps in this country accurate data were secured from 427 messes scattered throughout all training centres. It was found that the average amount of food consumed from the mess from October 1, 1917, to December 1, 1918, was 3,633 calories, or a little more than that ordinarily consumed by a farmer. The average waste was seven per cent. of the food supplied and the average weight to a man each day of edible waste was 0.38 pounds, which is well below the average for the civilian population. Comparison from month to month showed that there was from the beginning a gradual improvement with regard to waste; starting at about 0.60 of a pound of edible waste for each man a day for October, 1917, the monthly average gradually and, fairly uniformly, fell off until in August, 1918, the average amount was only 0.19 of a pound. After the influx of the second draft food waste rose slightly and after the armistice was signed there was a very sharp and pronounced increase, due to the relaxation of discipline.

The study by months also shows that the amount of food consumed from the mess throughout the winter months was from three to four hundred calories higher than the amount consumed throughout the summer months. This is the first scientific demonstration of the difference between summer and winter diet for men doing es-

entially the same kind of work. As a result of this study it may be stated that a soldier of average weight (146 pounds after four or five months' training) will eat through the months of January, February, and March 400 calories more than through the months of June, July, and August. This difference is not due to the effect of temperature alone on heat lost from the body, but in part also to muscular activity, for the stimulus of cold to muscular work is a well recognized phenomenon.

Besides the food eaten in the mess account was taken also of the food purchased in the canteen by the soldiers themselves. For the most part this consisted of light drinks and confections, pies, cakes, and a little fruit. In some camps the canteen or exchange, as it was more commonly called, also ran a restaurant counter. An attempt was made to ascertain whether the consumption at the canteen bore any relation to the amount consumed at the mess of the corresponding organization. A chart was presented showing that there was no relation between these two amounts. It cannot be said, therefore, that the consumption of the canteen is high because the food at the mess was poor, nor vice versa, that the canteen consumption was low because the food at the mess was entirely satisfactory. The social character of the canteen or exchange plays a considerable rôle in determining the amount of food consumed; in fact, the canteen is much more of a social institution than a supplementary mess, and its value to the army in this regard is well recognized by all commanders. The food purchased at the canteen costs about three times as much as the food supplied by the Government at the mess. The division of food and nutrition has determined the food consumption in 261 different canteens and finds that the average total consumption for a man each day from this source amounts to 365 calories. Adding this amount to the average total consumption from the mess we get in round numbers 4,000 calories (3,998, to be exact).

Comparing the amount of food consumed in the army with the data obtained from the Bureau of Markets of the Department of Agriculture for food consumed in civilian households, it was found that the average consumption of farmers most nearly approached that of the soldier. The work of the soldier might be characterized as lying between that of the farmer and that of the stonemason who works for eight hours a day lifting his materials and hammering a chisel. It is by no means as severe as the work of the lumberman engaged in rolling logs in winter weather. The diet of the soldier as compared with the diet of the civilian population may be summarized briefly as follows: The army consumes twice as much fresh meat, more than twice as much smoked and preserved meat, twice as much bread and beans, one and one half times as much potatoes, about the same quantity of sugar and about half as much flour. The army uses more dried and less fresh fruit, much more canned milk and practically no fresh milk; more dehydrated vegetables and much less fresh vegetables other than potatoes. A comparison of the number of articles of the diet shows that the army used on an average between fifty and

fifty-five articles of food in the weekly dietary at the training camps. The number of articles used in the officers messes was considerably larger than this, but since the officers support their own mess they of course have greater freedom of choice. The average number of articles of food eaten by the civilian population lies between thirty-five and forty. The army in field operations is limited to about fifteen different articles.

The average distribution of organic nutrients for the entire 427 messes as follows: Proteins fourteen per cent. of the total energy; fat thirty-one per cent.; carbohydrates fifty-five per cent. The range of distribution of the several nutrients was as follows: Protein from ten to seventeen per cent. fat from twenty to forty per cent.; carbohydrates from forty-five to sixty-five per cent. The distribution curves within these amounts are symmetrical, which means merely that just as many organizations used amounts five per cent below the mean as used five per cent. above the mean and the same for ten per cent. and so on.

A comparison of the cost of the various components of the ration shows that forty-two per cent. of the ration allowance was spent for meats, twenty per cent. being for fresh meat, the remainder for preserved and canned meats. Only six per cent. was spent for milk, six per cent. for bread, five per cent. for sugar, five per cent. for bacon, five per cent. for potatoes, four per cent. for eggs and four per cent. for sausage, 3.7 per cent. for butter, 3.6 per cent. for ham, 2.6 per cent. for poultry, two and one half per cent. for corn beef, and so on. A curve shows a gradual increase in the cost of food to the thousand calories throughout the period of the survey as compared with the increase in the quartermaster allowance for the ration for the same period. The two were not parallel, for the reason that the quartermaster's allowance was based upon the wholesale prices obtained by him for the section of country where the camp was located, whereas the actual cost of the food to the mess sergeant was determined in part by local prices. Throughout the period of the survey the ration saving system was in vogue which permitted the mess sergeant to spend a certain unused portion of his ration allowance in the local markets.

One of the chief aims of the survey parties and nutrition officers was to influence food economy or to prevent anything being thrown away that could be eaten. A frequent method of procedure was to make a brief quantitative study of the waste throughout the companies of a regiment and then to give personal instruction to the mess sergeants and cooks for a period of three or four days after which a second quantitative study was made. A chart was shown illustrating the effect of such instruction upon food waste. Taking the results at Camp Joseph E. Johnston and those at Camp Wadsworth as typical, it may be estimated that the same rate of improvement for a year would save the government at least \$7,000,000 for an army of 1,000,000 men. Some organizations in fact exhibited a higher degree of improvement than this, and in one organization at least, the 303d Field Artillery, practically 100 per cent. efficiency was

obtained in the use of food; that is to say, for the period of the survey no food whatsoever which could have been eaten was wasted. This organization had been under a high degree of mess discipline throughout its training. That this high state of efficiency resulted in no harmful effect upon the men was shown by the weight curves. Five hundred and twenty-three men in this organization were weighed at the end of the survey and their weights compared with the initial weights when they entered training. The average increase for five months of training was 6.6 pounds, and this increase was evenly distributed throughout the range of men of different sizes.

An investigation of the acid base equilibrium in food consumed by the soldier was made in a number of different camps. It is well known that the ash of meat and cereals is acid in reaction; the ash of fruit and vegetables on the other hand is alkaline. It was a matter of interest, therefore, to determine whether the fairly high proportion of meat and cereals in the army ration would result in any harm to the health of the troops, or would in any wise influence their susceptibility to the minor infections. A number of studies were made by comparing the proportion of meat in the diet with the sick rate of the same organization. At one camp, at least, where the quantity of meat consumed was unusually large and the quantity of vegetables unusually small, there seemed to be a definite relationship between the amount of meat consumed and the time lost by sickness. A comparison of the average company mess in the camps with the diets in the hospital brings out the interesting fact that, whereas the diet at the mess is likely to contain a surplus of acid ash, the diet in the hospital almost always provides an alkaline ash. It is perhaps significant that diets prescribed by physicians for restoring their patients to health should be so commonly alkaline in character.

MOVING PICTURES.

Moving pictures were shown illustrating the various activities concerned in the feeding of troops and the precautions to secure food that was wholesome and clean and to keep it in this condition until it was served. Emphasis was placed on the improvements which had been made in this war as compared with previous wars. The men had been better fed and were kept under more sanitary conditions as regards the mess than was ever before known in the army, the nutritional safeguards having been of a very high standard. There have been very few reports of food poisoning and no other sickness directly traceable to the character of the food. The physical result had been the healthiest, heartiest body of men ever seen in an army. The credit for this accomplishment is due to the quartermasters who purchased the food, the school for bakers and cooks who trained the mess personnel, and to the medical department which supervised the sanitary conditions, the menus actually employed and the scale of rationing.

The veterinary inspection of meat, instruction of mess personnel by nutrition officers in methods of inspection of meat, where to look for spoilage, tests for age and sex, methods of trimming, tests

applied to smoked and canned meats, examination of flour, corn meal, oat meal, dried fruit, vegetables, and other foods were illustrated; also methods of mixing, molding, weighing and baking bread. A point of special interest was the improved method of washing dishes in water kept hot over a furnace to guard against the spread of infection from the hands to the dishes and from the dishes to the mouth. The activities of the dietitian were also illustrated.

In conclusion the lecturer stated that the work established by the division of food and nutrition would be continued. At the present time a course of instruction is being worked out at the Army Medical School which will be required of all medical officers entering the army hereafter. The work will be continued also in the division of sanitation, particularly as regards the sanitary control of messes and of methods of handling food in camps. The speaker stated that the argument for the continuance of work of this character in the medical department which prevailed with the general staff was the argument for its professional character. When a man is sick he goes to a physician for diagnosis and prescription, and having learned the nature of his trouble and his needs for medicine he then goes to the druggist who sells the medicine. Likewise with regard to food, the person who should prescribe the kind and amount of food and the sanitary conditions under which it should be handled, cooked and served, is a professional man. Having learned what these conditions are the actual purchasing of the food, its handling and storage and delivery to the mess may be left to the quartermaster. The feeding of an army hereafter, therefore, should be regarded as a professional matter quite as much as the treatment of the sick.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Colloids in Biology and Medicine. By Professor H. BECHHOLD. Authorized Translation from the Second Edition, with Notes and Emendations, by JESSE G. M. BULLOWA, A.B., M.D. Fifty-four Illustrations. New York: D. Van Nostrand Company, 1919. Pp xiv-464.

In a recent lecture on heredity, Professor Bateson (*Smithsonian Report*, 1915) makes the following remark: "Of the physics and chemistry of life we know next to nothing. Somehow the characters of living things are bound up in properties of colloids, and are largely determined by the chemical powers of enzymes, but the study of these classes of matter has only just begun." Doctor Bullowa has rendered a distinct service to English speaking physicians by translating Bechhold's book. He has done more, however, for he has given valuable discussion and apposite comments in the text, bringing the work entirely up to date. Parenthetically we may remark that the translation of valuable German literature is a distinctly patriotic task for we are entitled to the best they have as part of our war indemnity. Some of the Chauvin-

istic statements of the original work have been corrected in the translation; in a footnote to Chapter XV Charles Lowe is rightfully given the credit of discovering phenol, and Sir William Henry Perkin for discovering the first aniline color. In other portions of the book references are included which were either overlooked by or inaccessible to Bechhold.

This work, though general and covering an extensive field, differs from most textbooks on a new subject in that it includes the practical applications of colloids as well as the theory of and methods of studying them. Colloid chemistry postulates as a fact that colloids are not substances but a condition of division in which substances are found. In order to be divided the minute masses must be separated by some medium, and on this account colloids are of necessity mixtures. The particles involved approach a magnitude approximately from 1/1000 to 1/500 the size of a red blood cell. This minute size endows substances with an enormous surface which determines their properties. For instance, butter is an emulsion of creamless milk in fat: milk has the same fat emulsified in the milk. This will serve to show the possibilities involved in the human body in determining the laws which cause the deposition of liquid fat in depots from its emulsion in the blood. The conditions which determine these and cognate processes, and disturb them, are discussed in such a way as to make data scattered through an extensive literature accessible to students and practitioners of medicine and surgery who are interested. The methods of research are sufficiently indicated in the first portion of the book so that those interested in the problems discussed may find a starting point for research. The latter portion of the book treats such practical problems as the functions of the body, disinfection, and microscopic technic. It is apparent from this book that no physician can afford to ignore the phenomena of colloids.

Births, Marriages and Deaths.

Died.

- ABBOTT.—In Taunton, Mass., on Thursday, June 19th, Dr. Frederick W. Abbott, aged fifty-eight years.
 ARCHAMBAULT.—In Haverhill, Mass., on Friday, June 6th, Dr. Lionel M. Archambault, aged thirty-two years.
 BARNETT.—In West Haven, Conn., on Wednesday, June 4th, Dr. John Frederick, aged seventy-three years.
 COBLENTZ.—In Fort Wayne, Ind., on Wednesday, June 18th, Dr. John W. Coblentz, aged eighty years.
 DONOHUE.—In New Brunswick, N. J., on Friday, June 27th, Dr. Frank M. Donohue, aged sixty years.
 EDWARDS.—In Woonsocket, Me., on Friday, June 6th, Dr. Daniel Mann Edwards, aged seventy-six years.
 KING.—In Greencastle, Ind., on Sunday, June 8th, Dr. Jerome M. King, aged forty-eight years.
 PALMER.—In Framingham, Mass., on Wednesday, June 4th, Dr. Lewis M. Palmer, aged fifty-nine years.
 SMITH.—In Gwynedd Valley, Pa., on Sunday, June 22d, Dr. Robert Mead Smith, aged sixty-five years.
 THOMPSON.—In New York, N. Y., on Saturday, June 14th, Dr. John H. Thompson, aged eighty-four years.
 TOMLINSON.—In Plainfield, N. J., on Sunday, June 22d, Dr. Thomas Henry Tomlinson, aged eighty-three years.
 WATKINS.—In Wolcott, N. Y., on Thursday, June 19th, Dr. Ralph H. Watkins, aged fifty-eight years.
 WOOLSEY.—In Brooklyn, N. Y., on Tuesday, June 24th, Dr. William C. Woolsey, aged forty-one years.

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ORIGIN OF IMMUNITY.

BY CASPER L. REDFIELD,
Chicago.

The writer on the subject of science in the *Encyclopedia Britannica* has written the following:

We have reached the stage when the different streams of knowledge, followed by different sciences, are coalescing, and the artificial barriers raised by calling these sciences by different names are breaking down. . . . Indeed, it is often just where this coalescence of two subjects occurs, when some connecting channel between them is opened suddenly, that the most striking advances in knowledge take place. The accumulated experience in one department of science, and the special methods which have been developed to deal with its problems become suddenly available in the domain of another department, and many questions insoluble before may find answers in the new light cast upon them.

It is intended here to bring to the help of the physician some things found in fields far removed from the paths he ordinarily treads. Some of it comes from steam, hydraulic and electrical engineering, and some from experiments in the physicist's laboratory. Some of it comes from horse racing and horse breeding; some from the dairy; some from the hunter's dogs; and some from the history of athletics from the days of ancient Greece to the present time. Some of it comes from the rise and fall of civilizations; some from our domestic plants; and some from a variety of experiments made for purposes very far removed from the present application.

All of these things are matters of knowledge and record in some department of science, but many of them are made available for the present purpose only by my own work. Obviously it will be impossible to review in the compass of a single article all of the matters bearing upon the points to be made. The most that can be done here will be to touch lightly upon some of the high spots, and indicate the general character of the evidence involved. The physician who is a student will doubtless think of many applications which have never occurred to me, and I shall have to leave to others the task of doing many things which are beyond my powers.

Resistance to disease consists of power to fight off whatever it is that causes disease. All persons are more or less resistant to diseases of all kinds. If they were not, then they would die the instant a disease touched them. Even in cases of terrible scourges, the actual deaths are only a small fraction

of the entire population, a fact which shows that the average resistance is greater than the average powers of attack by whatever parasite it is that causes the disease. It is well known that some races of men have greater resistance to certain diseases than have other races, and that some members of any group have greater resistance than other members. It is also known that the same person has greater resistance at some times than at others, as is evidenced by the fact that he will contract a disease at one time and not at another, even though exposed.

When the resistance to a particular disease is of a high order, it is called immunity. Thus, the negroes of the West Indies are practically immune to yellow fever and malaria, the Chinese are said to be immune to cholera, the buffalo and Texas cattle are relatively immune to the disease caused by the Texas fever tick, the native American grape vines are highly resistant to the phylloxera which has played such havoc with European vineyards, and Asiatic chestnuts are resistant to the fungus which is destroying our American chestnut trees.

Whence comes this immunity? What is the nature of this resistance to disease? Can the resistance which all persons have be built up so that they will be less liable to contract disease of any kind? Can ordinary resistance be raised to that point at which it is classed as immunity?

It is at this point that information from other sciences comes in to help answer these questions, but before we proceed to that matter it will be well to define immunity a little more accurately. A turtle is not subject to attacks of yellow fever because the mosquito which carries it cannot pierce either his shell or his leathery hide. And a man is not subject to diseases common among plants for the same reason that clover will not grow in a salt marsh, and pussy willows do not thrive in the home of the cactus and the sage brush.

While an animal may be immune to a certain disease because the pathological germ cannot gain entrance, or because it cannot exist in an environment totally different from that to which it has become accustomed, such immunity is not based on resistance in the proper meaning of the term. If we define immunity as a high degree of resistance, then we will confine it to those cases in which the animal or plant may be directly attacked by germs capable of existing in that type of environment,

but cases in which the individual is fully capable of overcoming such attacks. For the purposes of this article, immunity will be so defined. Under this definition, disease fighting power is the essence of resistance, and we can have immunity when we know how to increase this power.

One of the first things to bear clearly in mind is the fact that the powers of an animal are the same thing as the power that drives the steam engine, the water wheel, and the wind mill. The horse power coming from a horse is identical with the horse power coming from a steam engine. In fact, the horse power of the engine was determined by experiments on the horse. Now it happens that energetics is a well developed science relating to mechanical powers, and when we use a little care and consideration we find that the general principles of that science apply in the same way to animal powers. In mechanics we can have power only when we have a store of energy which is at a higher potential than that existing in surrounding objects, and we get the power by letting the energy flow from the higher to the lower potential. Conversely, we can raise energy from a lower to a higher potential only by the performance of work.

The same thing is true in the same way of the powers of all kinds of living bodies. A man or a horse can do work only because of a store of energy in his muscles. And this store of energy can be built up, that is, the man or horse can be made more powerful only by exercise, and exercise is the performance of work. It is impossible to make an athlete out of a man by simply feeding him, and no amount of feeding will make a 2:10 trotter out of the best horse in the world in the absence of a course of training.

The English authorities say that a recruit can be taught all that he needs to know about trench warfare in three months of time, but that to make him physically fit requires a year or more of intensive physical training. Making a man physically fit means building up his physical strength by physical exercise. The United States Government gives us a little information on this point which we may look at advantageously. As an item let us consider the report coming from Camp Devens. At that place 523 men were weighed and measured when they enlisted, and again after they had had about five months of intensive training for the field artillery. These men were at an average age of twenty-five years, and measurements showed that they did not increase any in height as a result of training. But they did increase in weight to the average extent of 6.6 pounds a man for the entire 523 of them, and this increase was in the form of solid muscular tissue. This added weight of muscular tissue means increased muscular strength, and we can be sure of that even when we do not have measurements of strength as such. Another item measured at Camp Devens was chest expansion. As a result of this five months of training, average chest motility increased from three to 3.70 inches. This is an increase of twenty-three per cent., and means the development by exercise of a power which did not exist before.

The converse of developing powers by exercise is the degeneration of powers by idleness. I use degeneration instead of loss for a purpose. Powers can be lost by death, by starvation, or by accident, but they degenerate only because of idleness. Idleness may be either absolute or relative. When it is relative it means an amount of exercise which is less than that necessary to maintain an animal or plant in the condition in which it is at the time. For example, when an athlete takes up a sedentary life, he continues to move about, but his powers gradually decline because the amount of exercise he takes is not enough to prevent such decline. And a race horse when retired from the track to the stud gradually loses his racing powers. His muscles become soft and flabby. A seed is an inert and motionless body, but it has the power of germinating. But let that seed remain motionless for two or three or more years and its power of germinating gradually declines and finally disappears. The loss of power by idleness not only applies to plants, but it applies to the seeds of plants. In fact it applies to every living thing, and corresponds exactly to what we know of common mechanical energy. Left to itself energy always dissipates.

When powers are built up by exercise, the building is in the organs exercised. Thus, in swinging dumbbells and Indian clubs, strength is built up in the arms and not in the legs. In running and jumping, strength is built up in the legs and not in the arms. But this is not wholly true. Exercise of any kind, either of arms or legs, causes the heart to pump more blood, and that develops the power of the heart. To produce the greater quantity of blood to be pumped, all the organs of digestion and assimilation have to work harder, and this harder work develops the powers of those organs. And so on. Activity in one part of the system stimulates activity in other parts, and powers are developed wherever activity exists.

While exercise builds up powers, the act of exercise drains away the energy existing in the organs exercised—the building process being an after result. This draining process is through the organs exercised, but reaches the energy store of other organs. Thus, if a person swings dumbbells until his arms are fatigued so that he has to stop, he can, after a brief rest, swing them some more without suffering distress. If he continues the second swinging until he is forced to stop because of fatigue, another brief rest will enable him to swing them a third time, and so on for a considerable number of times. Now, if a man who has thus drawn upon his energy through his arm muscles should immediately thereafter enter a jumping or running contest he would find that the exercise of his arms had drawn upon the energy store of his legs, and that he was in no condition to compete. Also, if a man is weary from long continued physical exercise, he is in no condition to think clearly.

These various facts show that while energy is localized in the different organs, any organ, when under special strain, may replenish its supply of energy by drawing upon the supplies existing in other organs. In other words, the total supply of energy in the system is available to meet a defi-

ciency arising at any particular place by reason of extreme activity of a particular organ. Because powers are developed by exercise, it will be seen that if a person is physically active for many years he will have a large supply of energy which is available to meet any emergency which may arise. As power strictly means amount of energy expended in a unit of time, the actual power of an organ is determined by the extent to which it has been developed individually by exercise.

Microorganisms do not normally exist within the body tissues. For bacteria to cause disease, they must not only gain entrance, but must grow and multiply. It requires a large number of them to produce the toxic effect which we recognize as disease. Normally, the body has the power necessary to destroy small numbers of pathological bacteria, and to neutralize their toxins. For convenience we will designate this power as being a blood reaction. The term blood reaction is sufficiently specific to indicate that it is an operation of energy, and sufficiently vague to cover a vast amount of ignorance as to exactly what happens. As between animals of different species, blood reactions are of different kinds. Thus, as between man and horse, the blood reaction of one is different in kind from the blood reaction of the other. As between different individuals of the same species, the differences in blood reaction are differences in power, and power involves the question of resistance to disease which we have under consideration.

If we inoculate a cow with smallpox virus we remove the germ from a place where it was able to live to a new place where it meets a new blood reaction. Only occasionally does the germ survive in this new place, but when it does survive we may pass it on from cow to cow without difficulty. If after passing the germ through ten or more cows in series, we take this virus and inoculate a man, we find that it is cowpox and not smallpox. A man so inoculated becomes immune to smallpox.

Going back to what we learned from other sources about power being developed by exercise and lost by idleness, and applying that information to the facts just given about smallpox and cowpox, we can get some new light on the phenomena relating to vaccination. When smallpox virus is inoculated into a cow it will "take" only when it comes to some cow which is more susceptible than others. The germ in fighting for its own existence in a new blood reaction develops its powers of meeting that kind of blood reaction so that when it is later passed on to another cow it finds no difficulty in surviving in a place where before it could not have survived. In passing along from cow to cow these germs continue to develop their powers of meeting the blood reaction of cows. But while they are doing this they are removed from the blood reaction of human beings, and because they are not fighting this particular blood reaction they gradually lose the power of fighting it. As a consequence, when they are later removed from the cow to the man they have only the powers of cowpox.

From these various facts it would seem that

cowpox and smallpox are two strains of the same thing. One strain has its powers developed to meet the blood reaction of cows but not that of man, while the other has its powers developed to meet the blood reaction of man but not that of cows. Also, that either can be transformed into the other by a course of training designed to develop one form of power and not the other.

Referring again to man, powers are developed by exercising them, but the immediate effect of exercise is to drain away the store of energy existing in the system. It has been established that when a person is exhausted by long continued physical efforts, or has been subjected to exposure to cold, or has in any other way had his supply of energy depleted, he is much more liable to bacterial infection than when he is in his normal condition. This means that the energy within the system is the source of the power which resists bacterial infection, and which overcomes such infection when it occurs. General physical exercise continued month after month and year after year gradually builds up the store of energy in the system, and if there is never any form of that exercise which will leave the person exhausted for some hours or days there will never be a time when he is specially susceptible to infection. In fact, his general powers of resisting infection will continue to increase as long as he continues to develop his powers by exercise.

When we examine cases of natural immunity to specific diseases we find that it exists only in those animals and plants which have lived for several generations in contact with the disease producing parasite. Zebu cattle from India are said to be immune to the Texas fever, but this immunity is to attacks by the tick rather than to the disease as such. This is not the kind of immunity we have under consideration. What we want to know is why the range cattle of Texas, when bitten by the Texas ticks, do not suffer from the fever as do northern cattle when taken to Texas. Also, why the West Indian negro does not get yellow fever when bitten by the proper mosquito; why the Balkan Ziginars are not stricken with typhus fever when bitten by the Balkan lice; why native American vines resist the American phylloxera.

In any epidemic, a considerable proportion of the population appear to escape attacks, and of those attacked, a considerable proportion recover. Assuming that the disease is new to the community in the sense that it has not been present for a considerable number of years, there are three things which enter into the proposition. The first is the resisting power of the individual as measured in his general energy supply which may be called upon to combat the disease. The second is the virulence of the particular strain of parasites producing the disease. And the third involves the magnitude of the attack as represented by the number of parasites which initially gain entrance or are produced before the system rouses itself to repel the unexpected attack.

Those persons who die during the epidemic are those who have become previously weakened, and who are subjected to a very heavy attack. Those who are ill for a time and then recover are those

who are weakened to a less extent or who became inoculated with fewer bacteria.

In any epidemic, many persons appear to escape attack entirely, but frequently this must be more of appearance than of reality. Given a normally healthy person bitten by a single insect which inoculates him with only a few pathological germs, his blood reaction easily wipes out the few germs which did gain entrance, and in doing that his system develops slightly its powers of meeting and killing this kind of germ. A little later he is bitten again, and again is inoculated, but does not know it. In overcoming this second slight attack his powers of combating this particular germ are still further developed. If the disease is continually present in the neighborhood he is continually being attacked, and in continually fighting such attacks he develops his powers of resisting this particular disease until he is fully capable of resisting such attacks, no matter how great they may be.

Real but unnoticed attacks by disease producing bacteria must be quite frequent. Postmortem examinations show that this is true of tuberculosis. The system, in fighting such attacks, builds up its powers of resisting that particular disease the same as fighting the virus of cowpox builds up the powers of resisting smallpox. And the same thing must be true in the vegetable world. For example, when phylloxera first attacked the American vines, there must have been some cases in which the attack was so light as not seriously to injure the vine. In fighting this light attack the vine would build up its powers of resistance so that later it would be able to resist a more severe attack.

Resistance to disease is an inheritable thing which passes from parent to offspring. But an offspring cannot inherit from a parent something which the parent did not have. We know that a parent can build up his general powers by general exercise, and that he can build up his powers of resisting a particular disease by fighting that disease or some modified form of it. Briefly, the offspring inherits the identical thing which the parent acquires by his effort and exertion, and there is not a particle of evidence of any kind that any animal or plant can come into possession of powers of resisting disease in any other way than by direct acquirement or inheritance of such acquirement. Natural immunity is nothing else than an inherited power coming from an ancestor who acquired that power by effort and exertion.

525 MONADNOCK BLOCK.

Typhoid and Paratyphoid in the Vaccinated and Unvaccinated.—Cesare Pezzi (*La Riforma Medica*, April 19, 1919) finds from a study of statistics in Italy that vaccination has no favorable effect on the mortality rate from typhoid. The mortality in the vaccinated in 1918 was eighteen per cent. and in the unvaccinated 14.7 per cent., while for the two years 1917-18 the mortality in the vaccinated was 21.7 per cent. and in the unvaccinated twenty per cent.

THE BELGIAN MEDICAL SERVICE.*

By L. MELIS, M. D.,

Brussels, Belgium,

Surgeon-General of the Belgian Army.

Do not expect me to speak before you on a scientific question of medicine or surgery. I leave that to my codelegates, particularly to Professor Depage and Professor Nolf. My mission is modest, but notwithstanding I find it agreeable and necessary. At the same time I must bring to you the cordial greeting of the Belgian medical corps.

It is an honor and a great pleasure for us to take part in a meeting in this country which has given to the world so many great and generous ideas. Coming into this terrible war without any thought of personal advantage or gain, looking only toward a more complete organization of society, America never hesitated to give her immense resources of men and material for the cause of justice and liberty. Today she has the satisfaction of carrying out her great humanitarian ideas. Today when the League of Nations is to mark the fulfillment of a universal peace conceived in the great heart of America and her people, she can put into effect with the help of science the highest conceptions of humanity. This work will be the eternal glory of America.

The American Red Cross likewise gives to the world a similar idea for a universal standard of hygiene by which plagues and pestilence may be overcome and prevented. We recognize the initiative and practical talent of our American friends. We beg you to accept our sincere and humble tribute of admiration for the ideas of the American Red Cross, which the studies of the teachers in medicine and surgery present at this meeting will help us to bring out.

Two days ago we heard with great satisfaction the address of your president, Dr. Alexander Lambert, about the organization and duties of a Red Cross society. We agree with him as to the necessity of creating in each country a central organization—a national health board—to direct all research concerning the welfare of the community.

We have not forgotten how during the four years of German occupation of Belgium one of your great men, Mr. Hoover, sent supplies of food to our people whom the Germans sought to starve into submission. We shall never forget the help which succored us in those dark days and our government has had the privilege of nominating Mr. Hoover a citizen of Belgium, a title he has done us the honor to accept. I can not dwell enough on the help and alleviation that Mr. Hoover's committee brought to the Belgians who continued to live in their burned homes, in their devastated villages and towns, beside their plundered factories. Let me also emphasize the value of the moral and material support which the American Red Cross, represented by Colonel Bushnell and Colonel Van Schaick, has given the Belgian Red Cross and the Belgian military hospitals. Your president, Dr. Alexander Lambert, visited all our hospitals at the front with the representatives of the American Red Cross. He

*Address delivered before the American Medical Association, June 13, 1919.

was able to account for the needs of the hospitals and of the health service of our army.

Later I shall give you some figures showing the importance of the help given us by the American Red Cross. Let me mention also, and I beg Doctor Depage's pardon for the reference, the propaganda work of Madame Mary Depage in America, propaganda which ended by her tragic death. Finally, I must not forget the generosity of the Ladies' Committee of Philadelphia, who maintained at Cannes, on the Mediterranean shore, a hospital for our convalescents under the high direction of H. R. H. the Duchess of Vendome, sister of our King.

You will better appreciate the importance of the help extended us by the American Red Cross when you consider that in its retreat in 1914 the Belgian army had to leave behind all its medical supplies, hospital equipment, and the material belonging to the Belgian Red Cross.

Without going into details, I may give some figures. At the beginning of the war the Belgian army numbered nearly 180,000 men. After the battle of the Yser River in November, 1914, only 72,000 men were left. Although most of the men of military age were in that portion of Belgium occupied by the Germans—a part about thirty times as large as that which remained free—the Government managed to rebuild the army, and when the last offensive began in February, 1918, we had 215,000 soldiers. The total number of men registered on the army rolls during the whole campaign is about 310,000. A special tribute should be paid, I think, to those recruits who succeeded in escaping from occupied Belgian territory in spite of the electrified wire and other devices which virtually transformed our country into a large prison.

During the war 210,000 men were admitted to the military hospitals, 77,500 for wounds and the rest for various diseases. The number of deaths from disease amounted to 4,508, a satisfactory figure if we keep in mind the various epidemics and especially the deadly epidemic of influenza, which affected the Belgian as well as other armies. The number of killed, died of wounds, and missing is about 43,900, which out of 320,000 enlisted men means a proportion of nearly fifteen per cent. The figures do not include men who died of wounds and disease either in the camps for interned soldiers in Holland or in the German prison camps.

America helped us before entering the war and afterward. The common war life and the daily contact has made us know each other. We appreciate each other, and the sympathy thus born has become a strong and durable friendship. One of my codelegates, Colonel Nolf, has said that America was the godmother of Belgium. I hope America will continue to be the godmother of Belgium in every field of endeavor.

Ladies and gentlemen, I take this opportunity of publicly offering, in the name of the Belgian Government and in my double capacity as surgeon general of the Belgian army and president of the Belgian Red Cross, our deepest gratitude and our heartfelt thanks and appreciation to the American Red Cross and to the people of America.

THE CLINICAL VALUE OF SEROLOGICAL EXAMINATIONS.*

JOSEPH GARDNER HOPKINS, M. D.,
New York.

Since Widal's discovery that the blood of typhoid fever patients agglutinated the *Bacillus typhosus*, there have been many attempts to utilize the phenomena of serum immunity in the clinical diagnosis of infectious disease. Such methods have proved most useful in prolonged infections of which tuberculosis and syphilis are the most pronounced examples. In very acute infections, such as pneumonia and meningitis, the diagnosis must be made before serum antibodies are developed and we are dependent on bacteriological methods for diagnosis.

AGGLUTINATION IN TYPHOID AND PARATYPHOID FEVERS.

The Widal reaction, as ordinarily performed, has lost much of its former value on account of the widespread use of prophylactic vaccines which of themselves stimulate the production of agglutinins. It has been asserted, however, by Dreyer and his coworkers that if quantitative determinations of the patient's serum agglutinins are made at intervals of three or four days a diagnosis may be arrived at. Vaccination against typhoid or paratyphoid is followed by a rapid production of agglutinins. The curve rises to a sharp apex from two to three weeks after the last injection and then falls, very rapidly at first, but afterward more and more slowly, not reaching normal for a year or two. The fall is so gradual that if, after the first month, determinations are made at short intervals, no difference is observed in the titre. In typhoid fever in an unvaccinated individual the agglutinin curve is somewhat similar, rising to a sharp apex about the twenty-first day and falling rapidly during the fourth week. In a patient who has been vaccinated the curve is similar in form, but starts at a higher level and does not return to normal as promptly. If we examine the serum from a vaccinated patient several times during the second or third week of illness we will find the titre rapidly increasing, or during the fourth or fifth week we will find it falling. Therefore, while the actual amount of agglutinin found on one determination is of little significance, because it is largely dependent on the previous vaccination, a typical rise or fall in the titre on successive determinations is of aid in diagnosis. The technic must be standardized to insure that the results of the successive tests are comparable, and the interpretation of the findings requires some experience, as paratyphoid, or at times wholly unrelated infections, will cause fluctuations in the amount of typhoid agglutinins. Sometimes curves are found in other infections quite indistinguishable from those of typhoid.

We recently had an opportunity to employ this method in an outbreak of typhoid among vaccinated troops. Some of the cases showed a characteristic reaction, but in others the change was more marked in the paratyphoid than in the typhoid agglutinins, although the infection was typhoid.

*Read by invitation at the stated meeting of the New York Academy of Medicine, April 17, 1919.

The test is of some aid in diagnosis, but cannot be relied upon as was the Widal in the unvaccinated.

AGGLUTINATION IN OTHER INFECTIONS.

Agglutination reactions have been used in the diagnosis of bacillary dysentery. In this disease, where the infection is usually limited to the intestinal mucosa, agglutinins are not developed as regularly as in typhoid, and some patients never show a characteristic rise. It occurs, however, in many cases. An agglutination of the Shiga bacillus in dilutions of 1-50 or higher may be considered diagnostic of past or present infection. In the Flexner type of infection, however, agglutination is not diagnostic unless it reaches 1-250, as Rajchman and Western have found that normal individuals may agglutinate up to that point. The agglutinin test has also proved reliable in the diagnosis of Malta fever.

COMPLEMENT FIXATION IN GONORRHEA.

In deep seated infections by the gonococcus, complement fixing antibodies have been found fairly constant in the blood. The reaction is therefore of especial value in such infections as arthritis and epididymitis and, to a less extent, in prostatitis and chronic urethritis. It is also widely used to determine when cure has been obtained. Very little has been added to our knowledge of the clinical value of the reaction since the original work of Schwart and MacNeil. Quite recently, however, Captain D. Thomson, of the British army, has described a new method of preparing the antigen, for which he lays claim to a higher proportion of positive reactions, especially in acute urethritis, a condition in which most previous workers found the blood usually negative. Thomson reports that in all acute cases tests gave a positive reaction by the end of the first week, and that of 248 cases of all types, ninety-two per cent. were positive. None of the workers so far have reported on a large series of nongonorrheal cases, and in reviewing the somewhat meagre literature on the subject one is impressed with the fact that such study is needed to establish the specificity of the reaction.

COMPLEMENT FIXATION IN TUBERCULOSIS.

The work of Besredka and of Petroff, Miller, Bronfenbrenner, and many others in this country has recently aroused much interest in the value of the complement fixation reaction in tuberculosis. The interpretation of the results is difficult, but at least it furnishes additional evidence which may be brought to bear in doubtful cases. The antibodies are not found in all cases of clinical tuberculosis, and they are present in not a few persons who have no clinical symptoms, though doubtless harboring a latent infection. They are found more constantly in the early than in the later stages of the disease, and more constantly in active than in inactive cases; but a positive reaction is not proof that a case is advanced or that it is active. The results of various workers have differed rather widely, but the recent study of Brown and Petroff is representative of the more reliable work. They found in cases in the first stage, fifty-one per cent.; in the second stage, seventy-three per cent., and in the third stage, eighty-one per cent. positive. Pos-

itive reactions were obtained in eighty one per cent. of active cases, in sixty one per cent. of inactive cases, and in seventy-nine per cent. of those in which activity was questionable. Their number of control cases was small; nevertheless, five patients gave a positive fixation who presented no other evidence of the disease.

Among the rarer infections, there are two in which the complement fixation test seems of definite value, namely glanders and echinococcus cyst.

THE WASSERMANN REACTION.

The Wassermann reaction has been the subject of many controversies as to its nature, the technic of performing it; and the specificity of the results obtained. There is now at hand an immense amount of evidence as to its clinical value. It is generally agreed that the reaction appears from two to eight weeks after the development of the initial lesion, that it is present in nearly 100 per cent. of active secondary cases if uninfluenced by treatment, and in eighty to ninety per cent. of tertiary cases. About seventy per cent. of tabetics show the reaction in the blood and an additional twenty per cent. will give the reaction if the spinal fluid is also examined. The earlier statistics gave nearly 100 per cent. positive results in paresis, but as this condition is being recognized in its earlier stages a few cases are being found with a negative reaction. As to congenital lues there are fewer published statistics, but Craig reports eighty-two per cent. positive.

Indicating its specificity it must be remembered that the other spirochetal infections, yaws and recurrent fever, give the reaction, as do a considerable proportion of cases of trypanosomiasis and of leprosy. To these four exceptions we may add malaria, scarlet fever during the febrile stage, and blood taken during ether anesthesia or postmortem, though the evidence is conflicting as to these last four conditions.

Innumerable reports have been published as to other diseases which may give a positive Wassermann, but in evaluating such reports two questions must be considered: First, how was the test performed, and, second, on what clinical grounds was syphilis excluded? Most of these reports of false positives fall into two groups. Some serologists, especially some of the earlier workers, have reported positive reactions in a most bizarre variety of conditions. Now when our worker obtains positive reactions in a number of diseases in which the great majority of investigators have found the blood negative, one can only conclude that this technic was at fault. It is easy to make the test so sensitive that it will show slight fixation in wasting conditions, such as advanced carcinoma or tuberculosis, or in acute fevers such as pneumonia. But these reactions are feeble (one plus or plus-minus) and should not be confusing if the reactions are controlled by clinical observation. I believe that the only way a serologist can determine when his tests are too sensitive is by the appearance of such false positives. There is another group of reported non-specific reactions which can not be explained on grounds of faulty technic. Some of our most careful serologists have reported that in some one disease they have found the Wassermann positive.

The instances, however, are isolated, the findings lack confirmation, and one is almost forced to conclude that in the cases reported unrecognized latent syphilis existed.

It is then only in the eight conditions which I have mentioned that the finding of false positive reactions has been confirmed. If they can be excluded (and in this climate their exclusion is usually simple) a strongly positive Wassermann reaction, repeated to avoid possible error, means syphilis. The syphilis may, of course, be latent and quite unrelated to the condition of which the patient complains.

Now what of a negative reaction? In a suspected primary sore, untreated, if the Wassermann remains negative for two months syphilis may practically be excluded. In a suspected secondary lesion, untreated by arsenic or mercury, a negative Wassermann, again repeated to avoid error, practically rules out syphilis. If the question is of tertiary or so-called parasyphilis, a negative Wassermann is by no means conclusive but certainly weighs against the diagnosis of lues. In controlling treatment, a negative Wassermann does not of course prove that a patient is cured, as we know that an active tertiary lesion may coincide with a negative Wassermann. But of all the symptoms of syphilis the Wassermann is the most persistent, and if a patient is free of other signs, such as changes of his spinal fluid, and his Wassermann remains negative for a year, even after a provocative injection of salvarsan, that is the best evidence that we can obtain of a cure.

In interpreting negative reactions, however, the finding of Craig and Nichols should not be forgotten, that if the patient takes a large amount of alcohol he may temporarily convert a positive into a negative reaction.

ISOAGGLUTININS AND HEMOLYSINS.

There is one other serum reaction which has proved of great practical value, about which I should like to say a word, that is, the testing of the donor's and recipient's blood before transfusion for isoagglutinins. It has been shown by Ottenberg, Moss, and many others who have studied the question that the severe and sometimes fatal reactions that occasionally follow transfusion are due to the presence of antibodies in the recipient's serum for the red cells of the donor. A recent report by Pemberton from the Mayo clinic amply confirms both the danger of transfusion of incompatible blood, and the safety of transfusing from a donor of the same group as the patient. There are two new developments along this line which are of interest. One is a simplified method for making the tests, devised by Major Lee, which proved very useful in the A. E. F. The only paraphernalia required is a glass slide, a needle, and a vial each of group II and group III serum, to which a little citrate and phenol have been added. A small drop of blood from a finger prick is mixed with each of the sera on the slide and the reading made with the naked eye in two or three minutes. With the technic so simplified, the emergency can rarely be so great that transfusion cannot be delayed until the group of the recipient and proposed donor has been determined.

The other development is that, according to the observations of Shawan and of Masson, the success of isoskin grafts is dependent on the same factors, and a graft will not take if the donor's red cells are agglutinated by the patient's serum.

1038 PUTNAM AVENUE, BROOKLYN.

SUPRAPUBIC PROSTATECTOMY.

A New Technic for a Modified Two and Three Stage Operation, and Absolute Prevention of Secondary Hemorrhage.

By A. L. SORESİ, M. D.,
New York.

In dealing with a patient requiring prostatectomy, we have to keep in mind that the operation, very easy of performance in itself, must always be considered as being very dangerous on account of the possible complications that may ultimately cause the death or permanent disability of the patient. The best surgeon, therefore, is not the one who might show more brilliancy in the actual removal of the prostate, but the one who tries to prevent complications, and takes all the necessary steps and precautions which can insure the comfort and safety of each patient. We must also remember that prostatectomy is never an emergency operation; it is just the opposite, and the more serious the condition of the patient, the more necessary it is to delay operation. Some of the complications common to the early prostatectomies performed by the best surgeons are prevented today, some are only partially prevented, some will never be prevented, because of the poor condition of certain patients, due to old age.

In this paper we aim to show a modified two stage or three stage operation, and the means of preventing the infection of the loose connective tissue surrounding the bladder and of completely controlling hemorrhage. In a later paper we shall discuss in more detail the subject of hypertrophy of the prostate, and its treatment. We cannot do this at present, because having been in the service for four years, we have been unable to study thoroughly certain data, and on account of the continued war conditions, we are still unable to obtain from manufacturers certain devices which in their present condition are not perfected enough to be presented to the medical profession.

Modified two stage operation.—This modification aims to prevent the infection of the tissues surrounding the bladder, and can be applied in every case in which prostatectomy is contemplated. Infection of the tissues surrounding the bladder is not only extremely annoying, but often proves fatal, and will always occur whether the ordinary one or two stage operation is resorted to. This infection is caused not only by the ordinary agents that cause infection in the other parts of the body, but also, and mainly by leakage of the bladder contents. The infection is favored, and rendered more severe by the fact that the tissues surrounding the bladder have *per se* very little resistance to infection, and this already weak resistance is rendered still weaker

by the old age and poor condition of the patient, the continuous infectious material leaking from the bladder, and the presence of urine. More or less severe infection of the tissues surrounding the bladder cannot be prevented by the usual procedure of

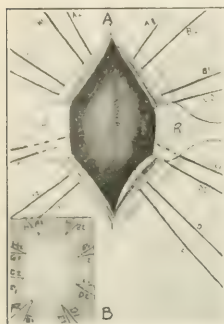


FIG. 1.—Illustrating technic of operation.

stitching the bladder to the skin just before opening the bladder, as is done now, because some material leaking from the bladder will always come in contact with the loose connective tissue around the suture line, and the loose connective tissue surrounding the bladder having been severely traumatized in order to expose the bladder, will offer little resistance, not to mention the urine leaking around the drainage tube. The infection can be completely prevented by securing the bladder to the skin, and waiting a few days, that is, until adhesions have formed between the skin edge and the bladder, before the bladder is opened. We advise the following technic: Under local anesthesia the bladder is exposed, and the overlying tissues kept apart by retractors (Fig. 1A). The bladder is secured to the skin with a series of special stitches (Fig. 1) which enter at the very edges of the skin incision and go through the bladder. The first stitch (Fig. 1, A1, A2) secures the upper portion of the bladder—the so-called dome—to the upper angle of the skin incision; the two ends (Fig. 1, A1, A2) are caught by the artery forceps, and held by the assistant, then the lower portion of the bladder is secured with another stitch to the lower angle of the skin (Fig. 1, E1, E2) and the two ends are also caught by an artery forceps. The retractors can now be



FIG. 2. Sutures in place.

taken off, while the assistant holds the artery forceps to which ends of thread (Fig. 1, A1, A2, E1, E2) are secured; a series of intermediate stitches (Fig. 1, B1, B2, C1, C2, D1, D2, F1, F2, H1, H2) are placed in the same manner as the two previous stitches, so as to secure a close approximation of the skin edges to the bladder, and the ends of each stitch are caught with artery forceps. When all the stitches have been placed, the skin is brought in close contact with the bladder by tying the ends in the following manner: Fig. 1B, A1, with B2, B1, with C2, C1 with D2, D1 with E2, E1 with F2,

F1 with G2, G1 with H2, H1 with A2; then threads H1, A2, are tied with threads A1, B2, threads F2, E1, are tied with threads E2, D1 (Fig. 2) so as to close the superior and the inferior angles of the incision. The ends of the thread are left long so as to be used later. The advantages of this suture are numerous, the tissues are closely approximated without tension, they are not ruffled, they are not strangulated, the ends of the threads can be used later during the other stages of the operation; if the single stitches are placed so that the large blood vessels are located between the ends of threads that are going to be tied, between for instance: A2 and H1, a perfect hemostasis is secured, when the bladder is opened later.

Two or three stage operation.—If the described technic is followed, all operations for suprapubic prostatectomy would be performed either in two or three stages. The first stage would always be the securing of the unopened bladder to the skin, and this can always be done under local anesthesia, with little discomfort to the patient, whose bladder in the meanwhile can be drained by a permanent catheter through the urethra; the second stage would also be the last, if the surgeon deems convenient to remove the prostate immediately, and the surgeon will find very convenient and safe to remove the prostate at this time, because he has no fear of infection of the prevesical space. Only exceptionally the surgeon will find it necessary to postpone the removal of the prostate, because he can examine at leisure the condition of the bladder and prostate after having opened the bladder under local anesthesia, as he has no bleeding to bother him, he has no fear of shock or infection, he can resort to the actual removal of the prostate either with local anesthesia, which is more easily applied, because there is no bleeding, or with a small amount of ether, which will not cause shock. If he deems necessary to postpone the removal of the prostate, he can apply the drainage tube, tightening the bladder around the tube with the threads that have been left long.



FIG. 3.—Diagram of prostatectomy.

Prevention of hemorrhage.—Uncontrollable hemorrhage is still causing the death of patients who have undergone a prostatectomy. Let us briefly see why hemorrhage is not prevented by the methods actually employed. Hemorrhage occurs, and does not stop spontaneously, because in this class of patients, sclerosis of the bloodvessels is often present, so that the torn vessels do not contract energetically enough to close the lumen, and because the hemorrhage takes place in a medium where there is a continuous flow of liquid, which does not allow the blood to clot and properly seal the torn

bloodvessels. It is evident, therefore, that direct suturing, packing with gauze, temporary hot gauze pressure, and the placing of air bags cannot control the hemorrhage with security, because direct suturing cannot be done in such a manner as to positively catch all the bleeding vessels. Packing with



FIG. 4.—Suprapubic prostatectomy.

gauze is useless, because the gauze cannot be really properly compressed in situ and kept so. Temporary hot gauze pressure, does not guarantee against hemorrhage even for a few minutes. When air bags are placed in order that they should be effective they should completely cover all the bleeding points, and constant pressure maintained. This cannot be accomplished, because the air bag when inflated has a special shape which cannot be the same as the shape of the removed lobes of the prostate. The bag containing air is lighter than the urine, and therefore has a tendency to float and not to keep in close contact with the bleeding tissues, unless it is pulled so hard through the penis as to become uncomfortable, and even if pulled very hard against the urethra, the fact that the bag and the air are lighter than the urine and the blood, will always allow the leakage of blood between the bag and the bleeding tissues when the bag is not directly compressing them. This will occur somewhere in the area where the lobes have been removed. In order to prevent hemorrhage it is necessary to exercise a gentle, even, continuous pressure on the tissues from which the prostate was removed, so that all the bloodvessels that might bleed are compressed until a firm clot has formed. This pressure must not change even when urine is present in the bladder, and the pressure must not inconvenience the patient. All these desiderata are fulfilled by putting in the place from where the prostate or part of it was removed a soft rubber bag, which is then filled with mercury. The bag which we present is made of soft rubber, has a pyriform shape, and two tubes (Fig. 3, A B). After having removed the prostate tube A is tied to a catheter introduced through the urethra and pulled down out of the same until the bag reaches the prostatic urethra, so that we have tube A out at the meatus, bag C at the prostatic urethra and tube B at the abdominal opening. Tube A is tied and mercury is introduced into the bag through tube B until this tube is full. It is then passed through the drainage tube D which is introduced into the wound and secured, Figs. 4 and 5, by tying the ends of the thread which were used to secure the bladder; one or two of these threads can be passed through the drainage tube, so as to steady it in place. Tube B is tied and the usual

syphon applied to drainage tube. The patient is placed in bed, the head of the bed is kept somewhat higher, so as to allow the mercury to gravitate, and completely fill the space (Fig. 5), that was occupied formerly by whatever portion of the prostate that had been removed. It is easily understood that the pressure exercised by the heavy mercury is continuous, uniform, gentle, and sufficient to compress the torn bloodvessels, even if urine is present, and that all the area formerly occupied by whatever portions of the prostate which have been removed will be filled by the mercury which can change the shape of the soft rubber bag according to circumstances and so will fill the smallest spaces, and therefore prevent bleeding. According to the case, from twenty-four to seventy-two hours after the operation the mercury is allowed to escape through tube A, and the bag is removed through the drainage tube. Fig. 4 shows a little weight attached to tube A. We used it in one case where the patient was very restless, and we think it can be used to advantage to hold down the catheter. In later models, which are being made, tube A will end with a bulb like enlargement which when filled with mercury will hold down the catheter much better. When the drainage tube is removed the bladder may be closed by untying the knots of the threads which have been left, freeing the skin close to the bladder. The threads should again be tied to each other and then the threads H 2, G 1 to threads B 1, C 2, threads G 2, F 1, to threads C 1, D 2, and then the skin and fascia are closed with a suitable suture.

Conclusions.—We recommend the following technic: Suprapubic exposure of the bladder which is secured unopened to the skin incision in all cases, while the bladder is treated for a few days through the urethra, some time after cystotomy and prostatectomy, introduction of the bag and mercury; suprapubic drainage and lavage of the bladder for about three days; closure of the bladder and urethral drainage. The advantages are: The operation of prostatectomy is robbed of almost all its dangers and inconveniences because the shock is practically absent, so that even patients in a serious condition can withstand the operation, completely eliminating the slightest infection of the tissues around the bladder and consequent absorption; the removal of the prostate can be done with ease and the condition of the bladder examined better; there is no hemorrhage and the edges of the bladder are well secured against the skin. The entire operation can be done under local anesthesia better than with any other technic, because the secondary hemorrhage is completely prevented without inconvenience to the patient.

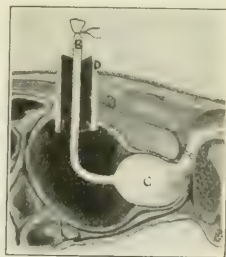


FIG. 5.—Bag in position

EDUCATION OF THE YOUNG BLIND.

BY EDWARD M. VAN CLEVE,
New York,

Principal of the New York Institute for the Education of the Blind.

When the general practitioner has done all that was possible; when the specialist has used all his skill in the effort to ward off the inevitable, there comes the time when for the child whose vision is lost through disease or accident the question is, What next? The wise and kindly physician will counsel the parents to lose no time in securing for their child the opportunities for special training that are offered. Here in New York these opportunities are provided in such a way that there is no valid excuse to offer, except ignorance of the existence of such facilities, for the failure of any mentally capable child to secure an education adapted to his needs and quite equal to what his sighted brother can have. In some particulars, indeed, his training may be even superior to that provided for the one who sees.

First of all the agencies for education of the blind child in the city of New York is the New

In the literary department the course is from the first grade (with some kindergarten training) through the high school, pupils completing this course being prepared for college entrance. The usual age of admission is eight years or over and



FIG. 2.—Reading by finger method, by which the blind "see" to read books.



FIG. 1.—At play on the lawn of the New York Institute for the Education of the Blind.

York Institute for the Education of the Blind, situated at present at the corner of Ninth Avenue and Thirty-fourth Street. This school, with a noble history of devoted service to the sightless, has kept pace with the modern movements for the education of the blind and today offers the best possible opportunities for the special training needed. Here well prepared teachers instruct the pupils in the regular school subjects such as are followed by their seeing brothers and sisters in the best public and private schools. Manual training is begun at the pupil's entrance and is continued through his course of schooling. Physical training is regular, persistent, intelligent. And special advantages are given to those who have talent in music to become proficient in piano and organ playing and to become teachers of the art. Thus, there are four lines of activity which are followed, namely, literary, manual, physical, and special talent.

the complete course may cover eleven or twelve years. Manual training is followed up steadily with the result that most girls are in the end capable of doing almost any housework, including cooking, sewing, knitting, and crocheting, and some become expert at weaving and basket making. Boys are taught to use tools, to weave cane seats in chairs, to make baskets, to weave rugs and carpets, and to tune the pianoforte.

Children who do not see need in a special degree training in physical culture. Lacking the incentive of sight, by which through imitation most bodily movements are performed, they must be taught patiently and systematically how to handle the body with ease, grace, and freedom. Results of this



FIG. 3.—Skillful machine sewers, though without sight.

teaching are little short of marvelous as seen on occasions of exhibition of the gymnastic training. But the consummate flower of this teaching is seen in the confident manner with which the trained

sightless person moves about even thronged city streets unattended and goes about his daily tasks with assurance and confidence.

To provide opportunities for becoming thrice well trained the school must first of all have teachers both competent and devoted, but it must also have apparatus especially adapted for its purpose. Therefore, special schools for the blind are an essential part of the educational system, since the required apparatus is expensive and special. Again, the pace of progress is slower than that taken by those who see. This latter statement covers all the various lines of educational activity. But there is this great compensation for both the extra expense and the slow pace—the sightless pupil usually retains better what he learns and is surer of himself than the pupil of the ordinary school.

How competent these well educated blind children may become is shown by a recent study of sixty former male pupils of the New York Institute for the Education of the Blind who left the school between the years 1892 and 1912 and had found their place in the workaday world. It is noteworthy

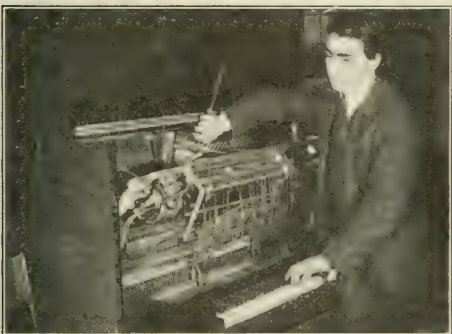


FIG. 4.—Tuning a player piano. The blind are good tuners.

to find that of this number two thirds have become successful men in business or professional life. A marked contrast between those who have had full training in the school and those who have had little or no scholastic training as blind persons is clearly noticeable through even casual acquaintance. It is most important, therefore, that the child who loses his vision should have the best education possible for him.

While it is manifestly impossible to photograph all the processes which go into the making of a well trained product of a school for the blind a very successful attempt has been made to portray through moving pictures the daily work of the pupils in the New York Institute for the Education of the Blind, in the class room, in the gymnasium, on the playground. Illustrations of this article are taken from the moving picture film entitled *Modern Education of the Blind*.

New York city has, beside the New York Institute at Ninth Avenue and Thirty-fourth Street, classes for the blind in its public schools, a Catholic Institute for the Blind, and a Home and Kindergar-

ten for Blind Babies. Physicians may hold out hope, therefore, to parents of children who may lose their sight, of securing for them adequate teaching so that they may grow up into intelligent



FIG. 5.—Knitting for the Red Cross. A group of little blind helpers.

and competent citizens. And all this may be secured without cost to the parent.

Education of the blind has been considered a special care of public and private agencies for only a little more than a century. Time was when the loss of vision shut out all but the most energetic and well to do from any chance to be trained. In America three great schools had their beginning at about the same time, the Perkins Institution at Boston, chartered 1827, opened September, 1832; the New York Institute for the Education of the Blind, chartered 1831, opened April, 1832, and the Pennsylvania Institution for the Instruction of the Blind at Philadelphia, opened March, 1833, chartered 1834. These are privately managed but pupils are sent to them by the authorities of the State. Two others, the Maryland School for the



FIG. 6.—Making useful and beautiful baskets in the school for the blind.

Blind and the Western Pennsylvania Institution for the Blind, are under private management but in the cases of the remainder of schools for the blind in the United States their management as well as their support is provided by the State. Forty-four State

and private schools and public school classes for the blind in ten cities of the United States enroll about 6,000 pupils. Some States have no special schools but send their blind children to neighboring schools; for example, northern New Jersey children are sent to the New York Institute for the Education of the Blind, those from the southern part of the State to the Pennsylvania Institute for the Instruction of the Blind at Philadelphia. Delaware also sends children to the Philadelphia school.

The blind child is entitled to the education befitting a citizen as much as the seeing child. Something more than this, with special opportunity and generous provision, is felt by the common mind to be the common obligation to the child who is so unfortunate as to lose his power to see. Private funds and public appropriations are generously set apart to accomplish the purpose of giving the right sort of an education with the best special training for usefulness that can be devised.

RHINOPLASTIC SURGERY.

By CHARLES GRAEF, M. D.,

New York.

Although most patients with nasal deformities seek our aid to secure relief from defective breathing or unwholesome catarrhal conditions, a number also come to the physician with the hope that something can be done to improve the shape and appearance of the nose. It is not always a matter of vanity; many find the undue size, the sunken or enlarged nasal bridge, or the crooked contour of the nose a decided handicap in social and business life. Consciousness of such a fault is so distressing to sensitive individuals that a degree of melancholia may result. If we neglect this work the patients drift into the hands of advertising quacks or beauty specialists. Moreover such noses frequently combine with their outer faults unhealthy general conditions requiring attention and therefore have every claim on our time and skill.

Opportunities to do plastic work on the nose have multiplied with the numerous war injuries and no doubt experience gained in this way will be of assistance to us. Heretofore the work of Roe and Joseph has been our chief guide. Personally I have found but little aid in the scanty literature on the subject. Most of it is a record of case results with few details as to procedure in the actual operative work. The reason for this is better understood with time, because each case is a problem in itself and operators find it almost impossible to detail the successive steps, important even if small, which lead to success in the individual case.

Some general principles can be laid down but experience is the only teacher of value. Some of this work was done on the cadaver, a plan which, more than any other, will aid the beginner in approaching his cases with confidence. The first patients I dealt with were those with collapsed or imperfectly developed alar cartilages which had

caused narrowing of the vestibular passages. In these cases no amount of straightening of the septum or reduction of turbinal tissue was of value in increasing the breathing space. These patients learn for themselves that spreading the nostrils with the fingers or some mechanical contrivance is the only way they can improve things, and small wire vestibule spreaders are sold for this purpose. These are not of real value except for use at night. Their presence in the nostril causes discomfort which counterbalances any assistance they may give in increasing space. Patients do not like them and will not wear them during the day.

Soon after submucous resection of deflected cartilage and bone from the nasal septum was introduced I attempted to transplant cartilage and bone plate taken from the septum to the lateral wall of the vestibule in these patients and in time secured satisfactory results although the first cases were not entirely successful. If cartilage from a well bowed septum could be secured I found the effect was better, the curve of the cartilage lending itself well to the needs of the situation. The transplanted cartilage was inserted through an opening made within the vestibule and placed in a pocket cleared for it by dissecting the skin from the ridge of the nose to the junction of the ala nasi with the cheek. All work of course was done from within the nose, the skin not being disturbed in any case. The cartilage plate should be long enough to reach across this space so that when it is forced into place it will have a distending action as well as giving support to the wall. It is in this that a well curved piece of cartilage from a bowed septum is advantageous.

In some of these patients the collapsed ala is the result of trauma, the lateral cartilage being broken from its connection with the nasal bone above and forced inwards. In such cases the pocket for the insert should be made close to this bone margin and the transplanted cartilage given added support by direct contact along the nasal bone. When the trauma has also affected the nasal septum it is possible to correct the crooked septum by a submucous resection at the time, and use the resected cartilage for the transplant. If this can not be done cartilage can be taken from another case where a submucous operation is required, or the patient's own cartilage from a straight septum can be used.

I have not attempted to use bone from the rib or tibia, as has been suggested. I doubt if this would succeed as well. Before beginning any of these operations the nasal hairs are carefully clipped from the vestibule walls and the lining is sterilized with iodine followed by alcohol. The nose should be cleansed of mucus, crusts, or other foreign material by wiping or intelligent douching. The skin over the nose and the upper lip is also painted with iodine, followed by alcohol, and asepsis is carried out. During the operation the mouth is covered with a double layer of sterile gauze fastened with adhesive straps. An important point is the placing of a gauze tampon well back in each nostril to prevent blood from falling into the pharynx during the operation. This can be

done from the front; postnasal plugging is not necessary.

A small incision is made in the alar wall at a point a bit lower than half way between the nasal bridge line and the cheek. A small narrow bladed

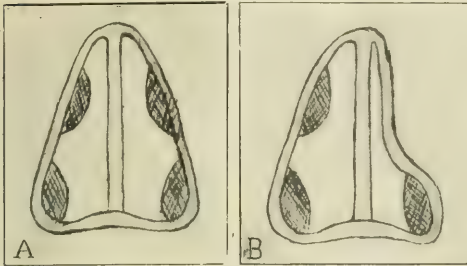


FIG. 1.—Cross section of a nose in the vestibule. A, Showing normal relation of the walls; B, showing collapse of the outer wall on the left side. (Schematic.)

knife with a cutting edge about half an inch in length is best adapted for this and for the subsequent dissection of the pocket for the cartilage. A small knife with a sharp curved cutting edge for working in the lower part of this dissection is useful but not indispensable. It is important to close the incision carefully after the cartilage is in place by suture or with Michel clamps. I have used these for years in work about the nose as well as for closing the line of incision in the septal mucosa after a submucous operation and commend them as being of real advantage. They are easily sterilized by boiling, are quickly placed in position without pain, and as readily removed when the wound is healed; matters of comfort to both patient and operator. Again they bring the wound edges together nicely without entering the wounded tissue itself. It is a difficult feat to place and tie a silk suture inside the nose without having it come in contact with an unsterile surface somewhere, and such a suture carried through the wound from side to side has every chance to contaminate the depths of the wound. The clamps should not be left within the nose after the packing has been removed as they might become loosened and possibly drawn back and downwards into the trachea or bronchi. After they are placed the wound line is painted with tincture of benzoin and a gauze plug put in the vestibule. I know that other writers state that the closing of the nasal wound is not necessary because it is small and the nasal secretions normally are bactericidal. Both statements are true, no doubt, but I have not seen many patients requiring a transplant operation in which the noses were normal in secretions, or any other way. Most of them have a foul collection of crusts, or chronic atrophic disease of the nasal interior. I have never seen an infection follow where such precautions were used if the patient was reasonably careful. The wounds are usually safely healed in four days. During this period a plug of sterile gauze coated with vaseline is worn in the vestibule. No other, or more continued, dressing is required.

The second type of case with which I dealt was

the hump nose with the large ill shaped bony arch. I have operated upon a number of these patients. The first one ten years ago was a young man whose nose was so large and badly shaped that he complained of seeing the hump all the time as he moved his eyes laterally. The nose contained ample breathing space but was a source of humiliation, and a handicap to him in business life. It was the most pronounced hump that I have handled but was as successfully operated upon as the others. An unsightly hump on the nasal bridge is either due to overdevelopment from congenital or postnatal causes or is the result of fracture. It is commonly located at the junction of the nasal bones and upper cartilage, and is often associated with an added deformity in a curve of the nasal tip to right or left. The skin over such a hump is thin and blanches from tension when the patient laughs or uses the muscles of the face, thus emphasizing the fault.

These patients are nearly always good subjects for operation for they are so anxious to secure a good result that they willingly cooperate with the surgeon in his work and complain little at the moderate degree of discomfort which may be felt at some stages of the operation. In the most difficult cases with complex deformity ether may be given, but for the removal of a simple hump local anesthesia is sufficient.

A hypodermic injection of morphine from one sixth to one fourth grain is given a half hour before the patient is brought to the operating room.

Novocaine, or one half per cent. cocaine, with one to 10,000 adrenalin chloride, is used to infiltrate subcutaneously the entire tissue over the nose. This is easily done with a suitable needle by ordinary hypodermic syringe, from the nasal interior in the upper septal angle half an inch above the nasal entrance. Fifteen minutes after this a small incision is made in the skin lining the vestibule where the needle puncture was made and through this the cartilage is pierced and the skin over the deformity is undermined widely enough to admit

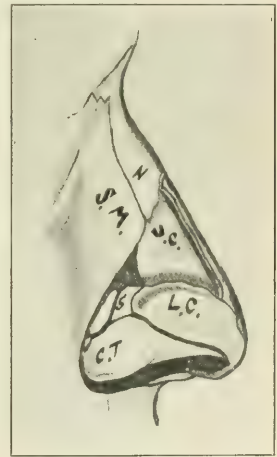


FIG. 2.—The outer nasal wall. N, Nasal bone; S. M., superior maxillary (nasal process); U. C., upper lateral cartilage; L. C., lower lateral cartilage; S., sesamoid; C. T., cellular tissue.

free approach from either side of the hump. There is no danger of damaging the skin if care is taken in this step and the point of entrance chosen with good judgment.

Bleeding is sometimes annoying, especially if the

dissection is carried far down the side of the nose where the nasal tissues are thicker. Keeping as close as is feasible to the skin surface is the best insurance against this. A plug of drainage gauze soaked in adrenalin is packed in the wound for a



FIG. 3.—Before operation for removal of prominent hump.

FIG. 4.—After operation for removal of hump.

time if this occurs. The extent of this undermining is governed entirely by the size and position of the deformity and should not be more extensive than is absolutely required in any case. The periosteum is next raised from the bone with a narrow, sharp elevator and the excess bone cut off by a small saw. A saw with a cutting edge of an inch and a half serves best and one with a straight handle by preference. If the toothed section is too long the soft tissues are unnecessarily torn by it below.

Roe has advised that great care be taken in this step not to enter the nasal chambers by cutting too deeply. This is not likely to happen in the removal of less pronounced humps, but if it does it seems to be of no consequence.

When the sawing is completed the bony excrescence is drawn out through the opening the vestibule and the wound closed. The loosened skin over the nasal bridge is held down to the newly cut surface by a suitable dressing. I first used tincture of benzoin and cotton to build up a firm adherent pad, reinforcing this with a narrow bandage drawn around the head and over the nasal dressing, but later I adopted the saddle introduced by Roe for this purpose. It is made of thin sheet copper and can readily be shaped to the size and form desired. Care must be taken in using it as excessive pressure may be harmful.* It is held in place by adhesive straps fastened laterally below the ears and to the cheeks. From time to time these are removed, the skin cleansed and powdered, and the saddle replaced, as the case progresses. It is worn continuously for a week, to insure firm and quick union of the wounded parts. The use of the saddle is continued, at night, for sometime longer until healing is firm.

In the case shown (Fig. 3) which resulted from fracture in early life there was an unsightly hump on the bridge of the nose high up; the tip was tilted to the right, the right lateral cartilage having

been fractured at its junction with the nasal bone and depressed along this line. There was also a large angular spur jutting into the turbinal tissue from the septum on the left side. These defects were all successfully corrected at the same operation. The hump was first resected as described. The spur was cut from the septum, and after mobilizing the alar cartilage along the nasal bone, the tip of the nose was drawn over to the left past the middle line and held by adhesive plaster strips fastened along the left side of the nose and to the forehead above the nose. A copper plate saddle was then placed over the bridge above and strapped down with plaster passing over the cheeks to the ears on either side. A plug of gauze in the right nostril served as a splint to support the alar wall while healing went on in the new position. The result was pleasing.

By suitable modification of these steps working at all times from within the nose, various other deformities are successfully corrected. Among these are the excessively long nose; the tip tilted; and various forms of lateral displacement.

A third class of cases includes those in which the nasal bridge is sunken wholly or partially. The worst types of these are found in cases where specific disease has caused a loss of bone and cartilage with subsequent cicatricial formation and contracture of the healed parts. These are cases in which the lost tissue must be replaced by a suitable substitute and various methods of doing this have been tried. Fifteen years ago the injection of paraffin had a considerable vogue but has largely fallen into disuse as many failures and some serious accidents were recorded. In many cases it is entirely unsuitable and its use is condemned, but I am convinced that in certain carefully selected types it is a good agent to employ and has therefore an important place still in our list of remedies for sunken nasal bridges. Sterile bone wax should be used for this purpose. It comes in sealed glass



FIG. 5.—Patient prior to repair of nasal deformity.

FIG. 6.—Deformity corrected by operation.

tubes and is always ready for use. I find it infinitely better than any homemade paraffin mixtures, and use that made from Horsley's formula, employing a Harmon Smith syringe.

This method should never be used for the ex-

tensive deeply sunken bridges seen in severe cases following syphilitic destruction, or where the skin is drawn tightly or held down by adhesions. For small depressions covered with healthy yielding skin of good vitality it may be used with perfect safety. It may be injected by making the needle puncture through the skin below the depression, passing the tip of the needle upward and slowly forcing enough wax into place to fill out the cavity without causing tension. It can be done as well from within the nose in most cases and this is the better plan when feasible as the needle puncture through the skin may cause a blemish. The results have been satisfactory and have remained fixed and without irritation so far as I can learn in the cases done by this method.

Implantation of bone to form a new nasal bridge support is the only satisfactory plan for cases of extensive destruction and this can be done with success even in severe cases. In the case illustrated here the extreme limit of loss of tissue had occurred. It was a specific case. The infection occurred in early life causing complete loss of the bony walls of the nose, the septum and most of the palate. The opening in the palate was so large that the nasal attic, the ethmoid and sphenoid openings were easily seen from the mouth. The patient had this hole covered with a dental plate, without which she spoke with difficulty.

She came to me first because of her eyes; myopia and an old keratitis with leucomata. Nothing could be done to aid her with glasses because she found it impossible to wear them, the nasal bridge being sunk so far in the glasses got no support. Even with the best mechanical aid the optician could furnish this difficulty could not be overcome. In this case the nose consisted of a rounded tip and nostrils, the entire bridge being sunk below the line of the remnants of the nasal bones; which had disappeared to the line of the superior maxillary processes. The Wassermann test was positive but after two years' treatment a negative report was returned and I undertook the operation.

For the implant I took two and a half inches of bone from her ninth rib. The pocket in the nose was carefully prepared by dissection from the left vestibule close under the skin, and extended to the frontal bone. At this point the periosteum was scraped back and a notch made in the surface with a sharp chisel. The pocket was carried down in the midline of the nose well to the nasal tip. The contracted skin across the upper part of the nose was freed from the nasal processes of the superior maxillary so that it could be raised and the bone implant was then passed through the opening inside the vestibule and pushed well up to rest with its upper end in the scarified place prepared in the frontal bone. Flexing the tip of the nose to the right the lower end of the implant was worked into position and the wound inside the nose carefully closed over it. The newlybuilt bridge was supported from the sides with a copper plate saddle which also made pressure on the points where the lateral dissection had been done. A rapid and firm healing followed with a thoroughly satisfactory result. I mention this case because it illus-

trates an extreme type and the result offers convincing proof that even in the most unpromising of these cases we may count on a fair degree of success.

1125 BOSTON ROAD.

INTERESTING CASES IN A POST HOSPITAL IN BROOKLYN.

BY CLIFFORD C. LECK, M. D.,
Brooklyn, N. Y.

CASE I.—F., civilian, aged forty-nine years, white, laborer, admitted February 16, 1919, with a diagnosis of compound, comminuted, linear T fracture of tibia, right, upper third. The knee joint was involved. There was also a compound, comminuted fracture of the right fibula. Both fractures were about three inches below the knee. Complications of serous meningitis and alcoholism were present. The patient was semiconscious on admission and occasionally delirious during the first two weeks. No reliable family history was obtainable. The patient had been knocked down by a passing automobile, the wheel running over his leg.

Treatment.—The leg and thigh were placed in a gypsum cast with a window for the wound. Three days after admission, some serum blisters were seen on the leg below the site of the fracture. These were opened and a gangrenous area about six inches below their site was incised through the skin and muscle, exposing a large hematoma. The cast was removed and the limb placed in a suspended Hodgen splint with fracture and extension frame. Carrel-Dakin infusions were installed. On the ninth day the condition was unchanged. The wound appeared clean. Very little pus was apparent. There was a space one inch in length between the fragments. A few pieces of loose bone were removed. On the fourteenth day, fluctuation appeared about the knee joint. This area was incised bilaterally to the patella and thick white pus evacuated. On the twentieth day the condition was unchanged. Incision and drainage of knee joint had had no apparent effect on temperature. On the twenty-fifth day multiple foci of pus in the popliteal space were seen and in musculature below the knee were incised and drained. On the thirty-fifth day the condition was unchanged. At a consultation it was decided that an amputation was necessary to save the patient's life. Patient steadily refused to have his leg amputated. Evacuation of pus foci on the twenty-fifth day apparently resulted in a reduction of temperature and slightly improved general condition! Daily changes of the dressings with Carrel-Dakin treatment were continued without apparent improvement in general condition or any manifested tendency of the wounds to heal. The amount of hypochlorite solution necessary to fill sinuses necessitated the use of a basin beneath suspended leg, the overflow being directed by vaseline gauze arranged above and below the site. Very little irritation resulted to the skin during the forty-nine days of treatment.

Bacterial counts from wounds.—Sixth day, eleven; eighth day, infinity; ninth day, thirty-two; tenth day, twenty-six; thirteenth day, fourteen;

twenty-third day, twenty; and five on the twenty-eighth day; twenty-ninth day, forty-five and infinity; thirty-fourth day, eleven; forty-fifth day, infinity.

Blood tests.—Eighth day, the culture was negative, for bacteria. Differential count, red cells 3,200,000, white cells 18,600, large mononuclears

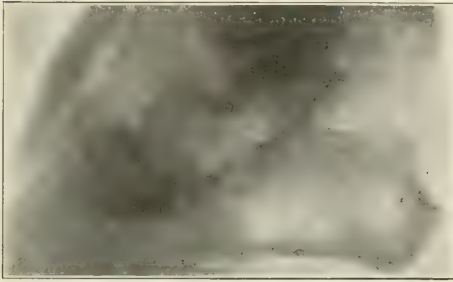


FIG. 1.—Case II, before reduction.

twenty-eight per cent., transitionals three per cent., polynuclears sixty-nine per cent.—forty-fifth day, white cells 32,600.

Symptomatic serous meningitis was the only recorded disease complicating this illness. This continued throughout and was manifested by an irrational irresponsibility in conversation, and control of evacuations. There was no definite paralysis. Of interest, was the low but prolonged resistance, associated with a high leucocyte count and a low septic or nonreactive type of temperature. Death occurred with rather sudden collapse on the forty-ninth day of the illness.

FRACTURE OF ASTRAGALUS—OPEN REDUCTION.

CASE II.—C., aged fifty-six, Italian, laborer, was taking lumber from the hatch of a ship when he was caught in a hoist and pulled up about fourteen feet from which height he fell to the deck, apparently landing on his feet. Complained of severe pain in the right foot on admission. The injury was diagnosed as an inverted Pott's fracture and an attempt was made to reduce the impaction, under anesthesia. A radiographic examination on the following day showed complete transverse fracture of the body of right astragalus with inward and forward displacement of the posterior fragment, with rotation on its long axis of about eighty degrees, leaving it wedged in between the tibial joint surface above and the top of os calcis below. A distinct outward subluxation was also present making the ankle deformity simulate an inverted Pott's fracture.

Open reduction under ether anesthesia was performed, chloroform was substituted as ether had no effect. A crescent shaped incision over inner aspect of foot immediately below internal malleolus was made with the convexity downward and through the ligaments. The tendon of the posterior tibial muscle was held aside which enabled us to reach the bone. A periosteum elevator was inserted between the bones, the top of os calcis was used as a fulcrum and the fragment was displaced forward and rotated into position. The ligaments

were repaired and the wound closed. The radiograph showed excellent apposition of the fragment on the following day. (Fig. 1.)

Sequelæ.—No rise in temperature occurred although there was a sloughing of skin and subcutaneous fat at the lower flap of the wound a half inch in width and one and a half inches long. This healed slowly under simple dressings. The entire foot and leg were encased in a gypsum cast and a window left for the observation of the wound. The patient was admitted March 13, 1919. This report dated March 30, 1919, April 9, 1919.—The wound is healing satisfactorily. This case is of interest in showing a successful open reduction of foot fracture.

SUPPURATIVE PERIOSTITIS.

CASE III.—R., aged thirty-seven years, soldier, negro, admitted March 6, 1919. Had reported sick on transport although he was not feeling well when he embarked from France. He was kept in bed on the transport, had chills and fever. Says he has had malaria but not since last enlistment. Denies venereal disease. On admission, his temperature was 103, pulse 124, respiration 36. His disease was diagnosed as influenza and bronchopneumonia. The progress until March 11th was satisfactory. On this date severe pain in and about left knee developed. It was most acute just above the joint on the inner aspect of the femur. There was no appreciable fluctuation in knee joint, but considerable tenderness above the femur. March 12th, the patient not so well. There was a rise in the temperature and pulse, the latter somewhat thready and irregular. Many moist râles were heard over the chest, more especially on the left side. The left knee was swollen and tender; the swelling extending to the tissues above the joint. On March 13th, the swelling in the left knee extended upward to the tissues above the knee. The radiograph showed a small focus of periostitis on lower end of the femur, on the inner aspect, about two inches above joint, and it was slightly clouded by the joint fluid. From March 14th, the condition remained unchanged until the 18th, when the fluctuation above joint was aspirated and a yellowish gray fluid obtained. An incision through the vastus internus muscle under local anesthesia was made and about 500 c. c. of pus was evacuated. March 24th, aspiration of the knee beneath the patella showed pus. A crucial incision of the thigh was made which disclosed the femur beneath quadriceps muscle. The entire length of the femur on anterior surface was affected. The periosteum was incised; it was not attached to the bone. The bone was smooth and hard. The knee joint was also opened bilaterally to the patella. The two areas were apparently connected. Iodine irrigations were used for two days, then a Carrel-Dakin irrigation was substituted. Temperature has been normal since the operation. A smear from the aspirated fluid from the knee showed gram positive diplococcus. Bacteria count, infinity.

Blood culture.—Negative Wassermann. Plus two, white count 20,000 on March 8, 1919. March 14, 1919, blood count 22,500, small mononuclear cells eight per cent, large mononuclear cells two per

cent. Polymorphonuclear cells ninety per cent., blood count March 17, 29,500. A culture of the organism from the aspirated fluid showed *Streptococcus viridans*. The wounds were left open with rubber drains that were removed on the third day and Carrel-Dakin irrigation was substituted. Bacteria count, April 1, 1918, twelve to the field; April 2, twenty-five to the field.

This case was of interest as it showed complications of influenza, an atypical history and an undetermined cause. The origin of the infection was near or simultaneous with, synovitis, or syphilis, also the probable effect on the bone, and convalescence.

On April 3d, the wound looked clean; very little pus was apparent. Temperature remained normal. The pulse was unaffected by operation or treatment. It remained between 110 and 120 throughout the course of the disease from the time of his admission until the present time when a rate of 100 was recorded. The infection of the knee seemed to be confined to the subpatellar area and is discharging very little. The Carrel-Dakin infusion was continued. April 6th, a portion of the bone, on the inner aspect of the femur, four inches above the joint, denuded of periosteum showed no tendency to granulate. Entire femur probably affected or will become so. Upper end of tibia also probably affected. The joint suppuration continues. Probable prognosis, amputation at hip.

HEPATIC ABSCESS—OPERATION.

CASE IV.—P., negro, birthplace Arkansas, aged twenty-seven years. Personal and family history negative. He was admitted from overseas transport on fourth day of illness, with a diagnosis of influenza. Symptoms of headache and general lassitude, on March 6, 1919. On March 8th, there was a beginning lung involvement of the lower right lobe, respiration twenty-four to twenty-six, the temperature ranged from 99 degrees morning to 101 degrees evening for the first ten days after admission. This was followed during the next ten days by a range from normal in the morning to 100 degrees in the evening. There was no variation at any time of more than three degrees and usually only two. He gave a history of a previous pneumonia, prolonged colds accompanied by pleuritic pains, chills, and sweats, for past seven to eight weeks. He said his health had remained good for the past eight years. Had had malaria. Diagnosis, influenza bronchopneumonia. March 24, 1919, the radiograph showed lungs clear but liver or diaphragm shadow was two to four inches above the normal line, on the right side. No tenderness but some bulging through right epigastrium. Flatness up to fifth rib, no rales; eyes tinged yellow of jaundice. No appetite and patient felt weak; lungs clear. March 25th, appeared septic, listless, no appetite. Was not doing well; some cough. No pain, tenderness over liver slight. Upon consultation with the surgeon, a diagnosis of suppurative cholecystitis, or liver abscess was made. The tumorfaction in the right epigastrium was aspirated showing staphylococci. The pus was thick and not bloody. One half hour later the abdomen was opened. The liver did not adhere to parietal peritoneum. The gallbladder was normal in size

but not easily emptied. The liver extended below the costal border about three inches, apparently freely movable with each inspiration. The liver was entered through the path of the aspirating needle by dull hemostat. The peritoneum was well walled off prior to the incision with a gauze pack. About 800 c. c. of thick gray pus was evacuated. A drainage tube was inserted. The wound was left open. A culture of pus showed staphylococci of slow growth. The patient was given gas on the third day and abdominal packs removed with difficulty. A lighter pack was inserted and the drainage tube shortened. Patient was in good condition. March 17th, blood count: white cells 19,600, hemoglobin eighty-five per cent., small mononuclear cells twenty-eight per cent., large mononuclear eleven per cent., transitional cells five per cent., polymorphonuclear cells sixty-four per cent. The pulse was not influenced by changes in temperature, which ranged from eighty to ninety throughout; the respirations were from twenty to twenty-four. Date of this report, March 30, 1919. The chief point of interest was the cause and duration of the infection.

March 30th, some adhesions had formed between the parietal peritoneum and the liver at the site of the incision. The lower border was not adherent. A fringe of omentum presented in the wound on the removal of the gauze pack. A smaller drainage tube was inserted and the border of wound repacked with gauze. April 3d, the parietal peritoneum was adherent to liver over the entire border of the wound. The drainage tube was removed and replaced by a Carrel-Dakin single infusion tube to the bottom of the abscess cavity, a distance of five and a half inches from the surface of the abdomen. The liver dullness diminished rapidly. The patient felt much better; appetite good; jaundice less apparent. April 4th, bacteria count, two to the field. Carrel-Dakin treatment continued. April 6th, bacterial count, two to the field. The abdominal wound was closed except for a space large enough to admit a Carrel-Dakin tube to the



FIG. 2. Case II, after resection

abscess cavity, which was almost closed. General condition improved.

OPEN AMPUTATION.

CASE V.—B., negro, admitted February 20, 1919. Family and personal history negative. An iron beam fell on his left foot, from a height of twenty feet. On admission the pain was severe in the left

foot. He was unable to walk. X ray diagnosis, complete compound fracture of the body of the left cuboid. Stellate fracture of the body of the left calcaneus, fracture into joint of left proximal and of fourth metatarsal. March 24th, gangrenous areas developed on the dorsum of the foot, around and about wound, which extended to include almost entire dorsum. February 22d, an incision was made of the dark colored areas on the dorsum of the foot through the skin and fascia to relieve the apparent tension beneath. There was considerable bleeding from the small wound on the inner aspect of the foot beneath the external malleolus. March 1st, gangrene did not show a distinct line of demarcation and extended in the skin above the ankle. An amputation was done six inches below the knee. The skin at this level was not in good condition. The flap was left wide open. March 5th, the skin flap appeared gangrenous for an inch from the edge of the flap where the line of demarcation had formed. Granulations were forming over the end of the fibula. The periosteum above this point was apparently unaffected. March 25th, the skin flap was so shortened by gangrene that a second amputation appeared necessary. This will be done as soon as wound bacteria count is favorable. Carrel-Dakin solution was used throughout treatment. Wound clean and very little pus at any time. Urinalysis on third day after admission showed sugar in appreciable amount which disappeared under sugar free diet. Blood showed .375 per cent. sugar. March 25th, albumen present in a small amount. March 19th, occasional pus cells and finally granular casts. Blood count: red cells 5,000,000, white cells 13,200. Wassermann negative. Temperature on admission, 100° F.; pulse sixty, respiration eighteen. Second day, 100.8° F.; pulse eighty-four, respiration twenty. Fourth day, temperature 103° F.; pulse eighty-two, respiration twenty-two. Sixth day, temperature 102° F., pulse eighty-eight, respiration twenty-two. For nine days after operation the temperature was unchanged. Since the tenth day after the operation it has not been above 99.4° F., rectally. Bacterial count after operation March 10th twelve, March 14th fifteen, March 17th eight, March 18th eleven, March 22d thirty-two, March 28th four, April 18th five.

April 5, 1919, the necrotic circumference of the shaft of the stump was chiseled off to the normal bone beneath, in order to hasten granulation over this area, and assure prompt sterilization of the entire flap which was manifestly impossible while necrosis of the bone remained. The flaps were otherwise in good condition with a very good blood supply. April 7th, the bacterial count was four and eleven. April 19th, the cortex of bone stump was probably affected. Bacterial count, three to the field. The elective site of reamputation by the closed method was two inches above the original site or with less danger, above the knee. Prognosis as to life, good. Whether the stump will be serviceable below knee is questionable.

RELAPSING HODGKINS'S DISEASE.

CASE VI.—C. E., private, infantry, aged thirty-one years, white, born in Sweden. Resident of Minnesota; occupation prior to enlistment, farmer.

Father and mother living, also three brothers and one sister. Personal previous history, negative.

History.—Was on return voyage from France on troop transport. Swelling began to develop on both sides of neck, being worse on right side. Placed in hospital bed on board ship on March 4, 1919. Admitted to this hospital, March 6th. Complained of severe pain in both sides of neck which had not varied much since onset. Loss of appetite. Said his temperature on March 4th was 102.6 and had remained about the same until admission. In November, 1918, patient was in hospital in France with fever and pains in chest. Said it was thought to be tuberculosis but that no bacilli were found in sputum. On admission complained of severe pain in glands of neck radiating to head. Frontal headache—some pain over left chest. Difficulty in breathing through nose. Poor appetite. Temperature 101, pulse 88, respiration 24. Weight, 180. General condition, good. Face flushed, tongue coated and dry, pharynx inflamed. Cervical glands very much enlarged especially on right side, and extending into beneath clavicle bilaterally but not noticeable at latter points except on palpation.

Pulse as recorded ranged from sixty to ninety-six. Respiration, twenty to thirty. Differential count—March 26th, small mononuclear leucocytes 21, large mononuclear leucocytes 3. Polymorphonuclear leucocytes 76. Urinalysis, negative. Leucocyte count—12,200 March 13th. Leucocyte count—March 26th—19,100 reds—5,400,000. Throat culture March 24th, gram positive diplococci, staphylococci and micrococcus catarrhalis. March 26th. Resection of a portion of the gland on right side. Laboratory diagnosis, Hodgkins's disease. Radiograph April 4th.—Peribronchial infiltration—all linear markings accentuated. Areas of increased density were seen extending bilaterally from mediastinum. Dome or right diaphragm appeared slightly elevated suggesting subdiaphragmatic pressure. Probably due to hepatic enlargement.

Pathology.—The lymphoid tissue has been practically replaced by strands of loose connective tissue among which are great numbers of eosinophiles, a few plasma cells, and many large cells with two or three vesicular nuclei and each nucleus having a very definite and deeply staining nucleolus of rather large size. The eosinophiles and other cells are frequently collected together in small pockets between the strands of fibrous tissue. In other portions of the gland the fibrous tissue was very dense, but even in these portions the eosinophile infiltration was very marked. Diagnosis, Hodgkins's disease. Progressive increase in size bilaterally to date since admission. Date of this report, April 3, 1919.

PERITONITIS.

CASE VII.—Private L., white, aged twenty-three years, New York, admitted March 18, 1919, by ambulance, at 12:05 a. m. History of similar attack about four years ago lasting one week. This attack began about 9 p. m., March 16th, with cramps over the lower abdomen which were described as very severe becoming better toward morning. Considerable soreness and pain persisted in lower abdomen throughout the day. No other history was obtained. On admission, the temperature was 99° F.,

pulse 100 and not of good quality, respiration 22. Subacute tenderness over lower abdomen, increased at right lower quadrant. Had vomited several times during the day prior to admission. Said he did not feel badly and pain was not severe. Diagnosis, acute appendicitis, probably suppurative. Operation, ten hours after admission and thirty-seven hours after beginning of attack. Appendix uniformly dilated with purulent fluid. Mesoappendix much thickened and easily broken. Apparently no attempt on the part of nature to wall off the affected area by the omentum as is usually seen. Parietal peritoneum slightly congested. No free fluid in abdomen. Small necrotic area at end of appendix. The appendix was apparently not ruptured, and removed in the classical manner, the stump being covered with mesoappendix and visceral peritoneum. The wound was closed without drainage. The patient was reported as having considerable pain during the following twenty-four hours and signs of peritonitis developed, including general tenderness, thirst, and vomiting with thready pulse. The wound was reopened, March 19th, at 10 p. m. The appendix area was apparently intact. About ten drops of white exudate was found immediately beneath peritoneum. No free fluid in the abdomen. The omentum was free, and congested. Cigarette drains were placed in sacral lumbar fossæ. The patient died at 10:30 p. m., March 21st, five days after the onset of the primary symptoms. A postmortem culture from the abdomen at the site of the appendix showed rapid growth of streptococcus hemolyticus. A section of the appendix showed, in one portion, that the mucosa was intact, but contained leucocytes, eosinophiles, and small hemorrhagic areas. The muscular and submucous layers were densely infiltrated with leucocytes and a few eosinophiles. The vessels of the serosa were dilated, and it, together with the mesentery, was densely infiltrated with leucocytes. In the other section the mucosa had been partly replaced by an exudate of fibrin and leucocytes and the portion of the mucosa remaining, the submucosa and muscular layers were densely infiltrated with polymorphonuclear leucocytes. The vessels of the serosa were dilated and in places the serosa was covered with an acute inflammatory exudate. Diagnosis, acute appendicitis (U. S. Army Laboratory).

Of interest in this case is the apparent coincidence of a primary streptococcus peritonitis, as has been frequently observed as a complication in the recent influenza epidemic. Unfortunately a possible link in the chain of evidence to this effect is missing as a culture of the abdominal fluid was not taken at primary operation. Symptomatically and clinically the two conditions were coincident.

REMARKS.

Carrel-Dakin treatment was most satisfactory in types of infection as shown in cases I, III, IV, and V, but it will not sterilize a wound associated with necrosis of bone. Primary periostitis without history of injury is not common. Case IV showed a microorganism which was frequently associated with influenza in the recent epidemic, namely, *Streptococcus viridans*. It was probably the causative

factor by metastasis from the lung, though syphilis should be considered. The illness recorded in history of Case IV was probably an earlier manifestation of this relapsing type of Hodgkins's disease. The open flap method of amputation, so frequently practised in the war zone, is not spectacular. The result obtained in Case V would seem to warrant its trial in gangrene of the extremities associated with diabetes and arteriosclerosis, in preference to the tried and so frequently unsuccessful closed method.

INTESTINAL PARASITES.

By I. VALENTINE LEVI, M. D.,

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In many cases we are inclined to look for and often accept the more serious diagnoses rather than those of a less serious nature, such as worms, because we are prone to forget reflex causation of disease. I shall endeavor to demonstrate by several clinical histories.

The textbooks all tell us that the chief symptoms of worms are the reflex ones. In nine cases out of ten, in young children who have intestinal symptoms or stomach trouble, especially if they are past the age of teething, practically the first question the mother will ask almost at your first visit is, "Don't you think it is worms?" As we pass the stage of early childhood and advance toward adolescence, unless the patient comes to you and tells you, or brings with him something he has passed from his bowel, it is unusual for many of us to even think of intestinal parasites. We take down a full history, get all the symptoms and depending upon these in conjunction with the age of the patient, look for all the conditions of the gastrointestinal tract from simple indigestion to carcinoma with no thought of the parasites.

Now let us take up briefly the symptoms in general, that can be produced by the more common intestinal parasites. In regard to the general clinical picture, one noted clinician has remarked that its chief characteristic is its lack of anything characteristic. That a person may harbor a worm and be unaware of the fact can not be doubted. On the other hand, that the commoner intestinal parasites, such as the tape worm, may result in severe symptoms is equally well established. The injury due to intestinal parasites is attributed to the following factors in particular: Mechanical obstruction, injury or irritation of the intestinal mucosa, loss of blood, loss of food that goes to the parasite rather than the host, toxins produced by the parasite or by the disintegration of the parasite, as segments of the tape worm.

The appetite varies, it may increase or decrease or be irregular; eructation, nausea, vomiting, abdominal pains either like gastralgia or colicky (Seeger reports abdominal pains in forty-two per cent. of his cases of tape worm); digestive trouble; constipation (Hirsh found it in five per cent. of his patients); diarrhea (six per cent.) or irregularity of the bowels (three per cent.). Anemia seldom occurs,

in patients with *Tenia saginata* or *soleum*. Inequality of the pupils and disorders of vision are common, likewise tinnitus aurium and disorders of hearing. Hirsh reports headaches in fourteen per cent. of his cases. Itching, dryness of the nose and epistaxis are common; general vague pains in all parts of the body, emaciation when the infection is of long standing, loss of strength, disturbed sleep and any symptoms that may be produced reflexly even to those of meningitis, may occur. These are only a few that may occur. In fact, there are very few symptoms that have not been present in one or more cases.

I will give the clinical histories of a few interesting cases, making them as brief as possible only outlining the principal points.

CASE I.—M. W., boy, aged twelve. Symptoms of indigestion with recurrent attacks of abdominal colic, vomiting, and fever every two or three months. Finally the condition was diagnosed as appendicitis of the catarrhal type. Operation was refused for some time, and then finally after a severe attack (acute exacerbation), an operation was consented to and the appendix which was removed showed a catarrhal and elongated condition; but after a brief period, the symptoms returned without fever and were attributed to adhesions until as one of these attacks was subsiding the patient passed a round worm about seven inches long. A vermifuge failed to bring any more and now several years have elapsed without any recurrence.

CASE II.—S. R., school girl aged twelve. The child was ill with symptoms of intestinal indigestion which progressed in spite of usual treatment. There was a continuous fever of from 100° to 103° F. I saw the child in consultation and confirmed the diagnosis. About a week later was called again to see the child who had grown progressively worse and in whom there had now developed the symptoms of headache, anorexia, pain in the muscles of the neck, inability to sleep, and she still had the continuous fever. On examination the only symptom found was a slight Kernig's sign. A Widal was taken and reported negative and it was then suggested to remove child to a hospital in order to make a better laboratory study. This was done. On admission, due to almost absolute rigidity of the muscles of back and neck and a fully developed Kernig's sign, a spinal puncture was made and proved absolutely normal. A leucocyte count showed 14,000 cells and another Widal was negative. About three days later I obtained the differential count which showed, if I recall correctly, fourteen per cent. eosinophiles and this gave us our first inkling of some reflex condition. Repeated examinations of the stools before and after using the various vermifuges failed to discover any parasites or ovals. The urine was negative. After about a week of this, and as a last resort, the child was given gas anesthesia and a piece of muscle from the thigh was removed and we were rewarded by finding trichina. The child made an absolute recovery in about three months.

After making our diagnosis it was accounted for in the following way. The family were religious Hebrews and when I put the question of pork to

the mother she absolutely denied ever having it, and then finally told me she had had pork in the house only once, one month before the onset of the illness because she thought it was healthy as her physician had advised her, I believe, during her convalescence from typhoid, to eat bacon and this was about the same. She also said, "Never again," and that she would abide by the Mosaic laws as she believed this was her punishment.

The first history that I will quote in detail is the history of myself. I was the first victim and the means of saving at least two other victims from the surgeon's knife.

About January, 1914, I began to suffer from pains in the left iliac region. These came on about two hours after eating and were accompanied and temporarily relieved by belching. My condition gradually grew worse and I began to lose weight. I diagnosed my own condition as nervous indigestion, put myself on a diet and medication with a little relief. About the end of July I sought other medical aid and was pleased when my diagnosis was confirmed, but I changed the treatment, eliminating all alcoholic beverages, coffee, and tobacco. After my vacation in August I felt better and by September was cured. The following April I had a recurrence, but of a more severe type. I again sought medical aid and was told my trouble returned because I had been overtaxed with work and had not continued the diet, I promptly put on harness again, struggled along until my August vacation, and returned feeling well.

About May, 1916, I had a very severe epigastric pain and pain in left iliac region, now relieved by eating. The condition was such that I purchased a lunch basket and carried it in my automobile and ate a sandwich about every one or two hours. I had more or less constant eructations, lost about twenty pounds, in spite of good appetite and regular bowel movements. The following month, June, in spite of treatment, I gradually grew worse, as I began to be bothered with insomnia and abdominal pains of such severe type that I could not sleep. The diagnosis was now changed to probably gastric or duodenal ulcer. There was an increase of free hydrochloric acid. The stools were examined and found normal. The blood showed ninety-three per cent. hemoglobin, 4,850,000 red blood cells, 6,700 white cells, and no increase of the eosinophiles. Then came July, the banner month. I was in an extremely poor condition. The pain was now more severe and more frequent. I was having nightly rectal spasms that could not be relieved by enemata or at times morphine, and I even used whiskey, so I had a medical man take up my condition with a surgeon and was thoroughly examined and told that the pain was not all on the right side, as a diagnosis of appendicitis would then be easy. Nevertheless, when he carefully examined me he thought he felt a mass in my left side and made me feel very comfortable when he, in an off hand way, asked me my age and whether I had ever passed blood in my stool. After the consultation they came to the conclusion that I should be examined by the x ray, as there was nothing else left to do before operating. I then put in ten days of

receiving bismuth enemata and taking a little by the mouth. I had from thirty to forty plates taken with a new diagnosis: diverticulitis of the descending colon and intestinal stasis. The surgeon did not want to do a resection of my colon unless absolutely necessary, as it would be very serious, and I was sent to the mountains to fatten up. I continued to grow worse and stayed away just four days instead of four weeks, and returned to face the music. I had stuffed myself with food, but continued to have constant pain in epigastrium and left iliac region and lose weight.

I returned on August 3d, and telephoned to the surgeon and made an appointment for the following day, but I did not keep that appointment, for on the following day after just three years of doctoring and suffering, I passed a segment of a tenia. Two days afterward I got rid of the remaining thirty-three feet of worm with the head and had immediate relief from all symptoms. Now over two years have passed without recurrence of any of the symptoms.

CASE IV.—During the time of my trouble, I had under my care a patient, A. L., aged thirty-six, in whom I had diagnosed a hyperacidity or ulcer, for he had the classical symptoms. I put him under treatment with varied results, for a time he became better, then worse. He was troubled with constipation and bleeding hemorrhoids, so I had these removed, but without benefit to his other conditions. I called a consultant who verified my diagnosis and suggested an operation for his ulcer. He had suffered for over four years. Two days after I had discovered my tape worm, and as our symptoms were somewhat similar, I gave him a tenicide with very gratifying results, for a little over four yards of tenia were passed and he had immediate relief from all of his symptoms. This patient had never passed any segments that he knew of.

CASE V.—I was called to see a physician's child, and, in the course of conversation, told him of my experience. He told me he intended to experiment on a patient with gastric ulcer with a tenicide on the strength of what I had told him. The history was as follows: Mrs. S., aged forty-four, had been treated by two physicians for six years for gastric ulcer. She had pain in the epigastrium, which was only relieved by eating; vomiting (occult blood), loss of weight, nervousness, and eructations. A surgeon was consulted and gave a diagnosis of carcinoma. Other medical advice was then sought, and my friend who gave me these data was called. She was treated by him for two years. He made a diagnosis of gastric ulcer, and had recommended operation and the patient had about consented when the experiment of the tenicide was tried. The result was the passing of a worm, a loss of symptoms and a gain in weight. These cases impressed me greatly and I spoke about the condition to several physicians and have since been told of two other cases, one in a pregnant woman, in whom the condition of gastric ulcer had been diagnosed and she had been treated for a long period for this condition which was cleared up by the use of a tenicide.

In going over the literature, I have been unable

to find any similar case. While I do not doubt that some have been reported, yet I could not find them. The same is true of the textbooks. There is comparatively little space given to the tenia and their symptoms, but, on the other hand, there are pages and pages given to gastric ulcer and hyperacidity, but no reference is made to the tenia in their differential diagnosis. With the experiences recorded I believe it is well to bear in mind the tenia in many of the long continued cases of gastric ulcer or hyperacidity that do not permanently respond to treatment.

1736 NORTH SIXTEENTH STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

THE PATHOGENESIS OF CANCER.

Cancer is a dyscytogenesis from local hypocytopoiesis and glandular dysentrophism. In other words, it is a malignant neoplasm characterized by the production of atypical cells resulting from a deficiency in the local nutrition and a disturbance in the entrophic secretions.

Gley classifies the glandular secretions into nutritive and morphonogenetic substances, or hormones, hormones and parhormones. But according to Maamé, there are some which must assure the function of the intimate nutrition of the gland, that is to say a relationship between cytopoiesis and cytolytic which will allow the gland to repair itself and thus retain its identity. These secretions are termed entrophic by Maamé. Each gland is subjected to the influence of its own secretion and of those derived from certain other glands, and he concludes that there are two types of glandular insufficiency, namely, a simple type to deficiency, and the second or more serious—a qualitative or *dysentrophic* type. If we accept Maamé's theory, there should be a double mechanism in the production of cancerous cells, whether cytopoiesis of an organ becomes lessened from a hereditary meio-pragia or on account of age, or from the effects of tobacco or syphilis in the cases of cancer of the tongue, etc. To this hypocytopoiesis corresponds an entrophic secretory disturbance—a glandular dysentrophy—from which a perverted metabolism results, atypical cells develop, and a cancer is produced.

In their paper on endocrine tumors, Gosset and Masson declare that on the first examination of the microscopic sections one would think the specimens are endocrine glands in a state of greater or less hyperplasia and not cancer, and that the regularity of the structure of the malignant growth gives it the histological aspects of glandular tissue. In a remarkable study on cancerous organogenesis, Letulle gives his opinion that this process admits the conformation of its metastatic superstructures as being derived from the normal cell type, but embryologically differentiated, from which are derived the embolic elements, so that in reality metastases represent the commencement of the development of organs. Leclerc and Masson (*Société de*

chirurgie, November 27, 1918) recently communicated the case of a goitre with metastases which had given rise to a costal growth in a rib on the left side and which after removal resulted in the patient's death from metastases in the spine. Histological examination of the costal neoplasm showed that it was an adenoma of the thyroid, intermediary between the fetal and colloid types. This observation has the value of an experiment in favor of the influence of an internal secretion, unquestionably somewhat changed in the present instance, on the generalization of a tumor which was histologically benign but assuredly beginning the process of malignancy. Masson's opinion, which seems logical, I think, may be accepted. He draws attention to the presence of the exceptional number of karyokinetic figures seen and perceives in this cytological character—in the absence of structural characters—an element of prognosis. Paté is of the opinion that such instances are merely a generalization of benign growths of the thyroid, but this opinion was offered some time ago so that its present value does not hold.

It might seem that these data confirm the supposition that there may be an affiliation between cancer and the internal secretions, although changed, of the endocrine glands. The cancerous isograft does not succeed but the hemograft does, although it is not always positive, so that the hypocytopoietic and dysentrophic predisposition should play its part. Zoological immunity is to be explained by the differences of the interglandular secretions peculiar to each kind, while the individual immunity is explained by the absence of glandular dysentrophy. Although a graft between mice has occasionally been successful, this simply denotes a receptivity belonging to a rudimentary glandular dysentrophy which can undergo an easy dysentrophy. In other words, in order that a cancerous graft shall be successful three conditions are necessary: 1, local hypocytopoiesis; 2, glandular dysentrophy, and 3, that the animal used for the graft shall offer the same interglandular reactions, that is to say that it shall belong to the same species.

Taine and Peyron (*Académie des Sciences*, July 29, 1918) reported a case of a carcinoma of the testicle in the rabbit, with a graft and generalization in the second generation. The animal was eight years old. Fragments of his tumor were grafted in the parenchyma of the testicle of six adult rabbits and subcutaneously in four young rabbits aged two months. A single graft was positive in the adult animals. This would appear to indicate that glandular atrophy and local cytopoiesis were weak in the latter, nevertheless this weakness was not pronounced because the evolution of the graft was very slow, as the animal was killed only at the end of two years and six months. The age (on account of use and hyperfunction), heredity, and sex played a fundamental part in the production of the cancer.

As a subject advances in years, the glands alterate and the cytopoiesis becomes weaker in the organs, and this is frequently according to hereditary predisposition. Women are more prone to cancer, especially of the uterus and breast, given

the hyperfunction that these organs are obliged to carry out from menstruation, pregnancy and nursing. Ménétrier's general law, according to which cancer becomes grafted more usually in tissues the seat of inflammation, applies in a remarkable degree to Maame's conception: in cancer arising in longstanding callous ulcers of the stomach and of the gallbladder when calculi are present, the gastric and gallbladder hypocytopoiesis must correspond with a glandular dysentrophy, and it is because of an absence of the latter that cancer does not develop in all patients with biliary calculi or gastric ulcer. De Massary has met with the case of a primary cancer of the liver in a young man twenty-five years of age, the histological examination being made by Ménétrier, which showed a cirrhosis of leucitic nature. Gilbert, Gougerot, Claude, and Jaboulay have mentioned cancrroid degeneration in burns. Jean Minet has reported a case of pancreatic lithiasis upon which cancer developed, and similar cases are common. Even the war has had its quota of cancer, because both Forgue and Bérard refer to traumatism as aggravating, accelerating or even giving rise to cancer, and Beclère declares that a simple wound may be the starting point of a malignant neoplasm.

All this means that there is a precancerous hypocytopoietic state governed by a more or less imminent glandular dysentrophy. The naevi are composed of cells in an incoordinate state, but they represent embryonal débris. Nevertheless they represent cells which are predisposed to ultimate canceration and are not merely predestined to malignant change, as Cohnheim maintained. The very interesting cases reported by Gougerot (*Paris Medical*, August 31, 1919) show that there are late naevi which can be explained by a local dyscytopoiesis. As to buccal leucoplasia, it may be regarded as a precancerous state, and I fancy that this is now generally admitted. As to the very interesting researches of Champy on the evolution of various tissues grown artificially by Carrel's method, this writer found that the cells returned to an indifferent state and cell division occurred in tissues which normally do not multiply. Both are characteristic of malignant growths, but if these tissues are regrafted in an animal the indifferent tissue rapidly retrogresses and proliferation does not take place. This disconcerted state of the cells is due to the fact that in the tissue growing artificially outside the body the glandular secretions are absent, therefore dyscytogenesis, and they exist in the animal receiving the graft, therefore the graft is absorbed. This also explains why Carrel has succeeded in growing cancer cells *in vitro*.

Everything seems to disprove any parasitic or bacterial theory of cancer and much tends to show that opotherapy has a brilliant future in the treatment of malignant disease.

Therapeutic Test in Relation to Wassermann Reaction.—Milian (*Presse médicale*, March 24, 1919) reports the case of a patient presenting no clinical signs of syphilis, but twice yielding a positive Wassermann reaction. Treatment with gray oil rendered the Wassermann negative. Such a therapeutic test is indicated in all analogous cases.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CXCV.—How do you treat burns? (Closed.)

CXCVI.—How do you treat infected wounds? (Answers due not later than July 16th.)

CXCVII.—How do you treat fracture of the femur? (Answers due not later than August 15th.)

CXCIII.—What is the proper equipment for a rural physician? (Answers due not later than September 16th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of \$25 for the best answer to Question CXCVI was awarded to Dr. Melville A. Hays, of New York, whose paper appeared in our issue for July 15th.

PRIZE QUESTION CXCV.

THERAPEUTIC USES OF ALCOHOL.

(Concluded from page 24.)

Dr. Russell J. Smith, of Pocatello, Ida., says:

Alcohol is an emergency drug easily administered, readily absorbed, and requiring no digestion. It is as a cardiac and respiratory stimulant that it has its greatest vogue and is only to be used for its immediate effects. When the primary effects wear off, it is secondarily a depressant. It is most beneficial when the attack for which it is prescribed is shortlived. In syncope, acute heart failure, asphyxia, collapse, in the depressive stages of the acute exanthems, in the early stage of congestion due to exposure, as in colds, it should be given in limited amounts for immediate effects and then other treatment instituted. In cases of unconsciousness or where the patient cannot swallow, alcohol may be given hypodermically. It is a diffusible stimulant and very readily absorbed under the skin. In fevers, it should be given in moderate doses well diluted to produce peripheral vasodilatation. If the action of the alcohol is favorable, the mouth and skin previously dry become moist, the restlessness is subdued, pulse and respiration improved. If there is not this result, alcohol is contraindicated.

Alcohol is sometimes used in insomnia for its hypnotic effect. The ease with which habit is formed renders its use here undesirable. It is beneficial in severe diabetes, reducing the amount of sugar, acetone, oxybutyric acid, and ammonia. Here it replaces the fats and carbohydrates. During convalescence from fevers, in debilitated states, it has some favorable action as a stimulant to the digestive processes in small doses. Externally it has a variety of uses. It is antiseptic and stimulating used after bathing. It prevents bedsores in patients confined to bed for long periods. It is a valuable agent in infected wounds, in insect stings, sprains, bruises, erysipelas, slight burns or suppurating burns, applied on several thicknesses of gauze. The following formula is good in inflammatory conditions applied on gauze left open for evaporation:

Morph. acetat.	gr. i
Liq. plumb. subacetat.	oz. i
Alcohol	q. s. ad oz. 4

Alcohol causes local dilatation of the bloodvessels and increased flow of blood current assisting in removal of products of inflammation. It is one of the best antiseptics for cleaning instruments where time is valuable. It has a slight anesthetic effect used locally and this effect shows in conditions of itching eruptions, in cracked nipples, in pruritus ani; it is astringent and has been long used as a gargle in tonsillitis and locally in hyperidrosis and sore feet. It is used to prepare the skin before operation and to sterilize the hands. In carbolic acid burns, alcohol applied immediately dissolves the acid. Internally, if used for this purpose, the stomach should be washed out with warm water or magnesium sulphate solution.

Alcohol has been used as an injection into the nerve in neuralgia of fifth, sciatic and other nerves with success. In coccygodynia, injected between the rectum and the coccyx, it has been successful. It has been recommended as an injection into cancerous tissue in inoperable cases, such as uterine cancer and cancer of the breast.

Children and the aged bear alcohol well. In marasmus of infants and insomnia of the aged, it is useful.

Dr. J. C. Densten, of Scranton, Pa., says:

"Old King Cole was a merry old soul,
And a merry old soul was he;
He called for his pipe, and he called for his bowl,
And he called for his fiddlers three."

King Cole, you will observe, has the adjective "old" modifying "king."

He was represented as being an "old" king, and yet he remained a "jolly old soul," and the inference is that it was his habit, and perhaps had been since middle life to, "call for his pipe," and "call for his bowl" at least once every twenty-four hours, and yet he lived and grew old, and was comparatively healthy, for no invalid could remain a "jolly old soul." From the earliest records of human life references may be observed to alcoholic fermentation, which early became a beverage. The human race has always craved stimulants, and especially those

living in the sunset of their life, or past the age of fifty.

Man cannot live without alcohol in his system. All the starches taken as food, split by a series of cleavage into alcohol (C_2H_5O); without this carbohydrate radical, the system cannot convert the protein (whether animal or vegetable nitrogen) into proteid or tissue building material and so growth of the animal would become stunted and ultimate death result.

Take for instance a diabetic patient. For some reason (which it is possible for the physician to discover) he cannot split the starches within his body further than the sugar and so is being deprived of carbohydrate radical (alcohol) which is absolutely necessary so the system may be furnished with heat and energy to convert the nitrogenous substances (fish, eggs, meat, and other substances) into tissue material. If this diabetic patient is not given alcohol, his fat (hydrocarbon) which contains the carbohydrate radical (CHO) will split into alcohol and he will live on his own fat until it is all consumed and then he will die. In order then to save the life of this individual we shall prescribe the elements of nutrition which are contained in alcohol.

The anabolic and catabolic processes of supply and waste cannot proceed in health without the carbohydrate radical alcohol.

Healthy young people, and even older people, do not need to partake of alcohol as long as they can split starches into their end product (alcohol). It is only when diseased or abnormal conditions arise which interfere with normal anabolic processes that alcohol becomes the only lifesaver. It often becomes absolutely necessary for the maintenance of health in the regimen of extreme old age.

Alcohol has its uses, so has fire and water. They also have their abuses. When used within reason they all three are indispensable to the comfort and wellbeing of animal life; abused they become demons of destruction and death, of discomfort and misery. Without alcohol the human race is doomed to a shorter cycle of existence, to an earlier death. Absolute prohibition of alcohol will drive the human race to become candy fiends. They will demand more sugar and sweets, for if they cannot get alcohol, which is an intermediary end product of starches (which first split into dextrin, then sugar, then alcohol) they will eat candy and sugar, which will split into alcohol, so satisfy the alcoholic craving, and thus remain boozers, having manufactured their own alcohol with very little enmity toward prohibition and its advocates.

Alcohol then when viewed from a scientific viewpoint of physiochemical therapeutics becomes essential to physical existence, endurance, and health. The therapeutic uses of alcohol are manifold and when applied in the true sense of therapy are a blessing. It is but a nature helper and it should be dispensed by the physician only, for in the dispensing from the saloons by those whose only aim is to sell as much as they can, this function is so abused that nothing but misery and crime result.

Why should we rush to extremes in anything? "Be temperate in all things," might well become the slogan for extremists. If we need alcohol in our

system to insure health and happiness as proved by physiochemical science, why not make provision which will provide this therapeutic physical necessity, and confine its dispensing to those who are capable of prescribing it only when there is absolute need.

Dr. James H. Donnelly, of Buffalo, N. Y., says:

In these days of social reform it is well for the physician to use discrimination and judgment in prescribing alcohol. No article mentioned in the pharmacopœia has received more attention than this remedy and many careful experiments and observations have been made. The experimental work of Clyde Brooks on the effect of alcohol on blood pressure and the pulse are valuable. On the other hand we have fifteen deductions which are the result of laboratory work showing that alcohol is not a food and giving the end results by comparison as proof. Opinions vary and we find that Gladstone, when he made an extraordinary oratorical effort, spoke with greater ease and less fatigue if he had previously taken a glass of wine or spirits.

Enumerating the points on which the majority of investigators are agreed: 1. The narcotic effect. 2. The dilatation of the superficial vessels. 3. The food value in protracted fevers. 4. The effect on diuresis. 5. That it causes perspiration by dilatation of the superficial vessels. 6. That in the same way it lowers body temperature. 7. That small doses may stimulate the ductless glands and temporarily increase the production of antibodies. 8. That diluted small doses may stimulate digestion but stronger and larger doses have the opposite effect. 9. That alcohol does not lower blood pressure if given in small amounts though the superficial bloodvessels are dilated. 10. Alcohol is an antiseptic hemostatic refrigerant when used externally.

In all internal treatments of protracted fevers it should be reserved for periods of extreme depression to tide the patient over a dangerous crisis. There is a vast difference in the way a patient reacts to alcoholic stimulation. Blackader, of McGill University, advises frequent small doses rather than larger doses at longer intervals. The absence of intoxication in fevers is no cause for larger doses; one to three teaspoonfuls every two to three hours should be the maximum dose unless collapse is evident when a large strong dose may be given hypodermically or by rectum. The adage is to watch by the bedside of your patient and if the pulse is slowed, strengthened, if sleep is affected, if there is less twitching, less delirium, if the skin, and tongue are more moist, if there is a more healthy glow to the face, then your alcohol is beneficial.

It is unwise to give alcohol in the beginning of infectious diseases because the resistance is lowered and the invading microbes are favored.

Alcohol has no place in the treatment of weakness in childhood or the anemia and chlorosis of adolescence. It never should be taken for the relief of sinking spells, depression, or any subjective symptoms even if they are accompanied by a weakened pulse.

In shock or collapse, especially in surgery, it acts as a narcotic, benumbing the sensory centres and thus lessening the shock. It relieves nervous symptoms and promotes better rest thus helping the heart. However, it should be employed if possible with the patient at rest in a horizontal position and accompanied by the application of heat.

Whether it is due to the psychic effect from the odor of the wine there is no doubt of the benefit, when used in atonic dyspepsia or anorexia due to physical or mental exhaustion. Caution is necessary where the condition is chronic or in the case of a neurotic patient, because of habit forming tendency. Rich red wines, malt extracts, and good ale are nutritive as well as stimulating during convalescence but the same precaution must be exercised. In the sleeplessness of old age a little spirits with hot water on going to bed promotes rest and in the advanced years of life is safer than opium or chloral. In arteriosclerosis it is unwise to prescribe alcohol as a vasodilator unless the patient is accustomed to its use, when it would be dangerous to stop its effects on the bloodvessels too suddenly.

Alcohol in large amounts is contraindicated in hemorrhage because of the vasodilator effect and a tendency to increase the bleeding.

In the initial stage of colds or la grippe a dose of whiskey combined with Dover's powder causes an increased peripheral circulation, thus relieving the local congestion. Same effect may be brought about with any hot drink and the Dover's powder.

Neubauer found alcohol of great service in severe diabetes. He used a wine containing ten per cent. alcohol allowing twelve to twenty-four ounces daily. He found a marked reduction in the output of sugar acetone and ammonia. It seems as though in using alcohol it benefits only the severe cases. Contraindications for its use are nephritis and all inflammatory conditions of the urinary passages, prolonged cardiac depression, marked gastric or intestinal irritation, tabes dorsalis, or any form of syphilis. Externally alcohol may be used in contusions, strained muscles, headache, neuritis, abscesses, and mastitis. In herpes zoster simplex alcohol applied on cotton and renewed gives great relief. For hardening cracked nipples alcohol is of great service.

Dr. Edward Huntington Williams, of Los Angeles, Cal.

What are the therapeutic uses of alcohol? This question may be answered concisely: Alcohol has no therapeutic uses. Or, at least, so said the House of Delegates of our great American Medical Association, sitting in solemn conclave two years ago. However, alcohol seems to be somewhat more potent among laymen. There are lay abnormalities, which may be referred to as "chromatic states," in which alcohol exerts sufficient functional effects so that even a physician may detect it.

Take, for example, that azure chromatic state which begins early in the morning of the second day of the week following the first day, and usually the result thereof. For relieving this condition there is probably no single remedy that equals alcohol when properly applied internally. I em-

phasize "properly applied," because in order to obtain the best results one must consider each case individually, particularly from a nationalistic standpoint. It would be bad therapeutics, for example, to treat this second day condition in a member of the Latin race in the same manner one would treat a native of the Emerald Isle, or a person indigenous to one of our own "arid" regions. The Latin should be given ten per cent. mixtures of alcohol well diluted. The Irishman will make a quicker convalescence if a forty or fifty per cent. mixture is given him straight. A Teuton, or at least that branch of the Teutonic race which may be characterized as wire haired or porcine, will make much better progress if given weak, dark brown mixtures, and if one has race betterment in mind during the treatment, the patient will be greatly improved if a few grains of arsenious acid are added to the mixture. None of these weak beverages, however, are effective in treating patients descended from Scandinavian stock. In these cases one must use sixty, seventy, or even eighty per cent. alcohol mixtures; these are usually highly satisfactory.

By far the most difficult cases to treat are residents of Maine or Kansas. Owing to the amphibious tendencies of these patients, no effect is produced by ordinary low velocity mixtures administered in the usual manner. I cannot speak from personal observation, but it has been suggested that the Murphy drip might be effective, using a flat trajectory alcoholic fulminant as the "drip."

To summarize briefly, then: 1, There are no therapeutic uses of alcohol; and, 2, it is of no importance, anyhow, since in a few fervid, super-saturated weeks there will be no alcohol in our great Utopia.

The So-called Solution of Mercury Benzoate for Hypodermic Injection.—E. Léger (*Bulletin de l'Académie de médecine*, April 15, 1919)

states that mercury benzoate, which is practically insoluble in water, can be brought into solution only by the addition of certain neutral salts, such as sodium chloride. Chemists have definitely shown, however, that in such a solution the mercury is no longer present as the benzoate, but as the bichloride, the two salts having reacted to form mercuric chloride and sodium benzoate. The amount of sodium chloride required to bring into solution one gram of mercury benzoate is .25 gram, and the amount of the resulting bichloride is .589 gram. Such a solution, however, when made with too grams of water, causes pain; but Gaucher found this drawback could be entirely overcome by increasing the amount of sodium chloride from .25 to 2.5 grams. This is perhaps due to the fact that solutions of bichloride which coagulate protein lose this property when sodium chloride is added. For over eighteen months, the following formula was used:

R	Hydrargyri chloridi corrosivi,	0.6 gram
	Sodii chloridi puri,	2.25 grams
	Sodii benzoatis,	0.7 gram
	Aque destillate,	q. s. ad 100.0 mls
	Fiat solutio.	

Editorial Notes and Comments

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NEW YORK, SATURDAY, JULY 12, 1919.

A GLIMPSE OF ELEVENTH CENTURY MEDICINE.

The good historian of nations or of medicine never looks upon that which makes history as transpiring in separate compartments either as to time or space. Yet such is the common way of thought. Certain movements, certain distinctive forms of thought or action, or of medical treatment and interest, are conceived of as belonging separately to a special time or a special belt of human population. Instead, the events and the slow unfolding of thought and experiment amid the ceaseless effort to live and to make good with life, all this which makes history is going on and has been going on without interruption since human life began. For this reason it need surprise no one that certain advance products of the eleventh century may foreshadow practices of the twentieth. On the other hand, such advance processes and interests may have mingled with them much that has since been shed as dross from their own or still older times. Indeed, not all of these have yet in the twentieth century become obsolete enough to be discarded.

We know ourselves better, therefore, and understand the workable value of the flux which lies in medical as in other thought by an occasional review of some current in the stream of time. Such a current seems to have made itself appreciable in the life of one Trotula de Ruggiero, honorable matron and sole woman physician of that period, who practised at Salerno. (Dr. Henri Leclerc; *Trotula et la coquetterie féminine au XIe siècle*,

Paris médicale.) The identity of this woman seems to be assured, though exact data concerning her name are not available. Certain references, however, to the wife of Jean Platearius the elder and the mother of two sons, one with the father's name, a woman who has cured a noble lady of a uterine disorder by a method of her own invention, seem to prove that this is the same Trotula whose work is mentioned again in a treatise of the thirteenth century. The writer of this work gives a picture of the treatment of the eleventh century and reveals an original type of therapy which escapes on one hand the tyrannical dogmas of the Galenic treatment and yet on the other hand avoids much of the superstition and barbarity of popular conception. There is a double interest in this therapy of which Trotula is the exponent, as it embodies the treatment of the diseases of women before, during, and after parturition as well as of the child, and at the same time pays marked attention to the improvement and embellishment of the body externally.

The remedies and lotions, recipes for which are given at length as written by Trotula, pertain to the bleaching of the hands and face, removing freckles, pustules and other defects, in making the hair soft and abundant, removing superfluous hair, rendering the mouth clean and the teeth clean and sound and purifying the breath. Altering the color of the hair was of course also not out of the province of this practical physician. The means used to accomplish these ends are many and varied. They make use of a variety of natural substances which the vegetable and mineral and animal world supply, and the minutely given directions lay stress upon the method of preparation and application. That these amid their obvious reasonableness all savor of animism and contagious or homeopathic magic, to use Sir J. G. Frazer's terms for the human thought and practice of long ages, is merely an indication that the learning and practice of this crude woman form one important manifestation of the current of such thought and practice as it moves on to greater perfection, unfolding, turning aside, experimenting, failing, succeeding as it goes.

Medicine may doubt the efficacy of the remedies prescribed, but it is interested in the means which have all the way along manifested the striving for certain ends, in the evident spirit of experiment which discovers and applies means at hand and still more in the fanciful movement of human thought which in all its poetic vagueness is so much greater and so much more extensive than merely definite

scientific means. This is the kind of poetry or phantasy dream which has constituted the principles of human magic and it is by this, throughout all the more definite measures of modern times, that humanity reserves and maintains sufficient interest in the prosaic means by which things are actually accomplished. The efficacy of the latter is largely accomplished through the psychic interest aroused. Today we scarcely advise goat's milk with agrimony for whitening the hair, nor for smoothing the face after childbirth an ointment prepared from the tarter of white wine, mixed with the urine of a child and heated on the ashes overnight and mixed with honey in the morning, but medicine has learned through such groping after ways and means. Perhaps through similar and only partially different practices and conceptions it passes on the torch to the future.

EYE DISEASES IN THE GENERAL PRACTICE OF MEDICINE.

Of all the specialties in medicine, do you believe that there is any other so utterly selfsufficient and so remote from the interests of general practitioners as that of the eye? If you do, you would have received a shock had you attended the meeting of the Ophthalmic Section of the American Medical Association at Atlantic City and heard the opposite proposition propounded, that of all the specialties the one most closely correlated to the general practice of medicine is that of the eye. To be sure eye men have long insisted that they could be of more help to the general practitioner than they generally are, and are often asked to speak before medical societies and tell how. Usually the hearers fail to obtain a great deal of benefit, as the remarks are apt to be rather superficial and not to delve deeply into the intimate connections talked of so freely. But several of the papers at the meeting were not of this nature, and might well have been presented before a mixed assemblage of practitioners devoted to various departments of medicine, not excluding the dentists, and including those of us whose interests are not limited to the vagaries of any one organ or set of organs.

The first paper on the list was read by an internist, who urged the need of coordinate action on the part of both ophthalmologist and internist in the study of neurotic patients, not only as regards the determination of certain symptoms and their bearing on diagnosis, but also in the formulation of treatment, even when a part of the treatment consisted of the fitting of glasses. Think of that. An internist so impressed by the effects of attention to the eyes upon patients under his care as to cause

him to appear before a body of eye doctors and plead for a greater degree of mutual help. Needless to say he was cordially received.

Similar in effect, though not confined to neurotic cases, was a paper on Group Study, a Necessity in Ophthalmic Research. Some of the sentences from this paper present the patient's point of view remarkably well. "People do not come to us in large numbers simply because they cannot see as well as they think they should, but they come to us because they are sick and expect us to help locate the source of their malady. They are justly impatient when, after having completed our examination of the eye, we consider our work as finished, whether we have aided them or not in arriving at such an understanding of their condition as will again restore their bodily health." Cooperation was again the keynote. It would not be wise, even were it possible, for the ophthalmologist to try to become versed equally well in all other branches of medical science, nor for the internist to try to master ophthalmology. Better for each to remain a master in his own line and for the two to combine their skill for the betterment of their patients. The same idea prevailed in the paper on Relation of Teeth, Tonsils, and Intestinal Toxemias to Diseases of the Eye, in the discussion of which an internist spoke of having cured large numbers of deep seated inflammations of the eye by means of treatment directed to the intestinal tract.

These papers were convincing and brought home the fact that affections of the eye are interwoven with those of almost if not quite every other organ in the body in a most complex and intricate way. The commonly held idea that the specialty of the eye is aloof from the other branches of the practice of medicine is absolutely wrong. There is no specialty more intimately concerned in the diagnosis, management, and treatment of diseases of other organs, and there is no organ more responsive to diseases elsewhere than the eye.

THE ROLE OF THE ELEMENTS IN NUTRITION.

At the meeting of the International Congress of Chemists held in New York ten or twelve years ago, a professor in an agricultural college directed attention to the important rôle played in plant life by minute quantities of elements whose presence was usually overlooked but without which the life functions of the plant could not proceed. The presence of a minute quantity of manganese was found to be essential to the development of an enzyme without which certain grains failed to develop.

We are now learning of the presence of elements

in foods, the presence of which has heretofore been ignored. The United States Department of Agriculture has been making a study of the subject and found zinc present in the ash of milk, egg yolk, peas, beans, yeast, corn, and wheat in proportions ranging from .06 to .38 per cent. while shucked oyster contained as much as 6.20 per cent. These studies by Birkner, Hiltner, and Wichman, the results of which appear in *The Journal of Biological Chemistry* for June, show that the zinc content of milk from individual cows varies materially and that the zinc content of human milk is markedly higher than that of cows in spite of the higher total ash content of the latter. The constant occurrence of zinc in the yolk of egg, and in both cows' milk and human milk lead to the inference that this particular element exerts an important nutritive function, the nature of which is not at present understood.

THE INDICATIONS FOR OPERATION IN BOWLEGS.

Regardless of the frequency of incurvation of the tibiae in children, operation is rarely resorted to for the correction of a rachitic deviation of the legs and there are several reasons why this is justified. The first, and most important, is that there are no marked functional disturbances even when there is considerable deformity and a child with bowlegs may walk almost as easily as his playmates. On the other hand, the incurvation may decrease with age. But there are deviations which persist, either because the process continues to progress or because the child is not treated; then surgical interference becomes imperative.

It is clear that an adolescent child who is constantly striking his legs together while walking should never be refused surgical aid and this does not signify that walking is totally impossible. It is enough that it be compromised and in all cases where the deformity is so pronounced that the entire body weight falls within or without the foot, operation is indicated. An operation for rachitic incurvation of the legs may be one of complaisance, resorted to purely from the esthetic viewpoint, but it must be said that we have arrived at an epoch of civilization in which beauty of form plays a considerable part in the human mind. There are many young people today who would have a better situation in the world if they had been favored by nature with straight and well formed lower limbs. It, therefore, seems rational to interfere surgically, in order to overcome these deformities because although they may not give rise to serious functional disturbance, they are the source of multiple vexations.

When should an operation be performed? In the first place it is to be noted that during the phase of softening one should abstain because a recurrence of the deformity is bound to occur. But it is during this phase, while the bone is still supple, that manual straightening will be found to be an excellent means for overcoming the deformity and, consequently, all attempts at premature operations should be carefully avoided. Cuneiform osteotomy, which is the operation of choice, should not be undertaken before the age of seven or eight and certainly never before the age of four when the rachitic process may have ended its evolution. After this age an intervention may be undertaken if the indications are marked.

Many surgeons have thought it necessary to describe a variety of bowed legs, to each of which they would apply a special form of treatment, but in practice this is of little value. All the deviations can be corrected by the same treatment applied in each case. However, the commonest types are a curve of the tibia with an anteroexternal convexity involving the entire diaphysis and where the fibula takes on the same deformity following that of the tibia. But let us not forget that in partial curving of the tibia with an anterointernal convexity limited to a portion only of the diaphysis the treatment is the same save for certain peculiarities governed by the anatomical arrangement of the parts. To correct the deformity osteotomy is preferable to osteoclasis which is a blind and uncertain procedure. Cuneiform osteotomy is the method of choice and it is neither as difficult nor as dangerous as some surgeons believe and it alone will give perfect results at the hands of any competent surgeon.

THE LESS COMMON SYMPTOMS OF CHRONIC APPENDICITIS.

The hepatic symptoms in chronic appendicitis consist of mild jaundice with, occasionally, some enlargement of the liver; the urine will be found to contain urobilin and altered biliary pigment. This catarrhal icterus is not uncommon in the chronic forms of appendicitis. In adults a number of observers have found a nephropsis in chronic processes in the appendix, but a number of competent surgeons look upon the renal condition as a mere coincidence and we are inclined to adopt this view. In some cases of chronic appendicitis a small amount of albumin may be present in the urine and this is not surprising when the frequent coexistence of tonsillitis and chronic appendicular inflammation is taken into consideration. In the female a chronic appendicitis not infrequently manifests itself by pelvic disturbances, particularly in the form of apyretic paroxysms of pain at the beginning of

each menstruation, or vomiting may be present instead. These menstrual symptoms may be so marked that the appendicitis is not suspected and the cause of the disturbance is vainly sought for in the uterus or annexa. By their grouping and intensity they form what is called the pelvic type of appendicitis.

But aside from the pelvic disturbances in the female which are not uncommon, there are other less well known pelvic symptoms. Such for example, is persistent vaginismus which is only relieved by removal of the appendix. Some instances of bladder disturbances have been recorded, such as frequent micturition, with or without pain, although at operation the bladder was not found involved in the inflammatory process in the appendix. Other instances of retention, incontinence or pollakiuria have been recorded due to reflex action from the inflamed appendix. The circulation may be disturbed in chronic appendicitis. There is paleness or flushing of the face, cold extremities, palpitation, shortness of breath, and even effort dyspnea. Examination of the heart is negative and only some cardiac crethism or anemia is found. In some patients a systolic bruit may be distinctly heard at the base or a continued blow with doubling of the sounds may be heard over the vessels of the neck. The pulse may be slow, fast, or irregular. It is not uncommon to note cough in certain other abdominal affections, but this symptom is unquestionably more common in chronic appendicitis. It may be a reflex cough from tonsillitis, or, as in uterine fibroids, it may be due to a congestion of the right base which will be revealed by auscultation in the pseudotuberculous types of chronic appendicitis. Or it may be in reality a particularly torpid pulmonary tuberculosis of the apex whose symptoms, without gravity, are somewhat exacerbated by the condition of the appendix. The cough in these circumstances may be accompanied by a slight degree of dyspnea.

REFERENCES.

A writer can often be judged by the references which he quotes. There is the author who gathers up (or has his assistant collect) all the literature bearing on the subject of his paper; he reads a little of it, perhaps, but most of his bibliography is added for the purpose of impressing the reader with his wonderful erudition. One can often see at a glance that the writer would have been foolish to have consulted half of the articles set down in his list. Then there is the writer who goes in more specifically (or with pretence to be more specific) and, taking his references from some author writing not long before on the same subject, gives not only his impressive list of "authorities" but the number and page of the journal in which they were pub-

lished. Alas, too often, when one looks up these sources they are not to be found, as the magazine or its number or page have (in the course of more than one such borrowing) become, through typographical blunders, sadly at fault. This troublesome little fraud is out.

Then there is the man who, standing on some lofty pinnacle (bluff would be a more appropriate word) of presumption, dashes off his little sayso with a kite tail of references following, some of which contain far more up to date material than he who has pretended to know their contents. This little superficiality happens but seldom, but it is not always unnoticed. It is unnecessary to add references to any work to show that it contains little that is new and original. There is nothing new under the sun and nothing really original. Everything grows out of what has preceded it, and it is refreshing not to be imposed upon by a bibliography which dates back much beyond the immediate forerunner of the contained statements of an article. Where quotations are made, however, they should be accredited with accuracy and where a bibliography is taken bodily from some previous source it is incumbent on him who borrows it to see that every title is correct and every volume and page accurate. His reputation rests upon it, for his sin, if he be much read, is sure to find him out.

Obituary.

NATHANIEL BOWDITCH POTTER, M. D.,
of Santa Barbara, Cal.

Dr. Nathaniel Bowditch Potter, formerly of New York, a noted writer on medical subjects and an authority on tuberculosis, died Saturday, July 5th, in Santa Barbara, Cal., of tuberculosis. He had been ill for several years and had gone to California in the hope of benefiting his health. Doctor Potter was born in Keesville, N. Y., in 1860. He was graduated from the College of the City of New York in 1888, from Harvard University in 1890 with the degree of A. B., and from the Harvard Medical School in 1896. Beside a wide practice, Doctor Potter had been professor of clinical medicine in the College of Physicians and Surgeons of Columbia University; visiting physician to the City Hospital, Hospital for Ruptured and Crippled, and the French Hospital; consulting physician to Central Islip State Hospital and the New York Throat, Nose and Lung Hospital, and chief of the medical department of St. Mark's Hospital. He had edited various medical books, including the first and second editions of Sahli's *Diagnosis* and the first and second editions of Ortner's *Therapeutics*, and he was a frequent contributor to medical publications, including the *NEW YORK MEDICAL JOURNAL*. Doctor Potter was a fellow of the New York Academy of Medicine, a member of the American Medical Association, New York County Medical Society, New York Pathological Society, Harvard Medical Society, the National Society for the Prevention of Tuberculosis, Officier de l'Instruction Publique, and Membre Correspondent de la Société Médicale des Hôpitaux de Paris.

CLEMENT A. PENROSE, M. D.,

Baltimore, Md.

Dr. Clement A. Penrose, one of the most eminent physicians of Maryland, died at his home in Baltimore on July 4th of blood poisoning contracted while he was in France before the war ended. He had been ill for several weeks. Doctor Penrose was born in 1874 and was graduated in 1897 from the medical department of Johns Hopkins University. While spending a number of years as a practicing physician he did much research work along scientific lines. During the war he made a study of food problems and their solution and was later commissioned to go to Europe for the purpose of studying food conditions in Allied countries and the living and sanitary conditions in the training camps. In recognition of his services he was given the rank of major and his work highly commended by the Federal Food Administration.

News Items.

Army Medical Men Decorated.—Major General Merritte W. Ireland, Surgeon General of the Army, and Brigadier General Francis A. Winter, commandant of the Army Medical School, have received the Order of Commander of the Legion of Honor from the French Government.

Seeking Illegal Practitioners.—The Medical Society of the County of New York is aiding the authorities in the apprehension of a number of persons who are said to be practising medicine on bogus diplomas. Nicholas Clements, who is serving a sentence of from two to five years in Dannemora Prison, admitted that he had sold fake diplomas to men who are now practising medicine and law. It is believed that as many as seventy-five men obtained credentials from Clements.

American-French Medical Relations.—It is reported that an organization has been formed at Paris for the purpose of establishing permanent relations between American and French physicians and surgeons. Several commissions have been appointed by the organization. One of these will have in charge the establishment of a course of teaching for American physicians visiting France, another the founding of a bureau of information, and a third commission will take up the means of organizing an exchange of articles on medical and surgical subjects between the journals of the United States and France.

A. M. A. Supports Public Health Movement.—At the recent meeting of the American Medical Association at Atlantic City, the Section in Preventive Medicine and Public Health adopted the following resolution:

Resolved, That the Section in Preventive Medicine and Public Health of the American Medical Association recommend to the House of Delegates that it ask the constituent associations to consider the advisability of such amendments to their by-laws and to those of this association as will eliminate from membership any physician who willfully fails or refuses to comply with local or State laws for the prevention of disease, especially the provisions in such laws requiring the reporting of cases of communicable disease.

Red Cross to Aid Troops on Mexican Border.

—All Red Cross canteens in New Mexico and at other points in the border territory are now preparing to give to the American forces there the same service given by the Red Cross during the troop movements on overseas service during 1917 and 1918.

Honorary Degree for Lieutenant Commander Bainbridge.

—At the annual commencement exercises of Coe College, Cedar Rapids, Ia., held on June 11th, the degree of LL. D. was conferred upon Lieutenant Commander William Seaman Bainbridge, Medical Corps, United States Naval Reserve Force. This was given *in absentia*, Doctor Bainbridge not being able to be present on account of his official duties in the navy.

Training for Army X Ray Work.—Training of officers and enlisted men of the Medical Corps in army x ray work will soon be concentrated at the Army Medical School in Washington under the section of röntgenology of the Office of the Surgeon General, says the *Army and Navy Journal*. Lieutenant Colonel Henry C. Pillsbury, Medical Corps, upon completion of special training he is now receiving in x ray work, will be appointed professor of röntgenology at the school.

Doctor French Honored.—The French Government has awarded the Legion of Honor to Dr. William J. French, of Washington, D. C., in appreciation of his work in the Children's Bureau which he established in Paris as a war relief measure. Under the direction of Doctor French, the American Red Cross, in conjunction with the Rockefeller Foundation, began several clinics, which were later increased to fifteen a week in accordance with the needs of the districts. Doctor French will soon return to the United States.

Suicides Increase in United States.—There were 2,000 suicides in the United States in the six months ending July 1st, according to a report issued by the Save-a-Life League of New York. Dr. Harry M. Warren is president of the organization whose main purpose is to prevent suicide. The report shows that suicide is increasing to an alarming extent, especially among children. During the last six months 175 children, ranging in age from ten to seventeen years, took their lives in the United States, seventy-one boys and 104 girls. The favorite methods among the boy suicides was shooting, while girls resorted in large numbers to the use of poison.

Medical Missionaries Wanted.—Army officers who wish to enter the foreign missionary field can find places without difficulty if they will apply to Colonel Arthur Woods, assistant to the Secretary of War, in charge of finding jobs for demobilized soldiers. Several church organizations have recently written to Colonel Woods, it is reported, asking particularly for physicians and men qualified as teachers. Service would be in Asia, Africa, or Latin America, and the salaries are from \$650 to \$800 for single men and \$1,000 to \$1,200 for married men, with quarters, medical attention, and travel allowances in addition. Men under thirty years of age are desired most and applicants must be of some Protestant Evangelical church.

Casualty Bureau of Red Cross Dropped.—The American Red Cross has discontinued its Casualty Bureau, which has given information regarding casualties and sickness among the troops of the American Expeditionary Forces, and this work has been undertaken by the Adjutant General's Office in Washington.

Distinguished Service Medal for Officers.—Major General Thomas H. Barry on July 2d decorated with the Distinguished Service Medal Major J. R. Culkin, Medical Corps, and Dr. Joseph A. Blake, of New York, who was surgeon in chief of the American Red Cross Military Hospital No. 2 at Paris during the war and who held the rank of colonel in the American Expeditionary Forces.

Reduction of Army Hospital Patients.—The number of patients in army hospitals from May 31st to June 21st decreased from 50,387 to 42,648, according to figures compiled by the Surgeon General. On June 21st there were 21,261 vacant beds in hospitals. The total bed capacity has been reduced from 76,920 to 63,909, and plans are being made for closing a number of hospitals within the next few months. Approximate dates are: Philadelphia, July 1st; Pittsburgh and East View, N. Y., July 15th; Cape May, N. J., July 20th; Fort Ontario, N. Y., Fort Douglas, Ariz., Fort Snelling, Minn., and Detroit, Mich., August 1st; New Haven, Conn., September 1st.

Allowance for Army Medical Personnel.—The Surgeon General's Office has issued tables of allowance of Medical Department personnel for duty at army camps, subject to future modification. They include all medical personnel except the camp surgeon. The figures are as follows:

No. of Men.	Personnel.
3,000	77
5,000	124
7,000	150
8,000	164
10,000	181
12,000	197
14,000	213
15,000	227
16,000	248

Memorial Hospital Project for Rheims.—The American Fund for French Wounded is raising funds for the erection of an American memorial hospital at Rheims. The building fund for the hospital has already been contributed by the New York, Chicago, and New England branches. The endowment fund is to take the form of beds endowed at \$6,000 each.

New York City's Hygienic School.—Public School No. 93, Queens Borough, New York's newest school building, is modeled on modern hygienic lines and embodies the latest improvements in height, light, and breadth of room. One of the outstanding features of its work is a daily morning inspection of pupils. The purpose of this is to inculcate habits of cleanliness, discover symptoms of illness and prevent contagion, and to establish close cooperation between the school medical inspection service and the class teacher for the benefit of the health of the children. Arms, hands, nails, teeth, face, neck, ears, and heads are carefully scrutinized, and cases of contagion are referred to the school doctor and nurse.

Britain to Retain War Health Measures.—It is reported that the medical examinations of recruits in Great Britain have disclosed such a poor standard of health that the present health insurance acts will be broadened as quickly as possible and a State medical service will be provided for every citizen. This regulation will become effective as soon as the necessary medical personnel has been obtained.

Personal.—Captain Samuel Goldman, Medical Corps, U. S. Army, has returned from abroad after having served for almost two years with the A. E. F. and B. E. F. and has opened his office at 1751 East Eighteenth street, Brooklyn, N. Y., for the practice of medicine, surgery, and electrical therapeutics. Doctor Goldman was attached to the British forces as medical officer to an infantry battalion and was decorated with the British Military Cross.

American Surgical Association.—Officers of the American Surgical Association elected at its 1919 meeting are: President, Dr. George E. Brewer, of New York; vice-presidents, Dr. John Fairbairn Binnie, of Kansas City, and Dr. Alexis Carrel, of New York; secretary, Dr. John H. Gibbon, of Philadelphia; treasurer, Dr. Charles Howard Peck, of New York; recorder, Dr. John H. Jopson, of Philadelphia; member of council, Dr. Lewis S. Pilcher, of Brooklyn. The next meeting will be held in St. Louis.

Public Health in Ohio.—The passage of the Hughes health district act insures an adequate health department, administered by a full time health commissioner, for every community in the State. A system of local health districts, each comprising a city of more than 25,000 population or a county area outside such cities, is set up by the new law, and a State subsidy up to a maximum of \$2,000 per annum is provided for each district. A staff of eight district supervisors will be maintained by the State Department of Health.

Institutional Children Compare Poorly with Homebred.—Two recent studies of the difference between institutional children and others have been made in Ohio and New Hampshire. In the former State only thirty-seven per cent. of institutional children were found to be mentally normal, and in the latter forty-nine per cent. As the children grow older the disparity becomes more marked. In the interpretation of the figures reasonable allowance has been made for the probability that many institutional children are the progeny of parents themselves unfit.

Legislation for Combating Venereal Disease.—Bills providing for appropriations for combating venereal disease have been passed in the following States, according to *Public Health Report*, of the United States Public Health Service:

Arizona \$4,500.00, Arkansas \$17,000.00, Delaware \$2,500.00, Maine \$8,000.00, Montana \$8,177.42, Nebraska \$25,925.50, New York \$55,000.00, North Dakota \$12,548.48, Oklahoma \$86,000.00, Oregon \$25,000.00, South Carolina \$10,000.00, South Dakota \$10,000.00, Texas (appropriation last year) \$45,000.00, Utah \$8,120.00, Washington (venereal disease control) \$25,000.00, Washington (for women's reformatory) \$150,000.00, West Virginia (annually), \$7,000.00, Wisconsin \$50,000.00, Wyoming \$4,000.00.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS RELATIVE TO THE PROPHYLAXIS AND TREATMENT OF INFLUENZA.

By LOUIS T. DE M. SÂJOURS, B. S., M. D.,
Philadelphia.

(Continued from vol. CIX, page 992.)

Comparative clinical trials of a number of different remedies in influenza have recently been reported by W. D. D. Small and W. O. Blanchard, 1919. Aconite, aspirin, sodium salicylate, belladonna, arsenic, quinine, Dover's powder, and gelsemium were each administered to a group of fifteen patients, and the relative progress of the several groups noted. In contrast to what might *a priori* have been expected, gelsemium appeared much more useful than any of the other agents, seemingly reducing the duration of the disease as well as affording early relief from discomfort. These observers even state that the contrast between the gelsemium group and the other groups of cases was so great that the patients treated with this drug could be picked from among the other patients without knowing that the remedy had been used. Belladonna also proved beneficial, and combined administration of it with gelsemium is therefore recommended. Regarding alcohol, these authors believe it to be definitely indicated in markedly toxic cases with marked tremor and circulatory impairment, brandy, whiskey, or champagne being given in doses of a half ounce every four hours. If such amounts fail and the desired effects do not seem forthcoming from any reasonable doses substitution of aromatic spirits of ammonia, one half to one dram, for the alcoholic preparations is advised. In patients showing signs of cardiac failure, Small and Blanchard found tincture of digitalis of value, but they did not observe any benefit from caffeine, strychnine, or adrenin.

A somewhat novel procedure, intended for the treatment of both influenza and its complications, is that described by Artault de Vevey, 1918, as lymphotherapy and hematotherapy. Fluid obtained by blistering the patient with a vesicant agent, or some of the patient's own blood, is reinjected intramuscularly. Experience with this treatment in forty-three cases showed that in uncomplicated cases the temperature regularly drops from 40° to 37° F. in ten or twelve hours after the injection, while in cases complicated with bronchopneumonia a similar reduction of temperature takes place within thirty-six or at the most, forty-eight hours. The treatment is stated to be applicable in all types of influenza, including the abdominal rheumatoid, nervous, and pulmonary forms. The series of forty-three cases included fourteen of bronchopneumonia—in six instances bilateral. Two patients died, and these had already been in an advanced tuberculous condition. In a few patients in whom the blistering process did not yield fluid sat-

isfactorily, ten to fifteen mils of blood were obtained from a vein with a syringe and immediately reinjected into muscular tissue. The therapeutic results from this modified procedure are stated to have been precisely like those obtained from the original measure, blistering and reinjection of fluid.

The question of pneumonia prophylaxis in influenza is one of paramount interest and importance in view of the disastrously high mortality attending this complication in certain epidemics. During the epidemic of the fall of 1918, in 12.1 per cent. out of 12,393 patients of influenza at Camp Pike, Arkansas, pneumonia developed, and of these thirty-one per cent. died. Only two patients in the entire series died with a diagnosis of uncomplicated influenza, and in these two no autopsy confirmation was obtained. Among the simpler measures for pneumonia prevention, early and complete rest in bed has been proved of great value by recent experience with the epidemic disease. Fantus, 1918, even states that in every case of pneumonia seen by him during the epidemic, its occurrence seemed due to inability or unwillingness of the patient to stay in bed long enough—apart from unusual handicaps such as organic heart disease, chronic bronchitis, and pregnancy. For pneumonia prevention Fantus also believes in the favoring of free expectoration by copious administration of fluid, sometimes in combination with sodium iodide.

According to L. Weiller, of Paris, 1918, creosote can be advantageously used as a pneumonia prophylactic. For four years he had been employing this drug in most acute pneumococcal affections of the lungs—except pleurisy—and had usually seen the temperature descend to normal in three days and recovery occur without cardiac complications. The creosote was administered, by rectal injection. At the beginning of the influenza epidemic he had occasion to test the curative properties of the measure in a few cases already complicated with pulmonary congestion, pneumonia, pleuropneumonia, or bronchopneumonia. Good results are asserted to have been obtained, and subsequently the procedure was utilized for prophylactic purposes. In the course of two months, over 200 patients presenting for several days a temperature above 39° C. were treated. Whenever a temperature exceeding 38.5° C. was noted, the rectal creosote injections were instituted and continued until defervescence. A distinct prophylactic influence against pneumonia is held to have been exerted by the drug, since in the series of over 200 severe cases pneumonia developed in two patients only, bronchopneumonia occurred in one, and pulmonary congestion in two. One of these patients, moreover, had left his bed too soon and another had received no food for twenty-four hours before the appearance of the bronchopneumonia. All of the

200 patients, including the five with lung complications, recovered.

The creosote treatment as applied by Weiller—following an original suggestion by Schoull—consisted in giving an injection of a glassful of tepid water in which about one drop of creosote per year of age every twelve hours in the case of children, or twenty-five to thirty drops altogether for adults. The mixture was well stirred before use, and recommendation made that the enema be retained over two hours. In the event of an actual pulmonary complication the amount of creosote was increased by two to five drops to the injection in children and by four to eight drops in adults. Experience showed again that the lung complications yielded rapidly to this treatment. The intervals between injections were augmented when the temperature returned to normal, but Weiller advises against complete cessation of the injections until after two days of apyrexia. He does not consider albuminuria—a frequent finding in pneumococcal disorders—to be a contraindication to the treatment. As auxiliary measures he gave a mixture containing ammonium acetate and ordered antiseptic treatment of the nasopharynx.

(To be continued.)

Salt Free and Bromide Treatment of Epilepsy

—C. Mirallié (*Bulletin de l'Académie de médecine*, April 1, 1919) points out that, to secure good results from this treatment, the diet must be entirely free from salt, though with this proviso all foods may be allowed. Epileptics are often especially fond of salt. The results are all the better the more salt the patient has been eating before the treatment is instituted. Suppression of salt renders the nerve cells more sensitive to the action of bromide, the dose of which has to be reduced to two or three grams a day; above this amount marked phenomena of physical and psychic depression are brought on, even in patients who have previously been taking six to eight grams of bromide a day. At the same time the nerve cells become more susceptible to excitant agents, such as alcohol. The author gives one gram of bromide morning and evening in a tumblerful of water. The results obtained took place irrespective of the age of the patient or the duration of the disease. Generally the seizures disappeared after the first few days of treatment. The diet must be continued at least four or five years, too early cessation often resulting in a return of the seizures. After a time the patients become thoroughly accustomed to the diet and can no longer tolerate the taste of food containing salt. Later the patient may, if he desires, return to a normal diet. Some have done this and have remained free of seizures for ten or twelve years. The salt free diet constitutes, indeed, the most essential part of the treatment; whereas the dose of bromide can be gradually diminished or the drug even stopped entirely, the diet must still be kept quite salt free for a long period. Of 161 patients, twenty were unimproved, forty-four showed diminished frequency or intensity of the seizures, while in ninety-seven, or sixty per cent., the seizures completely disappeared, in some instances at a period dating back twelve years.

The Treatment of Achylia Gastrica.—Horace

W. Soper (*Southern Medical Journal*, May, 1919) says that while the Ewald-Boas test breakfast may be used as a routine measure, no diagnosis of achylia gastrica can be made without the use of the fractional method. If it has been demonstrated in this way that hydrochloric acid and the pepsin and rennin enzymes are absent throughout the entire phase of digestion, and that no stomach mucus is present, a diagnosis of simple, true achylia may be made. The diet must be arranged to protect not only the gastric, but also the intestinal mucous membrane. The cellulose and connective tissue, as well as the gelatinous envelope of the starch grain, cannot be digested without the presence of hydrochloric acid in the gastric contents, and it is impossible to supply this deficiency in achylia. Hence these foods must be prepared in such a way that they can be taken care of by the small intestine. Hydrochloric acid is administered as a stimulant to the digestive hormones. Soper prefers to give the dilute acid in fifteen to twenty drop doses, well diluted, and taken slowly after meals. Every effort must be made to improve the appetite and to formulate a diet that is high in caloric value. Fats must be emulsified; those contained in meats, especially bacon, must be avoided. Butter and cream should be given freely. Starches must be finely comminuted. All meats should be boiled or broiled until they are thoroughly done, that the connective tissue may be gelatinized. Citric and lactic acids are powerful stimulants to pancreatic function, so fermented milk, orange juice, and grape fruit juice are important elements of the diet. Meat extracts should be given freely because of their stimulating effect upon the digestion and appetite. Careful and prolonged mastication will correct many errors in cooking.

When diarrhea is present it is usually corrected by appropriate diet and small doses of dilute hydrochloric acid. Constipation occurs in the majority of cases. When the colon is neither contracted nor atonic, a glass of strained orange juice on arising in the morning is usually very effective. In the atonic forms special attention must be given to abdominal supports, carefully planned exercise of the abdominal muscles, and the administration of finely ground agar agar. The spastic form of constipation may be corrected by enemata of six ounces of sterilized cottonseed oil given at bedtime and retained through the night, or, even more efficiently by direct local applications of magnesium sulphate to the spastic segments through the sigmoidoscope tube. Cathartics must be avoided.

The rules for treatment can be briefly summarized: Liberal diet as just outlined. Forced feeding must be resorted to in order to maintain a high degree of nutrition. The administration of small doses of hydrochloric acid in selected cases. The juices of the citric acid fruits, fermented milk and meat broths should form an important part of the dietary. Proper correction of constipation. Regular physical exercises. The prognosis is good in all cases of achylia, many attain very good health even though the acid never reappears. Chronic enteritis is a complication to be feared, inasmuch as the future health and life of the achylia patient depends on the integrity of the small intestine.

Treatment of Catarrhal Jaundice.—George F. Butler (*Medical Times*, May, 1919) says that in acute catarrhal jaundice the patient should be given at once a grain or two of calomel with a grain of ipecac in divided doses, followed in from four to six hours by a full dose of sodium phosphate. If the patient seems uncomfortably ill he should be put to bed, or remain in the house until the acute symptoms subside. The diet should be nonirritating to the liver and easily digested. Fats, highly seasoned foods, and alcohol should be excluded. After the first day or two the calomel and ipecac may be discontinued, but the saline should be administered daily until the bowels are freely open and show the presence of bile. Enemas of normal salt solution may be given. It is well also to administer some intestinal antiseptic, preferably the sulphocarbolates. Active cholagogues are usually contraindicated. Plenty of water should be drunk. Pruritus may be relieved sometimes by bathing the skin with a hot or cold solution of sodium bicarbonate, to which may be added, if necessary, a little carbolic acid. Alcohol and menthol diluted and other antipruritics may be tried.

The treatment of chronic catarrhal jaundice is similar to that of the acute form, save that more active intestinal antiseptics are needed. The main objects are to increase peristalsis, deodorize the stools, render the bowels as aseptic as possible, and to favor the emulsification and absorption of fats. Hot or cold compresses wrung out of water acidulated with nitrohydrochloric acid, or a weak solution of ammonium muriate, are of value. When there is much debility and anorexia, tonics, such as the arsenates of iron, quinine and strychnine, with nitrohydrochloric acid are of value. Should such medical treatment fail to give relief surgical measures are indicated.

Forcible Respiration in the Treatment of Paroxysmal Tachycardia.—Charles Fiessinger (*Bulletin de l'Académie de médecine*, April 15, 1919) notes that, while mention has frequently been made of slow, deep breathing as a serviceable therapeutic procedure in paroxysmal tachycardia, insufficient stress has been laid upon forcible respiratory effort by the patient as a necessary factor for satisfactory results. In a severe case of this affection, in which a pulse rate of 200 had been maintained for several days and the patient exhibited cyanosis and cold extremities and was apparently in a hopeless condition, deep inspirations followed by prolonged expirations, using Pescher's bottle apparatus, resulted in immediate recovery, the pulse rate dropping to seventy and the patient having no return of the trouble for six years. The author refers to another case in which the patient was regularly able to stop his attacks of paroxysmal tachycardia by running behind a moving automobile; subsequently, when he was no longer strong enough to do this, an asthmatic seizure would always bring relief from the tachycardia. Another patient, suffering from cardiorenal disease, had tachycardial seizures upon walking, but found that when he walked faster the seizures would stop. Recently a young woman of twenty-seven had paroxysmal tachycardia for twenty-four hours as a sequel to

influenza. Pressure on the eyeballs had no effect, but after repeated forcible breathing exercises the seizure suddenly came to an end. A month later, another seizure was arrested by three deep inspirations and prolonged expirations. Apparently any respiratory effort, provided it is kept up for a time, is capable of checking paroxysmal tachycardia. An important prerequisite at the time is that the patient should have enough strength left to execute the necessary forcible movements. For this reason the treatment should be instituted as early as possible in the individual case. Emetics are sometimes beneficial in paroxysmal tachycardia, but the forcible respirations are more advantageous, making less demand upon the patient's strength.

A Simple Treatment for Fractured Clavicle with Displacement.—Louis Senleq (*Paris médicale*, March 29, 1919) carries the patient's elbows behind the back, with the forearms flexed at right angles to the arms, and passes between the elbows and the back a bar or board thickly padded in its central portion and left thinner laterally. To hold this bar in position a broad bandage is passed around its central portion, then up like suspenders over the shoulders, diagonally across the chest anteriorly, underneath and around the forearm of the opposite side, then directly upward to the clavicle of the same side, where it is pinned to the previous turn over the shoulder. At night the patient remains in a half sitting posture, enough pillows being placed under the back to keep the elbows off the bed. At meals, the patient rests against the back of the chair, which holds the bar in place so that the arm of the uninjured side can be slipped out of its loop of bandage and used for taking food. The dressing is used for about three weeks. Forty-nine cases were treated by this method in a military hospital. In all instances firm union without angular deformity, appreciable shortening, or bulky callus was obtained, and no functional impairment of the affected limb followed. The apparatus was always readily borne by the patients. Some complained on the first two days of treatment, but became accustomed to the dressing. In no case was there difficulty from pressure on tissues.

Action of Antiseptic Condiments on the Infecting Properties of Oysters.—André Gigon and Charles Riehet, Jr. (*Presse médicale*, April 7, 1919) studied the effect of condiments on oysters harboring the typhoid or the A or B paratyphoid organism. In experiments on naturally or artificially contaminated oysters, addition of about ten drops of lemon juice to an oyster, with persistence of contact for about five minutes, was found to destroy eighty per cent. of the pathogenic bacteria. In the fluid of the oyster the ratio of destruction reached ninety-two per cent. Vinegar destroyed only forty per cent. of the organisms, and alcohol none at all, while white wine averaged eighty per cent. and in some instances destroyed ninety-nine per cent. Dilute hydrochloric acid as in the gastric juice, destroyed seventy-five per cent. of the pathogenic germs. In practice, these several antiseptic influences supplement one another and appear to play a certain rôle in the prevention of typhoid or paratyphoid infection from oysters.

Miscellany from Home and Foreign Journals

Thalamic Syndrome in Epidemic Encephalitis.

—Hubert S. Howe (*Neurological Bulletin*, May, 1919) reports an unusual exhibition of symptoms associated with thalamic lesions. Though the findings in this case are not entirely those of the thalamic syndrome, yet the main symptoms can be referred to this lesion and present much of interest in the study of this infrequent condition. The classical signs of such a lesion are unilateral. They are pain, anesthesia, deep and also frequently superficial, ataxia, astereognosis, and choreoathetoid movements. Hemiplegia, hemianopsia and disturbances of ocular movements and of the pupillary reflexes arise from involvement of neighboring areas.

This patient appeared to be a well nourished, middle aged man whose history was marked chiefly by his general health and activity and absence of all pathological facts or signs. He was subject, however, to headaches and was of a rather nervous temperament. For three months and a half he had suffered from trembling of the limbs and continuous sleeping. At the beginning of this time he had begun to be very irritable and nervous and a tremor manifested itself in his hands. A pain in his ears lasted for a week and was succeeded by severe headache which lasted only a few days. For three weeks he slept almost all the time, hardly rousing himself enough to take food. He talked during sleep but irrationally and was frequently irrational when aroused. His fever at this time was constant and sometimes as high as 104° F. There were no convulsions, there was no vomiting nor stiffness of the neck nor any muscular paralysis. He became apparently fairly well after this.

Two weeks, however, before the time of report the marked classical symptoms appeared. These were choreoathetoid movements of the left arm, burning, pricking sensations in the left extremities, weakness and involuntary movements of the left leg, ptosis of both eyes. Gradually ptosis lessened first in the right, then in the left eye and strength returned to the left leg and the choreoathetoid movements diminished in violence. The mental state, which had showed considerable disturbance, improved markedly. Dyesthesia and pain were present with this patient though no hemianesthesia was present during his hospital stay. There had been some moderate hyperesthesia to touch in the left arm and leg. There was ataxia of the left arm and leg and disturbance of the ocular movements and pupillary reactions. Reflexes were normal on the left, increased on the right with a positive Babinski and ankle clonus. The spinal fluid findings together with the history of prolonged somnolence, lethargy, and the various transient cranial nerve palsies evident, seemed to point clearly to epidemic encephalitis. The findings of the neurological examination confirm a diagnosis of lesion of the right optic thalamus, though involvement of other areas must be accepted to account for all the symptoms.

Influenza a Factor in Precipitating Latent Psychoses.

—A. F. Harris (*Boston Medical and Surgical Journal*, May 29, 1919) discusses eighteen patients, five male and thirteen female, who were admitted to the Worcester State Hospital during a period of five months, the direct cause of whose commitments has been attributed to a comparatively recent attack of influenza. None of these patients had an alcoholic or syphilitic history. No definite conclusions can be drawn from so small a series, but he thinks the following points rather striking and worthy of consideration: 1. Influenza does initiate latent psychoses and in a certain number of instances instigates them. 2. There is no relation between the severity of the attack of influenza and the psychoses, but the latter may follow mild as well as severe cases. 3. While the symptoms develop in most cases in less than two weeks following the febrile period, they may not be apparent for three months. 4. Delusions and hallucinations were the most common symptoms in this series, being present in ten of the seventeen cases. Depression was the most pronounced symptom in only three cases, while excitement and destructive tendencies were present in fourteen. 5. While any form of psychoses may result, dementia præcox was the most common in this series, eight of the seventeen cases presenting this picture. The average age of the patients diagnosed as such was twenty-seven years. 6. There is a possibility of an organic basis in some cases for the picture of dementia præcox.

Meningitis in Influenza.—Capitan (*Bulletin de l'Académie de médecine*, April 15, 1919)

was struck, from the outset of the influenza epidemic, by the frequency, or even the constant presence, of meningeal manifestations in all severe cases of the disease. Some cases were actually admitted for epidemic cerebrospinal meningitis that were merely influenza patients. With few exceptions, in all severe cases of influenza there are marked neck rigidity, a pronounced Kernig sign, violent occipital or frontal headache, frequently cerebral disturbances such as delirium, sometimes slowness or irregularity of the pulse or central dyspnea, occasionally dysphagia, vomiting, myosis, anisocoria, or strabismus. In two instances there was sudden death, probably of bulbar origin. These meningeal symptoms occurred in patients who recovered as well as among those who succumbed. Pathological examination accounted for all the phenomena witnessed. The convexity of the brain showed little except vascular congestion; but at the base there was found a thin pseudomembrane, in one or several layers, extending from the pons to the chiasm, even covering the optic nerves, and resting laterally upon the parietes of the lateral ventricles. From the margins of this membrane numerous thin filaments passed to the vessels, even as far as to a point below the medulla. There was no trace of exudate along the vessels themselves, as in cerebrospinal meningitis or pneumonic infection. The brain tissue showed an extreme congestion and

some softening of the cerebral substance. From this pseudomembranous condition there were all gradations down to a few filaments extending from the base of the brain to the vessels. Such changes were found even in two cases of moderate severity in which the patients had died suddenly without previous meningeal symptoms. The false membrane nearly always showed pneumococci and other unidentified bacteria, but some did not contain any at all. The organisms were always the same as those occurring in the congested, friable viscera. The cerebrospinal fluid was always abundant, but never contained germs. The acute meningeal involvement in influenza may probably result in permanent pathological changes. As regards treatment, Capitan found that by giving daily intravenous injections of six mils each of very pure colloidal arsenic and colloidal silver, nearly two thirds of the desperate cases of influenza can be cured.

Role of the Sympathetic Nervous System in Disease.—W. Langdon Brown (*Lancet*, May 31, 1919) discusses the relation between the sympathetic nervous system and glycosuria and diabetes and concludes that underaction of the pancreas or overaction of the adrenals, thyroid, or pituitary can all lead to glycosuria without evidence of disease of any one of the glands. The disturbance of balance between these several glands may be brought about through the sympathetic nervous system, and the following have been established as facts: Sympathetic stimulation increases blood sugar as a defensive measure; sympathetic stimulation causes increased secretion of the adrenals, the thyroid and the pituitary; vagus stimulation increases the secretion of the pancreas, and it appears probable that sympathetic stimulation inhibits pancreatic secretion, but the antagonism between its internal and external secretions does not mean antagonistic nerve supply, but a diversion of nerve energy from one channel to another; the general effect of sympathetic stimulation is catabolic, mobilization of blood sugar being part of the preparation for catabolic action; sympathetic stimulation, therefore, by increasing the activity of the glands which diminish carbohydrate tolerance and by inhibiting the action of the gland which increases carbohydrate tolerance raises the blood sugar above the renal leak-point and produces glycosuria. The failure of assimilation of ingested carbohydrate due to the defective action of the pancreatic internal secretion would produce a far more profound disturbance of carbohydrate metabolism than increased action of the glands, which merely increase sugar mobilization because the action of the latter is limited to the stored carbohydrate. This is in agreement with the fact that pituitary and thyroid glycosuria are more amenable to control than that due to frank pancreatic disease. The following is suggested as the most reasonable classification of persistent glycosuria: 1. Of organic origin, with structural changes in the endocrine glands leading to overaction of the adrenal, thyroid, or pituitary, or to underaction of the pancreas. 2. Of sympathetic origin, without evidence of structural changes in the endocrine glands, but due to functional overaction of the thy-

roid, adrenals, or pituitary, or functional underaction of the pancreas. Such a classification makes spontaneous diabetes a disease of the sympathetic nervous system. The final conclusion reached is that diabetes is due to deficiency of the pancreatic amboceptor, which deficiency may depend upon structural changes in the pancreas, or upon inhibitory action of the sympathetic on its internal secretion, and this effect may be increased by sympathetic stimulation of other endocrine glands further diminishing the power of carbohydrate assimilation.

War Neuroses.—Charles D. Humes (*Journal of the Indiana State Medical Association*, May 15, 1919) says that war neuroses are defense reactions commonly engrafted on a neurotic tendency. Shell shock is a war word enjoying no distinction truly its own and is not to be confused with the *commotio cerebri* so ably described by Marie and his French colleagues. Psychic reactions without motor disturbance were the rule among officers. The functional disturbances, aphonia, deafness, tremor, paralysis, largely obtained with the enlisted men and with only one exception in the author's experience associated with shot or shell wounds. The tendency toward neuroses, especially the acquired war neuroses, rapidly decreased as the army became combative. The success of correction lay in making the entire process of recovery satisfactory to the patient. It was the constant rule to relieve the patient from any morbid introspection and never refer to the disqualification which brought him into the neuropsychiatric department. The human element was more necessary in correcting and controlling these affections under war conditions than obtained in our regular private practice.

Acute Encephalomyelitis.—J. B. Cleland and Alfred W. Campbell (*British Medical Journal*, May 31, 1919) observed two sharply localized epidemics of a form of encephalomyelitis occurring in the summers of 1917 and 1918 in certain parts of Queensland and Victoria. They conducted extensive investigations upon this disease and have summarized their results in the present communication. The disease occurred in localized epidemics which were confined to certain dry interior parts of the country. The disease was acute and severe, often with an abrupt onset, and was fatal in seventy per cent. of the cases. It affected children mainly, but did not spare adults, and was characterized by the general signs of cerebrospinal irritation, such as rigidity, convulsions, increased reflex excitability, mental obfuscation, and coma, accompanied by fever and gastrointestinal disturbances. It either terminated in death by exhaustion and coma in a few days, or in rapid recovery, which was generally complete, though some flaccid paralyses occasionally remained. Histological examination of the nervous system in sixteen cases showed a universally distributed acute encephalomyelitis with multiple minute congestions and capillary hemorrhages, especially marked in the gray matter owing to its greater vascularity. The veins in the nervous tissues were sleeved with a deposit of round cells, and islands of these cells were often present. The disease was successfully

transmitted to monkeys, sheep, horses, and calves, and was kept active for many generations by passage from monkey to monkey. The lesions in these animals were typical of those found in human cases. The virus was apparently a filter passer and was not the same as that of poliomyelitis, as shown by its failure to infect dogs and by the susceptibility to it of sheep, horses, and calves. It is suggested that it may be a mutant, however, of the same virus which causes poliomyelitis.

Mild Bacillary Dysentery.—John Ryle (*Lancet*, May 31, 1919) encountered a considerable number of cases of mild bacillary dysentery, amounting to about one fifth of all the cases which would have been classed as simple diarrheas on cursory examination. The bacillary dysentery cases fell into three groups: 1, Cases with blood and mucus, called "clinically positive"; 2, cases without blood and mucus but with other suggestive features, called "clinically suspect"; 3, the "clinically negative" cases. Routine bacteriological examinations were made of swabs taken directly from the rectum of each patient. The diagnostic features of these cases of mild bacillary dysentery include: Low initial fever, seldom over 102° F., with rapid fall to normal; occasionally an irregular evening temperature for a few days; slight continued diarrhea, often associated with griping pains in spite of routine treatment, or a recurrence of diarrhea; early frequency and urgency of going to stool; slight pallor with a worried and anxious expression; redness and laxity about the anal orifice. It is important to recognize the dysenteric infection in such cases as the lack of recognition permits the men to be mixed with nondysenterics and to become a source of danger.

Hypothrepsia in French Prisoners Returning from Germany.—Charles Richet, Jr., and M. Mignard (*Bulletin de l'Académie de médecine*, April 15, 1919) observed among French prisoners released or escaping from Germany and returning to France through Belgium on foot, a number of signs and symptoms unknown in the adult in normal times. The most manifest feature was emaciation, accompanied by a true muscular atrophy involving especially the pectoral, intercostal, supraspinatus, and abdominal muscles; as a result of the abdominal muscular impairment, the belly became large and flaccid, and the general aspect suggested rickets. Diarrhea was a constant accompaniment, with four or five reddish brown liquid stools a day, without alternating constipation but with marked fermentation. Very frequently the liver was enlarged, extending below the costal margin. There was no apparent gastric disturbance, the appetite being not only retained but increased. Anemia was the rule, evidenced not only by pallor of the skin and mucous membranes, but by an erythrocytic count reduced from 4,500,000 to 3,100,000, with slight leucopenia. Infectious skin lesions such as furunculosis, ecthyma, and ulcerations, were usually present, generally following pediculosis. Melanoderma, involving the face and hands as well as the covered surfaces, was sometimes present. Some patients showed definite swelling of the

phalangeal joints, and in a few the malleoli were particularly prominent. Most of the men were bradycardial, with a pulse rate of but fifty or sixty, dicrotism, and sometimes irregularities of rhythm. The blood pressure was low—systolic generally about 110 millimetres and diastolic seventy to seventy-five. Frequently the white line phenomenon was noted. Many of the men had frequent urination, rising six or seven times at night during their captivity; later this symptom rapidly passed off. Direct muscular reflex activity was increased, but certain of the tendon reflexes were reduced; the anterior chest muscles showed fibrillation. The mental state was one of irritable asthenia, with a tendency to somnolence and nightmares during the period of low alimentation. These various disturbances improved rapidly under dietetic treatment, but the digestive difficulties reappeared whenever an excess of food was taken. The diet during captivity had consisted essentially of cellulose more or less macerated in water, being derived from rutabaga, beets, fermented cabbage, and bread containing an excess of bran. The maximal intake in calories was theoretically 2,050, but in practice even this low quantum was never reached. The diarrhea and enlarged liver depended not only on insufficiency, but also on bad quality of the food. Where there is merely insufficiency of food diarrhea appears only in the terminal stage and the liver atrophies instead of enlarging.

Sterilizing Action of Formaldehyde Vapor.—Barthélemy and G. Gross (*Bulletin de l'Académie de médecine*, April 8, 1919) refer to the marked extent to which formaldehyde sterilization was employed in war surgery. They report laboratory experiments tending to justify the increasing confidence placed in this method. Filter paper was impregnated with various germs and then subjected to formaldehyde vapor either for twenty-four hours at room temperature or for three quarters of an hour at 40° C. The germs used were the staphylococcus aureus, the diphtheria and the typhoid bacillus, anthrax and subtilis spores, and dried tuberculous sputum. At the higher temperature all the germs were killed by the formaldehyde, but at ordinary temperatures the spores were not destroyed, and the tuberculous sputum induced in one month in guineapigs characteristic lymphatic enlargements containing caseous pus and yielding typical tubercle bacilli. In spite of the authors' extended experience with formaldehyde sterilization at ordinary temperature, which procedure they found efficacious for uninfected articles, they believe it should be given up in favor of the 40° C. method, which saves much time and is no more destructive to perishable materials than the first procedure. The following prerequisites are indispensable for successful results: The articles should not be placed in the sterilizer until thoroughly cleansed, freed of fatty material, and dried. Space for diffusion of the vapor between them should be allowed. An airtight sterilizer should be employed. Trioxymethylene, if employed, should be used only in the powder form. Formaldehyde sterilization constitutes an efficient substitute for the steam autoclave where the latter is often unavailable.

The Physiology of Endogenous Uric Acid.—

H. F. Host (*Journal of Biological Chemistry*, May, 1919) has determined the uric acid in the urine and blood of fifteen convalescents and patients who had never had symptoms of gout. Observations on two normal individuals were also made, which are reported in detail. The nitrogen excretion and hydrogen ion concentration of the urine was determined, and these were found not to exert an influence on the endogenous uric acid output; an increase in body temperature effected a considerable rise in the uric acid excretion. The output of endogenous uric acid in twenty-four hours varied from .99 gram in a normal person on an extensive bread diet to .27 gram. The endogenous uric acid in the blood varied from .5 to 2.68 grams per 100 c. c. This, however, was constant for each individual within the limit of error of the method used (ten per cent.). In over one half of the subjects the uric acid concentration was between .01 and .02 gram to 100 c. c. of blood. However, the uric acid output in the seventeen subjects for twenty-four hours was very irregular, in some of the patients showing variations from day to day of eighty per cent. On a fixed diet and under similar conditions in a few cases the uric acid excretion was constant, but even in these patients variations in the diet played an important rôle. It was found that every variation in the caloric value of the food, beyond a certain minimum, whether it was an increase or a decrease in the protein, fat, or carbohydrate, exerted an influence on the uric acid excretion; the change was greater when the amount of calories was varied by means of protein than by changing the nitrogen free foodstuffs. When the food caloric value was constant the uric acid excretion depended largely on the food protein, so that changes beyond a certain minimum produced corresponding changes in the uric acid excretion.

Myocardial Hydrothorax.—A. G. Brown, Jr. (*Virginia Medical Monthly*, April, 1919) states that hydrothorax complicating the terminal stage of cardiac disease is more frequent than practitioners usually observe. It rarely exists to any extent without producing serious ill effects upon the already impaired myocardium. Dyspnea and cough, accompanied by evidences of cardiac dilatation, give reason for believing hydrothorax exists. Watching for these symptoms enabled the author to find and relieve hydrops where it had not previously been suspected. The positive diagnosis depends upon percussion and auscultation. Dullness and diminished vocal fremitus indicate the presence of at least 400 mls of fluid. The dullness in hydrothorax is variable. It is usually more marked on the right side, and changes easily with altered posture, though in some instances one should allow a short period of time to elapse before the second percussion. A mere slight change from the normal auscultatory signs and a modified percussion note should not be a cause of delay in aspiration. Auscultation of these patients shows diminished breath sounds and voice sounds over the dull areas. Bronchial breathing and increased pulmonary sounds are observed above the boundaries of the fluid, and frequently also, especially where renal complications exist, moist

râles—evidence of pulmonary edema. Few, if any, of the possible errors attending aspiration of an inflamed pleural sac can occur in hydrothorax. External thoracic edema, however, may demand a needle rather longer than usual. With the patient sitting erect, the examiner, by pressing in the axillary line over the intercostal spaces—about the fifth to the seventh—and entering just above a rib, may enter the pleural sac without causing much pain. The cardiac evidences in these cases are those of failing compensation, with diffuse cardiac impulse, displaced and weak apex beat, venous pulse, cyanosis, weak irregular pulse, and low blood pressure. The author reports cases in which aspiration was repeatedly applied. In the first, it was practised 100 times, with removal of an aggregate of 91,875 mls, or 23.9 gallons, of fluid.

Results in Fracture Cases Treated in Germany.

—A. Bréchet and R. Massart (*Bulletin de l'Académie de médecine*, April 1, 1919) write concerning the unfavorable end results seen among French wounded returning from Germany, due to careless treatment by their captors. Thigh fractures in particular all exhibited a bulky, infected, and still suppurating callus. Angular deformity in these cases was often marked because of poor immobilization or absence of it, without application of extension. All these patients had been wounded in 1918, i. e., at a time when, in virtue of new methods adopted in France since 1915, open thigh fractures ordinarily healed without osteitis of the bone fragments or sinus formation, and with a minimal degree of shortening. Each of eleven patients showed osteitis, irregular callus, and shortening ranging from five to ten centimetres, and none had a limb serviceable for locomotion.

The Effect of Different Bloods on the Growth of *Bacillus Influenzæ*.—T. M. Rivers (*Bulletin of the Johns Hopkins Hospital*, May, 1919) found that when either cat or rabbit blood agar is used the growth of the influenza bacillus is luxuriant, the colonies being well separated, large, and slightly opaque. The growth on human blood agar appears very slowly, and after forty-eight hours is only seen with difficulty. The organism also grows well on the Avery medium and on chocolate blood agar. It is very rare that obligate symbiosis appears on cat and rabbit blood agar, or on chocolate agar if the medium is well prepared. The more common occurrence of the symbiotic relationship on human blood agar may be due to the inhibitory effect of the blood which is removed by heating or by the growth of other bacteria. Studies of defibrinated human blood, normal human serum, defibrinated rabbit blood, normal rabbit serum, and normal guineapig serum showed that the human blood and serum are very bactericidal for the strains of *Bacillus influenzae* as compared with the blood and serum of rabbits and guineapigs. Attempts to reactivate the inactivated human serum with rabbit and guineapig serum (since they do not inhibit the growth of the influenza bacillus to any extent) met with success a number of times. Inactivated human serum, though less bactericidal than normal serum, kills the organism in from twelve to twenty-four hours.

Improved Method for Estimation of Sugar in Blood and Urine.—P. J. Cammidge (*Lancet*, May 31, 1919) says that the volumetric method which he described previously has proved to be highly accurate, but that when very small amounts of sugar are suspected—less than half of one per cent.—the test should be modified by boiling the water to which the iodine is to be added in order to drive off the air. The alkaline copper solution should also be freshly boiled in a small conical flask bearing a loose funnel as a stopper. The copper solution should then be run into the boiling solution which is to be tested. When blood and other fluids, except urine, are to be tested the filtrate and sodium carbonate solution should be boiled together and the modified Benedict solution added just after they have been boiled. These modifications make the results of the test trustworthy even with the very small amounts of sugar present in normal urine and blood.

Two Outbreaks of Mild Dysentery.—W. Broughton-Alcock (*British Medical Journal*, May 31, 1919) describes two outbreaks of mild dysentery among troops, both of which were due to intestinal intoxication as the result of the proliferation of the Schmitz bacillus. The disease was not only mild, but it ran a short course, was followed by rapid recovery, caused no deaths, and when the patients had convalesced they no longer harbored the bacillus in their stools. The Schmitz bacillus was not found in the stools from any patient who had not a history of dysenteric symptoms, nor in normal stools. The suggestion is made that infection by this organism is a common cause of localized epidemics of mild dysentery in subtropical regions.

Rapid Method for the Estimation of Urea in Urine.—James B. Sumner (*Journal of Biological Chemistry*, May, 1919) reports a method which apparently compares favorably with the Marshall-VanSlyke-Cullen aeration method. It has the advantage of being rapid, accurate, and simple. The method consists in treating one c. c. of urine in a centrifuge tube with an approximately neutral phosphate solution and with urease prepared from finely ground jack bean powder. After the urea has been decomposed, an acidified potassiummercuric iodide precipitant is added, the tube centrifuged, and an aliquot of the clear supernatant liquid is nesslerized and compared with a standard. Directions for preparing the reagents and carrying out the work are given in detail.

Digestibility of Bacon.—Katherine Blunt and Marguerite G. Mallon (*Journal of Biological Chemistry*, May, 1919) performed experiments to test the accuracy of Rubner's statement that bacon fat showed a low utilization, 17.4 per cent. of the fat eaten being lost in the feces. Their work was not in accord with this, as they found that bacon fat was about as digestible as other soft fat, and that the nitrogen is also as well digested as that of other meat. The average percentage of digestion of the fat of slightly cooked bacon was 66.3, and of much cooked bacon ninety-seven, while the average percentage of utilization was respectively 92.8 and ninety-five.

An Electromyographic Study of Chorea.—Stanley Cobb (*Bulletin of the Johns Hopkins Hospital*, February, 1919) describes a series of electromyographic studies in which the following cases of muscular contraction were observed: normal voluntary contractions, voluntary contractions affected by chorea, and involuntary choreic contractions. The action current pictures for voluntary and for choreic movement are similar, except for their duration, voluntary contractions being maintained for a longer period. The electromyogram shows the inability of the patient to maintain voluntary contraction, and the weakness of muscular contraction is shown by the lessened electrical discharge.

Etiology of Chorea.—George F. Stevens (*American Medicine*, April, 1919) objects to the use of the term "infectious" as applied to chorea. The principal feature of the disease is a disturbance of motility, the chief manifestation of the condition in children between five and fifteen; the disturbances are spontaneous or of coordination. These motile disturbances are most commonly manifested either as movements of the upper extremities or of the head or face. Stevens suggests that the principal predisposing cause of the typical form of chorea is found in the unsymmetrical development of different parts of the cerebrum, and an absence of exact conformity of growth of the cranium, especially at its anterior portion, inducing a slight pressure upon the cerebrum at a point or at points controlling the movements which are involved in the choreic disturbances.

Medical Empiricism and the Pathology of Chronic Head and Throat Infections.—O. C. Breitenbach (*Journal of the Indiana State Medical Association*, May 15, 1919) makes these statements: 1. Chronic throat and head infections are frequently met with clinically. 2. Strains of streptococci are intimately associated with the pathology of chronic head and throat infections. 3. Transmutability and special selective affinity of the streptococcus pneumococcus group establishes the pathology of many systemic diseases. 4. Eradication of primary foci in the head and throat harboring streptococci may be a direct factor in reestablishing normal tissue function. 5. Rational therapy demands an intimate working knowledge of the phenomena that we associate with the pathology and bacteriology of chronic head and throat infections.

Variations in the Results of Successive Wassermann Tests.—C. H. Browning and E. L. Kenaway (*Lancet*, May 10, 1919) find that when the same serum is repeatedly examined by a carefully controlled technic the actual amounts of complement fixed vary greatly on different occasions; that these variations are quite irregular; and that they depend upon factors which cannot at present be made constant. No clinical significance, therefore, can be attached to the occurrence of minor variations in the degree of positiveness of the Wassermann reaction of the same serum at different times. The criterion of positiveness or negativeness of a serum should be determined by the amount of complement fixed, relative to the amount fixed by a known negative serum, and not by the absolute amount fixed.

Proceedings of National and Local Societies

CANADIAN PUBLIC HEALTH ASSOCIATION AND THE ONTARIO HEALTH OFFICERS' ASSOCIATION.

Joint Congress of the Eighth Annual Congress of the Canadian Public Health Association and of the Eighth Annual Meeting of the Ontario Health Officers' Association, Held in the Convention Headquarters, Physics Building, University of Toronto, May 26 to 28, 1919.

Lieutenant Colonel J. W. S. McCULLOUGH, Chief Officer of Health for Ontario, in the Chair.

The congress was divided into several sections. There were general sessions, sections of social hygiene, of mental hygiene, of laboratory workers, of child welfare, and of medical officers of health. The program was a full and ambitious one. It was well carried out and the various meetings were excellently attended.

Dr. C. J. O. HASTINGS, Medical Officer of Health for Toronto, said that he was in favor of some such scheme of health insurance for Canada as they had at the present time in Great Britain. He outlined a plan whereby the workers would pay fifty cents a week, which would enable them to draw a sick benefit of seven dollars a week and one hundred dollars in case of death.

Presidential Address.—Dr. J. A. HUTCHINSON, of Westmount, Montreal, the president of the joint congress, in his presidential address, made a strong plea for a federal law which would require the production of a certificate of health for marriage. He pointed out that in existing circumstances there was no law in Canada to prevent the marriage of the unfit outside of an insane asylum, so long as a clergyman or magistrate was found willing to perform the ceremony. In his opinion such a state of affairs should not be allowed to exist in a civilized and intelligent community. He drew attention to the fact that the present code permitted clergymen to marry any one provided no legal impediment or relationship stood in the way. With the exception of these points, only religious beliefs of the church under which the ceremony was performed were considered a bar. Doctor Hutchinson stated that when a prominent clergyman received a proposal that the clergy refuse to marry people without a medical certificate he replied that if they did refuse the people would live together as man and wife without marriage, and that therefore he would choose the lesser of the evils. He declared that the public should have the facts concerning the propagation of the feeble-minded and should also be told that the majority of babies born blind came into the world in that condition on account of hereditary disease; that there must be safeguards in order to produce a healthy race. If we believed in the sacredness of marriage, and the speaker presumed that we did so believe, the best way to show the sincerity of our belief was to guard the portals of the marriage state. He thought that a law should be passed because it was impossible for the clergyman to be aware of these facts when performing the

ceremony. Such a law would tend to prevent the propagation of the feeble-minded and diseased. He held that alcoholism, tuberculosis, insanity, criminal tendencies, and certain diseases should constitute a bar to marriage under the law. He referred to the fact that several countries had such a law under consideration. A symposium on influenza was then held in which Dr. W. H. Frost, surgeon U. S. Public Health Service, Washington, D. C.; Dr. Augustus Wadsworth, director of the Division of Laboratories and Research, State Department of Health, Albany, N. Y., and Lieutenant Colonel J. W. S. McCullough took part in the discussion.

Influenza.—Doctor Frost reviewed the epidemiological aspects of influenza and pointed out its established tendency to pandemic prevalence at irregular intervals. He showed that up to the present time no positive preventive had been found. All the speakers seemed to be agreed as to the similarity of the recent epidemic and that which made its appearance in 1889. However, with regard to the best means of combating the pestilence there was no such unanimity of opinion, indeed there was a wide divergence of views. The majority of those who joined in the discussion contended that quarantine was the most effective method of staying its spread. From these views Lieutenant Colonel J. W. S. McCULLOUGH dissented. He said that as soon as the quarantine was lifted the disease was spread. He was also opposed to the closing of churches, theatres and schools, because in the cities people congregated in other places. He referred to New York as an example of a city in which the theatres and schools were not closed, and where the cases of influenza were fewer in proportion than in a great many other cities. He said that he knew of methods taken to control the disease, but none which really controlled it. The only measure that he could recommend was for the sick person to get to bed as quickly as possible. This he found acted more beneficially than any other precaution. As for the results of vaccines, the general opinion appeared to be that none of any definite value had been produced as yet.

Psychiatric Lessons of the War.—Colonel THOMAS W. SALMON, Medical Corps, United States Army, director, National Committee for Mental Hygiene, Washington, D. C., gave an address on psychiatric lessons of the war. He suggested that each general hospital should establish a ward for the treatment of mental diseases instead of bringing the patients to the insane asylums by way of the police court. He told of the work of the American Army in this direction, adding that their method of treatment was also the method adopted by the British and French during the final year of the war. By having experts near the front line they had been able to successfully treat and send back into the line about six thousand men who in previous years would have been allowed to pass through with the result their condition became incurable and they were lost to the forces. In this respect all

armies suffered heavily during the first part of the war. He thought that no disease was more poorly handled or understood less than mental diseases. The number of cases in peace time were amazing and yet no steps were being taken to handle them. He gave it as his opinion that the cases should be taken up first at the schools where there was every chance of effecting a cure. Parents should be informed so that they could recognize the first symptoms. The shell shock cases he put into a separate category as they had suffered a distinct shock to the nervous system, but the vast majority of cases were incorrectly described.

CHILD WELFARE

Dr. GORDON GALLIE, of Toronto, gave some interesting figures in relation to stillbirths. He thought that ignorance and poverty were the factors that contributed most largely to this unfortunate result. He advocated closer prenatal supervision by doctors and hospitals, and said that one disease which caused eighty-five per cent. of the stillbirths was preventable.

Dr. HEBER C. JAMIESON, Edmonton, gave the congress the result of his experiences in child welfare in Alberta. He said that Alberta had considerably more trouble with the 33.6 per cent. of foreign born children than with the remaining 66.4 per cent. of British born, owing to the foreigners of the province holding to their traditions and refusing to adopt the modern methods in vogue in Alberta. He showed that Alberta had made great strides in child welfare and stated that practically every reform put through in the province could be credited to the vote of women. In order to aid in securing urgently needed nurses the university of the province had waived the matriculation rule for them when they entered to study social service.

Miss K. OLMSTEAD, extension secretary, Association of Public Health Nursing, Chicago, spoke of the birth and growth of the movement in the United States to provide community nurses. Wisconsin had passed already a law making it compulsory for municipalities to have these nurses on the staff. They were now working for a national health department which would make the movement officially recognized. Miss Olmstead explained why the social service course was necessary to these nurses and said that their biggest work lay in the prevention of tuberculosis and infant mortality.

In dealing with nursing, medical and hospital problems in the rural Northwest, Dr. F. C. MIDDLETON, Bureau of Health, Regina, paid a tribute to the Royal Victorian Order. He told of their magnificent work in establishing small hospitals in the sparsely settled districts where maternity cases could be looked after. Saskatchewan now had a system by which nurses could be retained by the municipalities and rural districts, although the rural nursing staffs were still inadequate. He called for more nurses, particularly to look after maternity cases in the outlying districts where medical aid was hard to secure. As eighty out of the 550 medical men in the province had enlisted this left medical aid more scarce than ever. There were only 250 nurses outside of hospitals in the province, and he suggested that a nursing

course in the hospitals with a standard form of examination to care for maternity cases should be established. If later these nurses wished to take the full nursing course he thought that some system could be arranged for them to continue their work. The government had devised a scheme to allow districts to unite to establish a union hospital.

Dr. MARY SHERWOOD, of Baltimore, spoke on some problems of child welfare. She said, in part, that forty per cent. of the drafted men for the American army were rejected because of diseases contracted in childhood which were preventable. Surgical attention should be given every mother at childbirth. She had also found that the wages of the father had much to do with the health of the child. Because Sweden had established training in the problems of childbirth its death rate from stillbirth was the lowest in the world. She suggested that instruction be given in the schools on the subject, and that the state should establish medical research centers. Miss Sherwood paid a compliment to Canada by stating that it was like carrying coals to Newcastle for an American to lecture on this subject in Canada because Canada had far outstripped the United States in methods of child saving.

Veneral Disease.—Colonel E. L. KEYES, JR., Medical Corps, United States Army, and Mr. R. RUSSELL, of the American Sociological Association, New York, addressed the congress. They both dealt with the prevention of venereal disease in the army and in civilian life and dwelt chiefly upon the steps taken to combat this plague, which they asserted had taken more men out of the ranks of the belligerent armies than had casualties. The American Army, having had two years to make observations, had mapped out a plan to fight venereal diseases. Mr. Russell laid stress on the fact that the closing of the segregated districts in the United States had been done from the viewpoint of hygiene and not of morals. The question of morality was not the first consideration but that of public health.

Salvarsan.—Captain GORDON BATES, of Toronto, chairman of the Section of Social Hygiene, stated that there were 500,000 persons suffering from the worst forms of venereal disease in Canada at the present time. Also that this one disease was filling the asylums. A resolution set before the congress favoring the manufacture by the Provincial authorities of salvarsan occasioned a great deal of discussion. This resolution stated that salvarsan was at the present time manufactured in Canada by but two companies, who had a monopoly. This monopoly, according to the resolution, was detrimental to the supply and to the price, and the congress adopted the resolution calling for action by the government either to take over the manufacture of salvarsan or to allow free competition to other companies. Salvarsan was one of the drugs patented in foreign countries by the Germans. When the war broke out the patent was taken over and given to two firms to manufacture.

Dr. P. J. MALONEY, of Cornwall, said that in a matter which concerned the general health of the community he did not believe in any vested interest

and that this patent should become the property of the Canadian people. Mr. J. A. Dawson, of Vancouver, asserted that the British Government in conjunction with the United States had taken over all the German drug patents which could be used and were selling them. He thought that the patent in question could not be secured. He further stated that the drug being a mixture in which various poisons were blended in certain proportions was hard to manufacture and dangerous if not blended in the proper proportions. Major Fitzgerald, secretary of the joint congress, assured him that Mr. Lancaster, provincial chemist, had manufactured the drug and that his product was perfect, but that the Government had seen fit to grant a monopoly to two private companies. Other speakers pointed out the importance of the preparation to the medical profession and the resolution was passed unanimously.

Lieutenant Colonel J. W. S. McCULLOUGH, stated that the action of the Dominion Government in refusing to grant to the Ontario Board of Health a license permitting it to make salvarsan is the greatest stumbling block to the effective carrying out of the venereal diseases act. As a result of the Government's action the cost of treatment by means of salvarsan was considered exorbitant by many patients. While the Dominion Government refused to grant a license to the Ontario Board of Health in 1917 permitting it to manufacture salvarsan another application was now before the Dominion authorities. A decision was now awaited. Colonel McCullough believed that if the license was secured the board could greatly reduce the cost of the treatment.

THE CANADIAN NATIONAL COMMITTEE FOR MENTAL HYGIENE.

Dr. C. K. CLARKE, of Toronto, made an earnest plea for better and more careful treatment of the insane and of those suffering from mental diseases. Doctor Clarke said that the tendency of Canada was to lag behind in the treatment of the insane. In connection with the scheme of the committee to hospitalize the insane institutions, he stated that it would be very difficult to force public opinion to act as long as the insane asylums were under the control of Provincial governments. The only hope was in the appointment of a commission of independent men who had the welfare of the insane at heart. Preventive methods were necessary and also careful supervision of individual patients at the asylums by a force of field workers in psychiatry. Through the cooperation of the University of Toronto, the Department of Public Health, the asylums of Mimico and Toronto, and the social service department of the Toronto General Hospital, this course had been made possible and a trained force of workers in this branch would soon be available for the various asylums. The department of the Soldiers' Civil Reestablishment had taken up the matter and now had a trained force operating, with good results among soldiers suffering from mental diseases.

Doctor Clarke asserted that this course was necessary to social service workers if they were to be a success. He also thought that immigration

should be more carefully supervised, and that this force should be used for the purpose. He pointed out that many of the institutions bringing immigrants to Canada objected when it was stated that there were numerous mental defectives among these new settlers, thinking that their work was being belittled. This was not the case, but he thought they did not use follow up methods as could be shown by cases which had come to light. In the case of Toronto with 100,000 pupils in the schools, some system of supervision other than that of the teachers was necessary, as the teachers could not be expected to supervise the large number of pupils. Children mentally deficient could be cared for by the workers of the new force.

Colonel THOMAS SALMON, United States Army, who had charge of this branch in the United States army in France, gave the committee an outline of the work done in the United States in mental hygiene. He thought that as the American Society was seven years the senior of the Canadian, he might be pardoned for giving advice, and suggested that the work in this direction in the armies in the field might be continued during peace by social workers.

Edmonton was chosen as the place in which the convention of 1920 will be held. The officers elected for the coming year were as follows: Honorary president, Lieutenant-Governor L. J. Brett, Edmonton; president, Dr. H. E. Young, Victoria; vice-presidents, Dr. J. A. Amyot, Toronto, Hon. Dr. W. R. Roberts, St. John, N. B.; Dr. Colin Campbell, Montreal; secretary, Dr. R. D. Defries, Toronto; treasurer, Dr. F. A. Adams, Toronto.

ONTARIO MEDICAL ASSOCIATION.

Thirty-Ninth Annual Meeting, Held in Toronto, May 27 to 30, 1919.

Dr. G. STEWART CAMERON, of Peterborough, in the Chair.

The thirty-ninth annual meeting of the Ontario Medical Association took place in Toronto from May 27 to 30, 1919, in the Mining Building of the University of Toronto.

The association opened its meeting with a round table dinner in the King Edward Hotel, at which several well known members of the medical profession of Great Britain were present. The British representatives were Sir St. Clair Thomson, Lieutenant Colonel Sir Shirley Murphy, Admiral Dimsey, and Major Groves.

Lieutenant Colonel Wishart, of Toronto, presided. Sir St. Clair Thomson addressed the gathering on the postgraduate work in England in medicine. He referred to the establishment of a fellowship in medicine which would enable medical men in Canada to take advantage of the postgraduate courses in special lines of work which English institutions were offering.

Mr. J. H. BALLANTYNE, representing the Trades and Labor Council, addressed the medical men on the aims of labor. He said it was the aim of labor to promote a better type of working man and the matter of health was very important. The Trades and Labor Council supported the recognition of the osteopaths and the chiropractors on the ground

that they had the right to choose by what method they should be treated for bodily ailments.

Colonel F. W. MARLOW said that the medical profession had been hiding its light under a bushel, and it had to wake up and let the public know what it was doing. If labor knew the amount of work that was being done by doctors for nothing in the hospitals they would realize that the medical profession consisted of a body of men who were seeking to serve the public. If the doctors struck on charity work the situation of labor would be serious; the authorities would then have to employ the osteopaths and chiropractors.

DOCTOR MARLOW said he was in favor of the nationalization of medicine to a certain extent. He believed that nothing would contribute more to the solution of labor's troubles than some form of State medical service and health insurance.

DOCTOR SCOTT said that medical men were not opposed to osteopaths or chiropractors if they had medical training, which would enable them to know what could be done by medicine and surgery in the treatment of diseases in their early stages.

Dr. G. STEWART CAMERON, president of the Ontario Medical Association, of Peterboro, advocated the establishment of postgraduate courses for practising physicians to aid them in keeping up with the march of medical science. He also urged that more effective measures be taken for the prevention of disease, and pointed to the success attained by the medical officers in the war in keeping the fighting forces free from many of the most virulent diseases. He recommended State examinations of children and adults. He stated that more than fifty per cent. of the men examined under the provisions of the Canadian Military Service Act had failed to make the first class and that in a large proportion of cases their disabilities were directly traced to preventable causes. He said that better obstetric laws were needed. Birth was shrouded in too much mystery and the conditions surrounding it should be better known by the general public. Doctor Cameron, enlarging upon the idea, declared that medical practice was not a closed corporation or monopoly. The public mind should be directed to a fuller understanding of the basis upon which the physician made his diagnosis. He believed that ere long public opinion would force the practice of medicine into the control of the State. The president also advised that the practices of medicine and surgery be separated. He felt that the time was at hand when degrees should be issued for the various departments of medicine and surgery in which a practitioner had elected to specialize. A scathing denunciation was launched in the course of his remarks against what he deemed to be an organized onslaught by irregular practitioners, patent medicine manufacturers, and health cranks of one kind and another, upon the legitimate medical profession, with a view to discrediting it in the eyes of the public.

Sir ST. CLAIR THOMSON, of London, dealt with the medical lore of William Shakespeare. He explained that Shakespeare lived in a period when witchcraft was as firmly believed in as osteopathy was today; when potions, spells, charms, and in-

cantations were as freely used as modern patent medicines, and that in spite of his environment of superstition he showed an appreciation of the legitimate practice of medicine that was astonishing. He pointed to the playwright's appreciation of the physician's needs for taking notes by reference to the Scottish practitioner who attended Lady Macbeth and took copious records of her ravings with which to refresh his memory when diagnosing her condition. He spoke of poor old King Lear and his endeavors to find a pathological reason for the ingratitude of his daughters; of King John's last illness when fresh air treatment was employed on the monarch with excellent results, and of the good leech in the *Comedy of Errors* whom he described as having the true bedside manner, albeit he was an irregular, for upon visiting his patient for the first time he said: "Come give me your hand and let me feel your pulse." Treatment by mental suggestion had also been thoroughly appreciated by the bard, whom he quoted as saying: "They'll take to suggestion as a cat laps milk." In closing the speaker delivered the famous Seven Ages of Man speech which he asserted epitomized the whole gamut of life as truly and conclusively as any medical work full of long scientific phrases.

Dealing with the nutrition of the fetus Dr. J. MORRIS SLEMONS, professor of obstetrics and gynecology, Yale University, gave an address on obstetrics. A symposium was held on war surgery and on influenza.

Officers for 1919 were elected as follows: President, Dr. F. W. Marlow, Toronto; first vice-president, Dr. J. H. Mullin, Hamilton, reelected; second vice-president, Dr. H. F. Farley, Trenton; treasurer, Dr. G. Stewart Cameron, Peterboro; secretary, Dr. T. C. Routley, Toronto, reelected; assistant secretary, Dr. F. C. Harrison, Toronto; and councillors, Dr. J. H. MacGregor, London; Dr. E. R. Secord, Brantford; Dr. J. P. Morton, Hamilton; Dr. F. A. Clarkson, Toronto; Dr. T. S. Farncomb, Trenton; Dr. H. A. Boyce, Kingston; Dr. E. B. Oliver, Port William.

Letters to the Editors.

POSTOPERATIVE ANALGESIA.

NEW ROCHELLE, N. Y., July 1, 1919.

To the Editors:

A paper with this title in the *Boston Medical and Surgical Journal* for May 15th impels me to a few comments, even though I have had no personal experience with the method outlined. The paper is written by Dr. Bertha Van Hoosen, so we assume that she does not mean to be unduly harsh when she says: "It would seem at times as though the surgeon, the obstetrician, and even the family physician regards the relief of pain more as a means of facilitating his work rather than a method by which to preserve the strength and increase the recuperative power of the patient." Yet such an arraignment is not quite pleasant, especially when she goes on to say that the surgeon insists on a profound anesthesia for an operation ten to thirty minutes long, but leaves no orders for relief or

postoperative pain, or if he gives such orders they are not carried out until the patient is exhausted or crazed with pain; that the obstetrician lets his patient suffer many hours without his presence and gives an anesthetic for five to thirty minutes at the close of labor; and that the family physician is warned not to give morphine lest he obscure diagnosis and create a habit. What a set of heartless brutes we are! Seem to be rather, for as a class we are not heartless, even though at times we may appear to be. So we shall be glad if Doctor Van Hoosen can furnish us something reliable and not questionable of danger in unknown ways to relieve postoperative pain. Let us see what she presents. In two hundred consecutive cases, the patients were operated upon in the Mary Thompson Hospital and given postoperative doses of morphine 1/32 grain, and scopolamine 1/200 grain for from twelve to forty-eight hours, and two hundred and fifty-two patients were operated on in the Cook County Hospital and given postoperative doses of morphine 1/32, and scopolamine 1/400 for the same length of time. The usual time was thirty-six hours, or until midnight of the second day. It was found that the dose of 1/200 grain of scopolamine occasionally caused patients to show signs of mild delirium.

The results are tabulated, but nowhere is there given any indication of the nature of the operations. Yet this is important, for we know very well that while some operations are followed by much pain during the first twenty-four to forty-eight hours, others are not so attended, and that in still others the real postoperative suffering does not appear until after the lapse of from thirty-six to seventy-two hours. But this knowledge is withheld, suffice it that the report is on 452 consecutive operative cases. Whether operated on under local anesthesia or general narcosis likewise does not appear. The first table shows that of 200 patients, during the first night twenty-eight slept poorly, 107 fairly well, and sixty-five well. And what a boon to the nurse!

Doctor Van Hoosen says that "there being no necessity for giving moral support or enforcing discipline, the nurse may sit and read or doze for many hours during the day and pass her nights with comparatively little disturbance." That is well, but a question occurs. Only twenty-eight of the patients slept poorly, yet forty-six complained of pain either in the wound, in the head, or from gas; eighteen of those complaining must have slept fairly well or well and must have contrived to let their nurses know they were suffering. Finally the patient is likely not to remember about any of the suffering; memory of happenings during the first two days after operation is more or less obliterated. This may or may not mean anything serious to the nervous system, but I would not like to risk it on myself unless it was for a certain positive gain. The assumption that all operations are followed by postoperative pain is wrong. Some are and a safe postoperative analgesia would be a boon to them, but the efficacy and the safeness of any remedy should be demonstrated before it is recommended.

M. L. FOSTER, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Otis Group Intelligence Scale. Devised by ARTHUR S. OTIS. Yonkers, N. Y.: World Book Company, 1919.

This scale purports to be "an instrument for the measurement of native mental ability" applicable to "wholesale work." There are obvious uses for a method of this sort in the public schools, in the army, and in industry—any place, in fact, where large numbers of individuals of varying mental capacities must be tested in fundamentals. The scale consists of a series of ten tests, varying from twenty to thirty questions each, on following directions, opposites, disarranged sentences, proverbs, arithmetic, geometric figures, analogies, similarities, narrative completion, and memory. The questions are suited to any individual, child or adult, who has had the equivalent of three or four years of schooling.

Group testing is at best a primitive method of determining intelligence. If it is to be widely applicable it must not be above the heads of too many people. The method is therefore more exact in rating mental immaturity than mental maturity. Some of the questions, notably those on proverbs and on analogies, are absurd, and even if we were a school child we should distinctly object to having our intelligence rated according to our ability to tell the "opposite" of therefore, however, and unless.

Births, Marriages and Deaths.

Born.

HOLDERBY.—In New London, Conn., on Saturday, June 21st, to Dr. A. P. Holderby, 3d, Captain, Medical Corps, U. S. Army, and Mrs. Holderby, a daughter.

Married.

BARNES-WHEELER.—In New York, N. Y., on Thursday, July 3d, Dr. William James Barnes and Miss Grace Leavenworth Wheeler.

WOOD-MILLER.—In Wadsworth, Ohio, on Tuesday, June 24th, Dr. Carleton I. Wood, Lieutenant Commander, Medical Corps, U. S. Navy, and Miss Margaret A. Miller.

Died.

BASTIN.—In Fillmore, Ind., on Tuesday, June 24th, Dr. Joel V. Bastin, aged sixty years.

BISSELL.—In Lakeville, Conn., on Wednesday, July 2d, Dr. William D. Bissell, aged ninety years.

BOND.—In Boston, Mass., on Saturday, June 28th, Dr. Sarah A. Bond, aged sixty-one years.

GIVENS.—In Stamford, Conn., on Saturday, July 7th, Dr. Amos J. Givens, aged sixty years.

MCBRAYER.—In Shelby, N. C., on Wednesday, June 25th, Dr. T. E. McBrayer, aged seventy years.

OPPENHEIMER.—In New York, N. Y., on Saturday, July 5th, Dr. Henry S. Oppenheimer, aged seventy-five years.

PENROSE.—In Baltimore, Md., on Friday, July 4th, Dr. Clement A. Penrose, aged forty-five years.

POTTER.—In Santa Barbara, Cal., on Saturday, July 5th, Dr. Nathaniel Bowditch Potter, of New York, aged fifty years.

SMITH.—In Corinth, N. Y., on Friday, June 27th, Dr. Fletcher Alberto Smith, aged sixty years.

WAGNER.—In Newman, Ill., on Tuesday, June 10th, Dr. John M. Wagner, aged seventy-seven years.

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THE IMPORTANCE OF REST IN THE TREATMENT OF TUBERCULOSIS.*

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Rest is one of the most important measures in the treatment of tuberculosis. Important as it is, simple as it seems, it is but poorly understood and usually improperly applied. Comparatively few men, even those who limit their practice to the treatment of tuberculosis, seem to understand the therapeutic value of rest, and grasp the importance of a carefully arranged régime for its application. This term should include mental relaxation as well as physical repose.

Brehmer, the founder of the modern treatment of tuberculosis, was an advocate of exercise, believing that an important predisposing cause of the disease was a small heart, and that this supposed predisposing factor could be overcome by graduated exercise, particularly hill climbing, which would have an influence in strengthening that organ. While he used care and judgment in prescribing these exercises yet it was his opinion that each patient should exercise and climb gradual ascents as an important part of the therapy. The harm that was done by this measure was not readily determined, because this was the first systematic effort that was ever made to segregate tuberculous patients in an institution and give them the advantage of systematic treatment. The general improvement was so much greater than that obtained by treatment in the home that whatever ill effects were produced by the exercise were hidden by the general improvement.

Dettweiler, a patient and later an assistant of Brehmer, became convinced that ill effects resulted from exercise and adopted rest as the important factor in a systematic treatment which he instituted. He is the founder of the *Liegekur*, or rest treatment. It was a long step from the exercise and hill climbing of Brehmer to the rest treatment of Dettweiler, in which patients were forced to spend many hours each day reclining in chairs on piazzas. Such a wide divergence of view held by two men of such earnestness for the good of the tuberculous patient naturally resulted in the founding of two schools of thought—the followers of

Brehmer, who emphasized the importance of exercise, and the followers of Dettweiler, who emphasized the importance of rest.

When I became interested in the treatment of tuberculosis in the year 1895, an attitude of compromise toward these two principles was prevalent, with a leaning toward the necessity of exercise. This leaning toward exercise was particularly prevalent among the rank and file of the medical profession.

Having a member of my own family afflicted with the disease I had occasion to consult some of the men who were most interested in treating tuberculosis at that time, and without exception they advised exercise in the open air. The fact that the patient was weak, had fever, and was gradually losing strength made no difference. I endeavored to follow this advice, but after urging exercise upon the patient for a time I came to the conclusion that good could not come from a measure which resulted in exhausting what little strength the patient had, and substituted rest in the open air in its stead. At that time, I did not know of the work of either Brehmer or Dettweiler but unknowingly adopted the principles of the latter. Shortly after this a colleague from Toronto consulted me after a long journey through our eastern and southern cities. He had stopped at each medical centre and each health resort on the way and had consulted one or more specialists in each place, and had been advised by all "to exercise in the open air, if he would regain his health." When he consulted me I remarked, after completing my physical examination that I was going to give him advice which was contrary to the usual teaching, but believed that it was rational. I then told him that I wanted him to rest and not exercise. He reached out his hand and grasped mine and said, "Thank God that I have at last found a man who understands my feelings."

Further study of the tuberculous patient as well as the disease led me to favor the teachings of Dettweiler rather than those of Brehmer. At first, however, I grasped the meaning of rest but imperfectly. I thought it was sufficient for the patient to remain quiet when the temperature was up to 100°. When I began my sanatorium experience the plan which I adopted was to keep all patients in bed with temperatures of 100° or over, and not to allow them to get up until the temperature had been below 100° for three days. This was the accepted teaching at that time. What ignorance both of

*Read before the American Therapeutic Society, Atlantic City, June 6, 1919.

tuberculosis and of the tuberculous patient is manifested in such advice! It carries with it no conception of a reason for either the rest or the exercise.

If one would understand the indications for rest and exercise he must understand the rationale of the cure of tuberculosis. He must understand that, as yet, there has not been found any one thing upon which we may depend for a healing of this disease; but that cure, if it comes, is brought about by conserving the natural defensive forces of the individual on the one hand and stimulating specific reaction against the disease processes on the other.

The healing of tuberculosis then resolves itself into, 1, a process of building up and making the patient strong, and keeping him so for a long period of time until he becomes master of the invading bacilli, and, 2, a stimulation of the patient's specific defensive powers. The former may be brought about by such measures as open air, suitable food, carefully directed rest and exercise, a helpful mental attitude, hydrotherapy, heliotherapy, and such measures as relieve symptoms and complications; the latter may be brought about by products made from the tubercle bacillus or the culture fluid in which it has grown. It is impossible to place a percentage value on any one of these measures. It is also evident that their relative value differs with different patients and under different circumstances.

One reason why rest and exercise are so abused in therapy is because most of the other measures may be employed either while the patient rests or while he exercises; another reason is that those who prescribe often fail to appreciate the difference in application, or at least fail to make a careful distinction. Both rest and exercise are applicable in the treatment of tuberculosis; both have their influence for cure. The indications for their employment are so different, however, that they should be understood by all who prescribe for tuberculous patients. The indications are based on physiological principles. Rest conserves energy; exercise calls for an increased energy output. Rest is the condition which makes the least demand upon the body forces, consequently it is the condition which leaves the patient with the greatest amount of reserve force. There are times in the treatment of most cases of tuberculosis, more particularly those of active tuberculosis, when, unless all possible strength is conserved, the tide will be turned against the patient. It requires a given amount of energy to meet the demands of ordinary metabolism; it requires an extra amount to meet the extra demands made by a disease like tuberculosis; and it requires still more to fight the infection and bring about a healing. Whether or not treatment will be successful and the progress of the disease will be checked depends on whether or not a sufficient energy output can be maintained. If all available energy is used up (as it is in certain persons) in caring for the ordinary wear and tear of the body, patients can not fight a chronic infection like tuberculosis. Some way of conserving their strength must be found. The demand must either be made less or the supply of energy greater, or both. In some, the margin of conservation is very

slight. No doubt could we only raise it five or ten per cent. we might be able to save some lives.

In order to appreciate the manner in which exercise calls for the expenditure of energy, I will quote from Joslin the observation on normal individuals at the Carnegie Laboratory (1): "It is convenient to remember that one calorie per kilogram body weight per hour was eliminated while in bed, and 1.21 calories per kilogram were eliminated while sitting in a chair. In other words twenty per cent. more energy was required by these individuals to sit in a chair than to lie on a couch. If the subject is asleep lying down and awake sitting up the difference may be thirty-five to forty per cent. On the other hand, if the greatest possible care is taken to be as quiet when erect as horizontal, the difference may be only eight per cent."

The disease fighting power of a patient will depend on his ability to maintain an excess of energy after meeting the natural metabolic requirements of the body. If it requires twenty per cent. more energy to sit in a chair than it does to lie at rest in bed, it is plain that lives may be saved by the conserving force of rest in bed.

Energy is produced by food; not the eating of food, but the assimilation of food. The requirements of food under conditions of rest and various degrees of exercise are about as follows:

Condition.	Total calories.
At rest	1750-2100
Light work	2450-2800
Moderate work	2800-3150
Hard work	3150-4200

In tuberculosis nutrition suffers greatly at times, partly on account of an inability to eat sufficient food, again on account of faulty assimilation. Sometimes the energy output can be readily met when the patient is at rest, but not on exertion. Again there are times when, with large intake and absolute rest, the energy requirements cannot be met, except at the expense of the patient's own tissues.

Therefore the rule for rest as far as the expenditure of energy is concerned may be stated thus: The patient should always rest when exercise will make demands upon his energy output so great that he is unable to meet them fully and still have a surplus for fighting the disease.

In tuberculosis a condition of suboxygenation is often present. This leads to incomplete metabolism and favors the storage of hydrogen ions in the tissues, with a resultant lessened alkalinity. This condition favors necrosis and autolytic action which result in the breaking down of the tuberculous tissue. During the stage of activity exercise increases the toxemia and provokes cough; conditions which lessen energy production on the one hand and call for an increase of energy output on the other. Rest then seems to be essential in conditions of low energy production and in the presence of active disease. In this connection, I wish to call attention to the difference between clinical and pathological activity.

Recently I listened to an address on the use of exercise in the treatment of tuberculosis. The speaker wisely stated that exercise should not be

prescribed while the disease was still active, but made the mistake of giving as the indications for the absence of activity, the absence of clinical symptoms, such as cough, expectoration, malaise and fever. Such a conception is wholly wrong. How often do we see patients walking with symptoms of malaise, cough, expectoration, and temperature, the latter sometimes as high as 101° and 102° , who lose all these symptoms after a few days or weeks in bed. Yet no one would say that this disease process has become inactive in so short a time. Many patients have a tuberculous process which is clinically inactive although they continue to cough and expectorate bacilli bearing sputa from cavities which have failed to heal. Many patients suffer from malaise from causes other than tuberculosis and may still suffer from it after all activity from tuberculosis has disappeared. The temperature is too often taken as being the guide to the degree of activity. The temperature curve is an index of the ratio of heat dissipation to heat production; and while a rise of temperature is associated with an increased heat production which takes place when an active infection is present in the body, a temperature rise may be caused by excessive muscular exercise, or by remaining in a superheated atmosphere, or by certain nervous reactions which interfere with heat elimination. There are two important elements then to be considered in the causation of rises of temperature; the increased heat production and the decreased heat elimination. Heat elimination takes place to the extent of eighty-five per cent., through the bloodvessels of the skin. Therefore the nerve control of these vessels is a very important factor in the control of the body temperature. A patient may have active tuberculosis and yet the control of the bloodvessels of the skin may be such that he is able to eliminate a little more than an average amount of heat; under such circumstances the body temperature might be kept at the normal.

So it is evident that one cannot rely on the disappearance of the common symptoms which accompany tuberculosis as meaning that the disease is no longer active, nor is it necessary that they all be absent before the process is inactive. One must recognize that tuberculosis is a chronic infectious disease in which pathological changes take place very slowly. The same cycle of changes, from infection to the development of the disease and resolution, which takes place in an ordinary boil in a week, in pneumonia in two or three weeks, in typhoid fever in six or eight weeks, takes place in tuberculosis in months or years. From the time of implantation of bacilli with formation of the tubercle in a lung until the time of its producing active tuberculosis or healing may be months or years. Under conditions most favorable for healing it is my opinion that changes continue to take place in the lung of patients suffering from early clinical tuberculosis for a period of one and one half or two years. This opinion is based on results obtained from watching contractions which occur in the lung, the data elicited on auscultation, and the time required for the muscles (sternocleidomastoideus, scaleni, pectoralis, trapezius, levator

anguli scapulae and rhomboidei) which are reflexly thrown into spasm by the inflammation in the lung to lose their rigidity.

I endorse the statement that exercise should not be used in the treatment of tuberculosis during the period of clinical activity, but would suggest that it is not sufficiently definite. This does not mean that exercise should be prescribed as soon as a patient loses his cough, expectoration, fever, and toxic symptoms. Rest, in my opinion, should be employed until such a time as exercise will not cause an increase or a return of clinical symptoms; and until such a time as the patient has secured a degree of resistance and reserve force which is capable of supplying the extra demand made upon him by the exercise without lowering his reserve for fighting the infection. When the patient has reached this condition may be judged by observing him carefully and by careful examination. Rest is preferable as long as signs of active necrosis are present and until the breath sounds have assumed the harsh quality characteristic of scar formation.

It has taken me many years to develop the program which I now follow in the treatment of tuberculosis. In no other line of therapy do I feel that I have made greater advances in treating the tuberculous patient than in the application of rest and exercise. It is my invariable rule to put patients to bed on entering the sanatorium regardless of the degree of illness. My purpose is first to relieve the patient of all extra and avoidable demands upon his physical body that his energy may be directed toward fighting his infection. I also endeavor to secure as high a degree of nerve relaxation as is possible; so that by the time the disease process is inactive and it is time to build up a strong physical state, the nerve balance will be restored to such a degree as to be able to do its part. In this connection it must be remembered that tuberculosis is a chronic infectious disease and that the diagnosis is rarely made until the disease has existed for a long time. During this time toxins have been exerting their harmful influence upon the nerve cells which result in rendering them unstable. As we endeavor to rest and exercise the physical body in order to restore physical strength, applying each measure when it is indicated, so do we through mental relaxation and psychotherapy endeavor to rest and exercise the nerve centres and psychical being so as to restore the nerve and psychic equilibrium.

The success of a measure depends much upon its technic. The technic must be adapted to the individual patient, to the physician who employs it, and to the conditions under which it is operative. What I consider the ideal technic for applying rest and exercise to the treatment of tuberculosis is the one that I follow in the sanatorium. The patient upon entering the institution is put to bed. If his maximum daily temperature is near or only a degree or so above the normal and there is no other condition to contraindicate it he is allowed to get up to wash and go to the toilet, and to sit up while his bed is being made. His baths, however, are at first given by the nurse. If toxemia, as indicated by fever, or other contraindicating conditions are present then

the washbowl is brought to the patient while in bed; if severely ill, the urinal and bedpan are used and the bed is made without the patient getting up. Patients are treated with this degree of rest and care until signs of activity lessen and until such a degree of physical and nerve stability has been reached as to warrant the opinion that increased exercise will be beneficial, or at least not harmful.

This long period of rest in my experience is borne well by more than ninety-five per cent. of patients. The first few days are the most difficult. Lying in bed relieves certain muscles and brings strain upon others. These latter ache, the same as muscles which are not accustomed to being used in walking ache after a long tramp. This should be explained to the patient. This discomfort disappears in a few days. The patient needs sympathetic encouragement during this first period and if properly guided at this time will usually cooperate satisfactorily. This enforced rest and care is, as a rule, a new idea to the patient; it often impresses him with his first idea of the seriousness of his disease, and thus affords him the basis for a whole hearted necessary cooperation. The few who will not cooperate usually make unsatisfactory patients and obtain unfavorable results. Fortunately this régime is usually quickly followed by some improvement and often by a very striking one. This shows the patient the value of the rest, and, if he is intelligent, usually calls forth an earnest cooperation.

Those patients who remain at home usually fail to secure the advantages that such a program insures. They are living among the well who, as a rule, are untrained in carrying out the program; so the benefits derived are usually much below that obtained in an institution. There is a desire on the part of the patient to eat at the table, to go to the bath room whether able to or not, to visit at various times and often with those who remain too long and tire the patient. The extra demands made upon the patient are often sufficient to turn the balance against him.

If the patient and those who care for him could only realize that whether or not healing will take place is largely a matter of whether the patient can provide the sufficient energy to carry on the ordinary processes of metabolism, meet the demands made by the amount of exercise taken, and still have a surplus for fighting the disease, the necessity for rest would be better understood. If they would then further realize that the act of sitting quietly in a chair requires twenty per cent. more energy than lying quietly in bed; and that sitting up, walking or engaging in active conversation requires probably forty per cent. more than lying quietly in bed, the necessity for rest would be better comprehended.

When the time comes to put the patient on exercise caution should guide each movement. I usually allow the patient to sit up only ten minutes the first day, and then increase by five or ten minutes a day according to the particular condition of the patient. My idea is to increase the exercise so gradually that no possibility of tiring can exist. When one half hour is reached, I have the patient

divide the time and sit up at two periods, one in the morning and the other in the evening. When one hour is attained, it is repeated for several days; so is two hours, and three, before advancing. The length of time taken to advance to two or three hours sitting up varies greatly according to the patient. The stronger patients are allowed considerable freedom about their rooms during the time when they are sitting up two or three hours. This is preparatory to walking.

When a patient is able to sit up three hours without tiring he is ready, providing there are no other contraindications, to begin walking. On the first day I order fifty or one hundred feet according to the patient and have it increased by the same amount each day, stopping and repeating for several days when half a mile, one mile and two miles have been attained. The ultimate distance to be reached depends upon the patient; so does the rapidity of attaining it. The maximum of some patients will be one half mile, but that of others ten miles. When possible, I attempt to have the average patient walking at least two or three miles a day and the stronger ones five or ten miles before discharging them from the institution. Such a program should then be followed for a long period of time. If the patient starts work of any kind, however, the amount of walking must be reduced so as to bring his expenditure of energy within his production, otherwise disaster will result. Patients who can walk ten miles a day without tiring will usually stand an ordinary day's work without harm, providing they begin by working a few hours a day and gradually increase the amount.

The success of this program depends first upon thorough rest, dropping the patient's energy expenditure below the point of energy production; and then, when the patient is relieved of the extra demands made upon him by the disease process, increasing his ability to meet larger demands for increased energy by gradually accustoming him to an increased amount of exercise.

Time is the essence of this program. It cannot be carried out quickly; only as rapidly as tuberculosis heals. The successful healing of tuberculosis requires a long time. It can not be cut short with safety. There is a time when nearly all cases of clinical tuberculosis can be successfully combated by intelligent therapy carried out for a sufficiently long period of time. There is no definite set period of time, when the disease should heal or be considered incurable. One patient will respond much quicker than another; one will be more conscientious in his treatment than another; and still one will have a different tuberculous process from the other. The patient must be guided by the physician who knows, and keep fighting until the result has been attained.

The program here outlined is only that for the application of rest and exercise. It alone is not to be considered sufficient. Everything that will add should be added. Open air, good food, psychotherapy, aerotherapy, heliotherapy, hydrotherapy, tuberculin, attention to symptoms and complications, should each be employed for the five or ten per cent., that it will add to the chances of healing.

Too much of our effort in the treatment of tuberculosis is poorly directed. We must draw our minds away from the narrow conception of an infiltration in the lung, and make our conception include the patient with all the effects which this disease has produced upon him either directly or indirectly. Then and not until then will we grasp the serious problems which this disease produces, and understand that the treatment of tuberculosis is a reeducation and a rehabilitation of one whose physical, nervous, and psychical equilibrium has been destroyed by the long continued action of a chronic infectious disease. When this point of view has been attained, the necessity for physical rest and nervous relaxation in the program for the treatment of chronic clinical tuberculosis and the necessity for early diagnosis and prompt energetic treatment before these serious changes have taken place will be more fully recognized.

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UTERINE HEMORRHAGE.*

By ARNOLD STURMDORF, M. D., F. A. C. S.,
New York.

In the entire range of our daily gynecological experience there is probably not another manifestation with which we are more familiar and of which we understand less than a bleeding uterus. Time honored dogma has so habituated us to accept every concomitant pathological element as the immediate and direct cause of the bleeding, that we have become entirely oblivious to the existence and significance of certain intrinsic intermediary factors that essentially link cause to effect and reveal the "why and how" of the uterine hemorrhage in logical sequence.

When a bleeding uterus presents a small fibroid, we seek no further for an explanation, and yet no one has definitely explained why one uterus harboring a fibrous nodule bleeds excessively, while another bearing enormous masses of a similar nature does not bleed at all. Still less do we know why there is bleeding from those uteri that present no palpable evidence of any causative factor whatsoever, and lastly, we know nothing of why and how the uterus bleeds during normal menstruation.

Our examination of a patient may reveal what we interpret as a cause for the bleeding, either pelvic or systemic. On the other hand, the most painstaking investigation may fail to disclose any such cause, and it is to this class that our present consideration is devoted. In either event, whether the cause of the hemorrhage is apparent or not, we promptly inaugurate the same venerable therapeutic triad, ergot, packing, and lastly but inevitably, the curette. The bleeding may cease and again it may not, in which event we shall probably renew and repeat our efforts along the same lines, ringing the changes among the alluringly named uterine stypitics, until the persistence and gravity

of the hemorrhage leaves us no choice but hysterectomy. This, of course, conquers the hemorrhage and removes all the evidences of our therapeutic impotence with the bleeding organ; but our clinical conscience may be much disturbed when the pathologist quietly informs us that we have deprived our patient of a normal uterus.

The two questions which naturally present themselves are: Why did this uterus bleed so persistently? Why have we failed to control the bleeding?

The current literature teems with explanations. Every anatomical element of the female generative organs has been charged and acquitted as the causative factor; the endometrium, the adnexa, the myometrium and the uterine bloodvessels. We have scraped these uteri for endometritis and found only the hitherto misinterpreted morphological changes in the endometrium, normal to the different stages of the menstrual cycle. We have removed diseased adnexa—and sometimes normal ones—and the bleeding continued or recurred. We have had fibrotic and endarterial degenerations in the myometrium of these uteri demonstrated, only to find the same alterations in nonhemorrhagic senescent uteri, and thus, all along the line, one after another of the alleged etiological factors failed to exhibit that uniform synchronism with the hemorrhage essential to establish a direct relationship of cause and effect.

It is axiomatic that every clinical manifestation represents a normal function perverted or diverted, and every therapeutic effort must be based on the normal mechanism of that function. Coagulation is Nature's universal hemostatic, and every effort to control bleeding must be an effort to induce coagulation. While the incoagulability of normal menstrual blood has been noted since earliest times, the identical incoagulability characterizing the cases under discussion has escaped the attention of all observers; and yet this same incoagulability in perverted protracted form embodies the etiology and dominates the treatment of the hemorrhage. The hitherto accepted teachings, attributing the absence of clotting in menstrual blood to the presence of alkaline mucus secreted by the endocervical glands, is no longer tenable, for no such admixture inhibits coagulation in other mucus secreting areas.

It would lead far beyond the practical object of this paper to enter into the complex and important elucidation of this hematological problem for the details of which I must refer those specially interested to my former publications on the subject (1). It must suffice here to state, that the endometrium, during menstruation and in the hemorrhagic cases, receives normally coagulable blood from the general circulation and sheds this blood in a noncoagulable state. This loss of coagulability is not due to the absence or deterioration of any element essential to coagulation, but to the presence of an inhibiting substance that is periodically secreted by the corporeal endometrium, from which it may be expressed. Such expressed endometrial juice is capable of inhibiting coagulation in any normal blood.

The endometrium is activated to the secretion of this inhibiting substance by a hormone generated in

*Read by invitation before the Bronx County Medical Society, May 21, 1919.

the graafian follicles. To the present time we have not succeeded in isolating this substance, nor have we discovered its specific antagonist, but we have learned to circumvent it by effectual measures. To establish the functional nature of a given metrorrhagia is to establish a favorable prognosis; for, notwithstanding the persistence and apparent gravity of these hemorrhages, the condition usually tends toward spontaneous recovery after a more or less protracted period, provided that during this period, which may last several months, the bleeding can be held within safe limits.

To correlate the physiology and pathology of uterine bleeding we must revise some current conceptions of the uteroovarian mechanism. The specific functions of the uterus in menstruation and gestation demand a wide range in the control of its blood supply, and, like the heart, the uterus automatically responds to its fluctuating circulatory necessities by rhythmic contractions, not only during pregnancy, but throughout its functional existence. The myometrium is composed of smooth muscle fibres, which, like all nonstriated muscle, exhibits the intrinsic phenomenon of rhythmic contraction, independent of any neurogenic stimuli. Not only are these contractions necessary in maintaining the nutritional and functional integrity of the uterus as a whole, but they also serve the equally essential purpose of drainage; the cervical secretions must find free egress from the normal and more especially from the diseased conditions of its mucosa. Under normal conditions, such drainage is effected, not merely by a passive outflow through a patent os, but by the active rhythmic expression resulting from uterine contraction.

To comprehend this, it is necessary to dispel the anatomical myth of a cervical sphincter; such a sphincter would imply the existence of a concentrically contracting muscular ring; the structural design of the cervical musculature precludes any concentric closure of its outlet which dilates with every uterine contraction, because its fibres, directly continuous with those of the corpus uteri, do not at any point completely encircle the cervix, but are disposed in a serried succession of oblique circle segments, which, by contracting spirally upward, necessarily shorten every diameter of the uterus, by their uncoiling in the cervix widen the os like an iris diaphragm in a microscope. These uterine contractions start as a peristaltic wave at the fimbrial extremity of the tubes and extend through the corpus uteri to the cervix. During the menstrual flow and in certain of the hemorrhagic cases the contractions are diminished in frequency and intensity or cease entirely to reappear at the terminal stage of the menstruation or hemorrhage.

The dominating factors of a normal menstrual cycle are:

1. The maturation and rupture of a graafian follicle.
2. The evolution and involution of the corpus luteum within that follicle.
3. The synchronous transmutations and autolytic disintegration of the corporeal endometrium essential to the inauguration and cessation of the menstrual flow.

4. Initial inhibition and terminal stimulation of intermittent uterine contractions for the quantitative control of the uterine blood supply.

Any perversion in the chronological concurrence of these menstrual dominants will result in menstrual perversion. Etiologically, the menstrual perversions designated as menorrhagia and metrorrhagia may for clinical purposes be grouped under the following captions:

1. Pregnancy.
 - a. abortion, intrauterine and extrauterine;
 - b. decidual degenerations.
2. Toxicoses (endocrine disturbances).
3. Systemic infections.
 - a. acute;
 - b. chronic.
4. Local infections.
 - a. acute;
 - b. chronic.
5. Neoplasms.

Excluding the hemorrhagic complications of pregnancy from present consideration, certain facts in the diagnostic differentiation of the remaining groups demand emphasis. Uterine hemorrhage of toxic origin is characteristically exemplified by the metrorrhagia of thyroid hypofunction, as first described by Hertoghe. The excessive bleeding occurs most frequently at the pubescent and preclimacteric period, there may or may not be a palpable enlargement of the thyroid. These patients bleed and grow fat, yet, notwithstanding their excessive loss of blood, they rarely show a marked reduction in hemoglobin.

Severe acute systemic infections, such as typhoid, typhus, and influenza, not infrequently present an excessive menstrual flow as a prodromal symptom, while among the chronic systemic infections syphilis and tuberculosis stand in the foreground as a cause of persistent uterine bleeding. From five to six per cent. of all gynecological patients yield a positive Wassermann and while the demonstration of such luetic reaction does not necessarily imply a direct relationship to the hemorrhage, the concurrence is therapeutically suggestive.

Metrorrhagia in the tuberculous is extremely rare and when present is due to a tuberculous ulceration of the endometrium. Among the acute local infections, salpingitis stands preeminent as a cause of abnormal bleeding from the uterus, while among the chronic local infections the initial focus will in the majority of cases be found in a chronic endocervicitis. The dominating pathological factor that determines the morbidity of a cervical laceration is not the extent of the tear but the incidence of its infection. Such an infection does not remain limited to the lacerated area, but sooner or later involves the entire endocervical mucosa from the external to the internal os.

In progressive cases, an ascending myometrial lymphangitis inhibits uterine contractions, the blood current in the valveless veins, deprived of its essential *vis a tergo*, is slowed, and the resulting circulatory stasis augments the menstrual flow in the nonpregnant (menorrhagia; metrorrhagia), or impairs decidual evolution in the pregnant with premature expulsion of conceptional products.

Finally, the mere demonstration of a neoplasm does not necessarily establish the cause of a given

uterine hemorrhage. Many patients harbor symptomless fibroid growths for years and present a uterine hemorrhage, due not to the growth, but to one or other of the etiological factors enumerated. On the other hand it is absolutely essential to exclude polypoid or small submucous myomata hidden in the cornual recesses of the uterine cavity. Of graver import is adenocarcinoma, limited to the upper endometrial zone, insidious in development and progress, all of which, barring the hemorrhage, may exhibit no physical evidence of their existence on routine palpation, their presence being established only by a diagnostic curettage or explorative vaginal hysterotomy.

To recognize any of the enumerated causes of metrorrhagia in a given case is to establish the therapeutic indications, but it is the hemorrhagic uterus which presents no palpable causative factor that demands special elucidation.

In a paper entitled *Studies on a Local Hematological Factor in the Causation of Uterine Hemorrhage*, I designated this type of uterine bleeding as functional metrorrhagia, based upon the following conclusions:

1. The general circulating blood, during the menstrual period and in the hemorrhagic conditions here considered, shows normal coagulative properties.

2. During menstruation and such hemorrhage, the endometrium receives the normally coagulable blood from the general circulation and gives vent to this blood in a noncoagulable state.

3. The noncoagulability of the menstrual and hemorrhagic blood discloses an identity in experimental and clinical manifestations, differing only in degree.

4. Under the given conditions the endometrium exercises a function capable of rendering coagulable blood noncoagulable.

5. This function, normal to menstruation, is due to an inhibiting substance, generated in the endometrium. The secretion of this substance is activated by a hormone periodically liberated from the graafian follicle of the ovary.

6. The noncoagulable blood contains all the essentials to coagulation, nevertheless, this blood does not coagulate and is capable of inhibiting coagulation in normal blood from any source, all of which warrant the assumption that the inhibitive biochemical element, presenting coagulation under normal conditions during menstruation, becoming augmented or protracted by contributory disturbances, presents the direct local causative factor in the production of uterine hemorrhage.

In 1914 I first designated this form of uterine hemorrhage, in which every known or accepted causative factor is excluded, as a functional metrorrhagia whose diagnostic and pathognomonic criterion is the incoagulability of the blood flowing from the uterus. These cases are all amenable to cure by local and systemic medication. On the other hand, every uterus that expels clots of appreciable size and number harbors some surgical condition as a cause of the hemorrhage.

To establish the functional nature of the condition is to establish a favorable prognosis; for,

notwithstanding the persistence and gravity of the hemorrhage, it is well to bear in mind that most of these patients will tend toward recovery after a more or less protracted period—provided that during this period, which may last several months, the bleeding can be held within safe limits. It is axiomatic that every clinical manifestation represents a normal function perverted or diverted, and every therapeutic effort must be based on the normal mechanism of that function. Coagulation is Nature's universal hemostatic, and every effort to control bleeding must be an effort to induce coagulation. In the treatment of these cases our therapeutic measures must be focused on two objective points: the regulation of the systemic blood pressure and the inhibition of the endometrial hyperactivity.

Whenever and wherever a copious hemorrhage occurs, Nature promptly diminishes the force and volume of the general blood current by relaxing the cardiovascular channels. Even the normally menstruating woman regularly presents a drop of from ten to fifteen points in blood pressure at the terminal stage of her menstrual period. The metrorrhagic cases, on the other hand, especially the preclimacterics, present a persistent high pressure, ranging from 150 mm. of mercury upward.

The indication for vasodilators is obvious. Under the guidance of a reliable pressure apparatus, aconite, nitroglycerine and especially atropine should be administered until the vascular hypertension is reduced to normal. Opium is a sovereign adjuvant and is indispensable in the cases characterized by cerebral erethism and general restlessness, which in itself is productive of circulatory pressure. I mention ergot in order to condemn its use in the most emphatic terms. It does not and cannot control these metrorrhagias: its specific influence on the musculature of the puerperal uterus is never realized in the non gravid organ, while its recognized augmentation of the general vascular tension only tends to increase or prolong the bleeding. The same applies to the use of pituitrin, hydrastin, and cotton root bark, while stypticin (cotarnine hydrochloride), styptol (cotarnine phthalate) and all the later synthetic oxytocics are absolutely inert.

I cannot enter on the outlines of the local treatment without a word of warning against the prevalent indiscriminate use of the curette, which, except for diagnostic purposes, has no place in our therapeutic armamentarium for this form of hemorrhage. The curette should never be used without an obvious indication, and the existence of such an indication places the case outside of our present category, for, as already stated, these are purely functional cases, with no organic lesions and a normal endometrium, the laceration of which by the curette only augments the hemorrhage.

Two topical medicaments, the correct application of which fulfil the local indications, correcting the perverted function without destroying it—in other words, moderating the bleeding to the rhythm and proportions of normal menstruation without destroying the endometrium—will be found in pure acetone and sixteen per cent. dilution of liquor

formaldehydi. Either of these agents is cautiously but copiously introduced into the uterine cavity by means of an intrauterine syringe. In copious bleeding—a preliminary application of adrenalin solution is essential to prevent the blood from diluting the medicaments and thus nullifying their effect. The syringe holds one half to one ounce. The uterine end of the cannula is wrapped in a thin layer of sterile gauze and thus introduced into the uterine cavity to the fundus. A free return flow must be assured by the patency of the cervical canal, and the vagina protected from the irritating fluid by proper lubrication. The syringe is slowly emptied of its contents and carefully withdrawn in such a manner as to leave its saturated wrapping in contact with the endometrium for twenty-four hours. A daily repetition of this procedure is essential. The hemorrhage does not cease at once, but is steadily reduced until a slight seepage, which may last several weeks, during which time treatment must be persisted in, inaugurates a normal intermenstrual period.

Should this method fail, the x ray and radium may be called into requisition, but to the present time, indeterminate and indeterminable dose, added to the many disagreeable side effects of these methods of treatment, place them as yet among the last of empirical means in the treatment of uterine hemorrhage.

Such, in bare outline, are the principles that govern the control of these hemorrhages. They involve innumerable details which are necessarily omitted here. We must always bear in mind that we are dealing not merely with a bleeding uterus but with a bleeding woman. The management of these patients offers the most legitimate field for so-called medical gynecology and their successful control will often tax the skill, the patience, and the therapeutic resources of the most experienced.

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57 WEST SEVENTY-FOURTH STREET.

SUBCUTANEOUS ANESTHESIA WITH ETHER AND OIL FOR GUINEAPIGS.*

A Preliminary Report.

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Many animals during the war were required in both medicine and surgery in the effort to conserve the life of the soldier. The blood of guineapigs and rabbits was used in the production of reagents for the Wassermann reaction, and the blood of rabbits was extensively used in the production of diagnostic sera. Dogs and cats aid in the decision of many problems concerning the badly wounded soldiers,

such as shock, or the choice of one of several operations.

It is desirable to anesthetize these animals in the most humane, the simplest, quickest, and safest way. These requirements have been met by the subcutaneous injection of ether and oil.¹

Anesthesia may be produced quickly and safely, and may be made to last from thirty minutes to two hours, according to the dose employed.

Technic.—After various modifications, the technic, as finally employed, consists in giving the injection just back of the neck, *against* the direction of the hairs, which are *not* removed.

Dosage.—The exact dose, according to body weight, for a given time, has been worked out as follows:

A predetermined dose of ether was given to two guineapigs, one weighing 900 grams and one weighing 310 grams. The larger animal was never completely narcotized (never off its feet), but its movements were incoordinated and it was wobbly and weak in the legs. After forty minutes it showed fair control of its limbs, and began to eat; it had fully recovered in an hour. The smaller animal was down in three minutes and was deeply narcotized for one hour (respiration lowered, with abolition of all reflexes), and it died at the end of two hours.

The maximum and minimum dose was determined by finding the amount of ether given in each instance cited in grams of body weight.

Minimum dose.—The guineapig that was only partially anesthetized (weighing 900 grams) was given four c. c. of ether and oil (oil fifteen per cent.). This may be expressed in the following equation:

$$\frac{85 \text{ per cent. of } 4.0 \text{ c. c.}}{9} = \frac{3.4}{9} = 0.37 \text{ c. c.}$$

The minimum dose, therefore, for guineapigs is 0.37 c. c. of ether for each 100 grams of body weight. Several additional experiments verified this as the minimum dose.

Maximum dose.—The guineapig that died (weighing 310 grams) was given 4.0 of the ether and oil mixture, and the amount of ether may be expressed as follows:

$$\frac{85 \text{ per cent. of } 4.0 \text{ c. c.}}{3.1} = \frac{3.4}{3.1} = 1.1 \text{ c. c.}$$

This is equivalent to 1.1 c. c. of ether for each 100 grams of body weight.

The two following experiments, in addition to the one already cited, verified the maximum dose:

One guineapig, weighing 335 grams, was given 4.3 c. c. It was down in four minutes, anesthesia lasted two hours and fifty-two minutes, and death followed three hours later. Another guineapig, of the same weight, was given the same dose. It was down in four minutes, anesthesia lasted one hour and twenty-six minutes; recovery was complete but tardy—too deeply narcotized.

Thus, of three animals given the maximum dose,

¹Ether was first combined with oil for anesthetic purposes in 1913; since that time it has been administered in many thousands of cases for colonic anesthesia (Seventeenth International Congress of Medicine, London, Subsection VII (b)). Oral analgesia (with ether and oil) for painful dressings has also been used successfully in many cases (*British Medical Journal*, March 2, 1918, 163).

*Authority to publish granted by the Surgeon General, U. S. Army.

two died, and the third was too deeply narcotized at all times. These experiments established the maximum dose for guineapigs.

Maximum safe dose.—This was obtained by striking an average between the minimum (0.37 c. c.) and the maximum (1.1 c. c.) as follows:

$$\frac{1.1 \text{ plus } 0.37}{2} = \frac{1.47}{2} = 0.74 \text{ c. c.}$$

Therefore, 0.74 c. c. of ether for each 100 grams of body weight was found to be the maximum safe dose for surgical anesthesia, lasting from one to two hours. Deviations of course may occur with faulty technic and with animals of different vitality. All animals given this maximum safe dose made a complete recovery from the anesthetic.

Fourteen experiments were carried out with the maximum safe dose. All animals were given a dose corresponding to 0.74 c. c. of ether, or 0.87 c. c. of the ether-oil mixture, for each 100 grams of body weight. The mixture contains eighty-five per cent. ether and fifteen per cent. olive oil. Eight of the fourteen animals were anesthetized over one hour. Four of these eight were down two hours; one an hour and a half. Two of the fourteen were down thirty minutes and over; three, ten to twenty-two minutes, and one was not anesthetized at all, because of leakage at the point of injection.

A second series of experiments was conducted with the object of ascertaining if a shorter period of anesthesia could be satisfactorily obtained with a smaller dose. This is the average between the maximum safe dose (0.74 c. c. of ether for each 100 grams of body weight) and the minimum dose (0.37 c. c. of ether for each 100 grams of body weight); it is 0.55 c. c. of ether, or 0.65 c. c. of the eighty-five per cent. ether-oil mixture, for each 100 grams of body weight. This corresponds to one half the maximum dose. Nine guineapigs were anesthetized with this amount. Of these, five were anesthetized over one hour, the longest time being one hour and twenty-four minutes; one, forty-three minutes; one, fifteen minutes; one died; one was not anesthetized.

A third series of experiments was conducted with a still smaller dose—the average between 0.55 c. c. and 0.37 c. c. of ether, which is 0.46 c. c. of ether, or 0.54 c. c. of the eighty-five per cent. ether-oil mixture, for each 100 grams of body weight. Twelve animals were anesthetized with this amount. Of these, nine were anesthetized over thirty minutes, the longest time being fifty-nine minutes. The shortest time was fourteen minutes. Two died.

Six more experiments, with a still smaller dose, were so inconclusive that it was decided that the practical minimum dose for anesthesia was represented in the preceding series.

SUMMARY.

The following doses have been determined for guineapigs, for each 100 grams of body weight, the eighty-five per cent. ether with fifteen per cent. olive oil being the mixture used in the experiments:

1. *Maximum safe dose.*—Anesthesia of two to two hours: 0.74 c. c. of ether, or 0.87 c. c. of eighty-five per cent. ether and fifteen per cent. oil mixture (or 1.00 c. c. of seventy-five per cent. ether and twenty-five per cent. oil mixture).

2. *Medium dose.*—Anesthesia for about one hour: 0.55 c. c. of ether, or 0.65 c. c. of eighty-five per cent. ether and fifteen per cent. oil mixture (or 0.72 c. c. of seventy-five per cent. ether and twenty-five per cent. oil mixture).

3. *Minimum practical dose.*—Anesthesia of about thirty minutes: 0.46 c. c. of ether, or 0.54 c. c. of eighty-five per cent. ether and fifteen per cent. oil mixture (or 0.60 c. c. of seventy-five per cent. ether and twenty-five per cent. oil mixture).

INCIDENCE OF INFLUENZA BACILLI IN THE UPPER RESPIRATORY TRACT.*

Influenza Patients During Months of February, March, and April, 1919.

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One of the striking features of the recent pandemic of influenza is the resulting diversity of opinion concerning the etiology of the disease. In the years following the epidemic of 1889-90 the feeling was apparently well established that the infection was due to the small gram negative hemoglobinophilic bacillus described by Pfeiffer. Early in the present outbreak bacteriologists directed their efforts to the isolation of this bacillus from the upper respiratory tract of influenza patients. Inasmuch as the isolation of this organism presents no great technical difficulties, even with the older methods, it was surprising to learn of the comparatively small proportion of instances in which many authors found it to be present. Friedlander, McCord, Sladen, and Wheeler (1), Nuzum, Pilot, and Stangl (2), and Ely and others (3), for example, found it relatively seldom in true cases of influenza and their conclusions gave rise to the impression that this particular bacillus bore only a casual relation to the disease.

In the light of more recent events it is difficult to believe that the so-called influenza bacillus, whatever its etiological rôle may be, was not present in the majority of cases, and it seems probable that the failure to detect and cultivate it was due to some technical fault. The fastidiousness of this bacillus in respect to cultural conditions, the delicacy of its growth on blood agar, the tendency of the usual organisms to overgrow or obscure it, and, in some instances the notorious inefficiency of alcohol as a decolorizing agent¹ are possible factors contributing to this failure.

During the course of the present epidemic the technic for the isolation of the influenza bacillus has been so much improved that now failure to recover in a true case of influenza is the exception rather than the rule. It has been found that instead of using the inconvenient West tube it is sufficient to apply a naked swab to the posterior

*Authority to publish granted by Surgeon General, U. S. Army.

¹For decolorization a mixture of three parts alcohol and one part acetone is recommended instead of pure alcohol, because this mixture offers no temptation for human consumption.

wall of the nasopharynx. With a little easily acquired skill the danger of carrying saliva to the culture medium is obviated and the incubated plates usually show a satisfactory number of influenza colonies in proportion

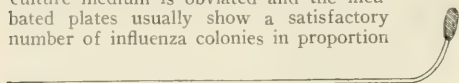


FIG. 1.—Swab for obtaining cultures.

to those of other organisms. True nasal secretion and sputum offer less desirable material for culturing.

By far the most important factor in the isolation of the bacillus is the nature of the culture medium employed. On the usual blood agar, even with a proper reaction, the colonies are minute and delicate while the colonies of the accompanying bacteria are usually far more numerous and prominent. The chocolate agar devised by Williams came into prominence because of the more luxurious growth afforded by it. On it the colonies are more opaque and more numerous than on blood agar, and frequently attain a diameter of three to four millimetres. The use of this medium facilitated the isolation of the influenza bacillus and considerably augmented the number of positive cultures.

The efficiency of our bacteriological methods was still further enhanced by the introduction of oleate hemoglobin agar by Avery. This medium not only possesses the advantage of restraining the development of streptococci, pneumococci and other gram positive organisms but at the same time stimulates the growth of *Bacillus influenzae*. On this agar the influenza colonies have a peculiarly distinctive appearance and attain a considerable size, thus making their identification a simple task.

This development of bacteriological technic combined with a constant influx of patients to the hospitals of the port of embarkation afforded an excellent opportunity for studying the prevalence of *Bacillus influenzae* in clinical cases. Because of the fact that this bacillus had been so long associated with this epidemic disease it was felt that it was of first importance to determine in how large a proportion of cases the bacillus was present. On account of the press of routine work it was necessary to limit the study to this particular aspect of the problem instead of undertaking a more comprehensive bacteriological study in all cases.

The system of records existing in the army made it possible to obtain definite information concerning the onset and subsequent clinical course of the infection in each case, while the routine of the U. S. Army Laboratory of the port of embarkation at Hoboken, N. J., Sixth Avenue and Eighteenth Street, New York, furnished all desired collateral clinical information. Just prior to undertaking this study detailed instructions as to the procedure and methods of bacteriological examination were sent to all laboratories of the port of embarkation in order that a uniform technic should prevail. As soon as the patient was admitted to the influenza wards cultures were taken and blood counts made on the first, third, and sixth days of the disease. The clinical course of the disease was carefully followed and all patients who failed to

show the characteristic symptoms were excluded from the final analysis. The seriousness of the disease frequently led the examining surgeon to make a diagnosis of influenza and isolate patients who subsequently were found to be suffering from other infections. The laboratory findings in these cases, particularly a failure to find influenza bacilli, frequently led to a change of diagnosis, and it is interesting to note that in none of the subjects giving negative cultures did influenza or bronchopneumonia ever develop.

The technical procedures were as follows:

1. *Taking cultures*.—a. Swabs.—Pieces of hay, baling or other similar wire six inches in length are bent at an angle of eighty degrees three quarters to one inch from one end. On this end a small amount of cotton is firmly wrapped to make a swab. These are placed in plugged glass containers and sterilized by dry heat (Fig. 1).

b. Nasopharynx. The tongue is depressed with a sterile tongue depressor, the swab introduced back of the uvula with the bend parallel to the tongue then rotated until the direction of the bend is perpendicular to the tongue, and the anterior and posterior walls of the nasopharynx thoroughly swabbed. The swab is withdrawn without touching the uvula or tongue and thoroughly rubbed over a small area of the medium in a Petri dish (see Figs. 2 and 3). A sterile platinum loop is rubbed back and forth over this area and then without lifting it from the surface it is streaked over the whole plate as indicated in Fig. 2. If the material on the original swab is scant the loop is then also streaked radially from the central area. Where economy of plates is demanded one plate may be used for two cases and streaked as shown in Fig. 3.

2. *Media*.—The following media were used:

a. "Chocolate" agar of Williams, pH = 7.4.

b. Oleate hemoglobin agar of Avery, pH = 7.4.

c. Castile soap hemoglobin agar. Owing to the difficulty experienced by many in securing satisfactory sodium oleate, pure Castile soap was substituted for sodium oleate in the original Avery formula, five c. c. of a two per cent. solution being added to ninety-five c. c. of agar, to which the washed corpuscles from one c. c. of blood had been added while the agar was hot. This medium was found to have the same inhibiting action on other



FIG. 2.

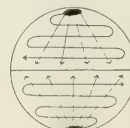


FIG. 3.

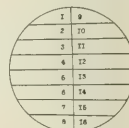


FIG. 4.

Illustrating schematic methods of plating cultures.

organisms and proved to be a most favorable medium for the influenza bacillus.

d. Blood agar. Five per cent. defibrinated human blood with meat infusion agar, pH = 7.4.

All plates were incubated before use.

3. *Cultivation*.—Plates were examined at the end of twenty-four hours and again at forty-eight hours. Smears from all suspicious colonies were stained by Gram's method and colonies of typical bacilli fished to oleate or soap agar, chocolate agar, and plain agar. In order to spare material, as many as sixteen transplants may be made on one plate by marking the plate with a wax pencil as shown in Fig. 4.

4. *Identifications*.—Typical subcultures on oleate or chocolate agar which failed to grow on plain infusion agar were presumptively diagnosed as *Bacillus influenzae*. Such findings were confirmed microscopically.

5. *Results*.—The results of the bacteriological examinations are shown in the accompanying table.

Explanation of table.—Under the classification "influenza acute" only those cases were included which showed the characteristic symptoms of the fastigium of the disease before the onset of complications, and which in addition gave a leucocyte count of less than ten thousand on the first, third or sixth day of the disease. The "influenza convalescent" cases were those patients who had had the disease, had escaped complications but were still on sick call. "Influenza complicated" cases were the patients who had passed through the early stages of the disease and were suffering from lobar or bronchopneumonia, empyema, etc., with hypo-leucocytosis.

soap hemoglobin agar consistently gave more positive cultures than did the chocolate medium and the proportion was still greater when compared to blood agar. The last named medium must be considered as an unsatisfactory medium for the isolation of the influenza bacillus.

Eight cases clinically diagnosed as influenza gave negative cultures and were subsequently found not to have been influenza. On the other hand, the influenza bacillus is frequently found in persons suffering from other diseases of the respiratory tract. This is shown by our findings in the sputum in 143 cases coming to the laboratory with a diagnosis of pneumonia with no reference to a previously existing influenza. All but seven of these cases were bronchopneumonias and undoubtedly postinfluenzal. Among them the influenza bacillus was found in 117 or 82.2 per cent., being present unaccompanied by pneumococci or hemolytic streptococci in twenty-three instances. Seven had pneumococci alone, and eighteen hemolytic streptococci. In twenty-five pneumococci were associated with influenza bacilli, and from fifty-eight both hemolytic streptococci and the influenza bacillus were isolated. Two had pneumococci and hemolytic streptococci, while in ten pneumococci, hemolytic streptococci, pneumococci and influenza bacilli were present.

As to the actual proportion of carriers of the influenza bacillus among normal individuals we

TABLE SHOWING BACTERIOLOGICAL FINDINGS IN INFLUENZA PATIENTS IN FEBRUARY, MARCH, AND APRIL, 1919.

	1919.	Months total.	Flu. bac. influenza present	Flu. bac. not present	H. influenzae influenzae	—Hemolytic streptococcus—					—Pneumococcus—					Result
						alone	to	Flu.	Flu.	Flu.	alone	to	Flu.	Flu.	Flu.	
Influenza, acute	January	26	25	06	Not complete.	1 Scarlatina, 1 Pleural effusion, 1 Pneumonia developed.
	February	33	31	90.9	4	..	..	..	..	..	..	..	..	..	..
	March	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	April	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	81	73	90.5	..	..	..	..	..	..	..	..	..	..	..
Influenza, convalescent	January	Not complete.	1 Nephritis, 1 Gastric ulcer.
	February	43	33	76.7	Not complete.	..	..	..	..	..	..	..	..	..	..
	March	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	April	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	44	33	77.3	..	..	..	..	..	..	..	..	..	..	..
Influenza, complicated	January	9	9	100	1	1 Empyema (H. S.), 1 Meningitis (pneu.), 1 Empyema (H. S.), 1 Diphtheria, 2 Empyema, 1 Pleural effusion, 2 Empyema (H. S.).
	February	64	61	95.3	3	..	5	..	..	..	..	..	..	..	..
	March	42	42	100	39	..	..	..	..	..	..	..	..	..	..
	April	20	20	100	17	..	..	..	..	..	..	..	..	..	..
	Total	135	133	100	..	..	..	..	..	..	..	..	..	..	..
Total	260	242	93.08	10	2	2	36	3	8 Died

Discussion.—The total of ninety-three per cent. of positive findings (for *Bacillus influenzae*) in 260 cases of acute and convalescent influenza, or 96.3 per cent. if the acute and complicated cases are grouped together, would seem to attest the efficiency of the bacteriological methods employed, and to point to some intimate relationship between the bacillus and the disease. Other results of the work not tabulated showed that the nasopharynx gave a much higher proportion of positive cultures than did deep swabs from the nose. The oleate and

have obtained no data. However, during the spring of 1918 before the outbreak of the epidemic the presence of this bacillus was incidentally observed in cultures taken for the detection of meningococcus carriers. The proportion increased as the season advanced and the observation was deemed to be of sufficient importance to warrant its transmittal to the surgeon general of the army. In our opinion the presence of the influenza bacillus in apparently normal individuals need not be regarded as evidence against the possible etiologic

importance of the bacillus. It may be that it appeared as the forerunner of the disease with little or no virulence at the beginning, but by spreading from individual to individual it gained in virulence until finally in the early autumn of 1919 it attained its full pathogenicity for men.

SUMMARY.

In 260 cases of influenza the *Bacillus influenzae* was isolated in 242 instances or 93.08 per cent. Out of eighty-one acute uncomplicated cases seventy-three or 91.5 per cent. were positive. Out of 216 acute or complicated cases 208 or 96.3 per cent. were positive. Out of the forty-four convalescent cases thirty-four or 77.3 per cent. were positive. Influenza bacilli were found in every one of 135 complicated cases.

2. Cultures from the nasopharynx gave a higher proportion of positive results than did those from the nose.

3. Oleate or castile soap hemoglobin agar was found to be by far the most favorable medium for the isolation of *Bacillus influenzae*.

The author desires to acknowledge the hearty cooperation of Captain Benjamin White, Sanitary Corps, and Miss Dorothy M. Gostenhofer, laboratory technician, who carried out the technical part of the work, and to express his appreciation to Captain O. T. Avery, Medical Corps, for several preparations of sodium oleate, and also to Fairchild Brothers and Foster for their generous courtesy in preparing 100 grams of sodium oleate particularly for this investigation.

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SOME LEGAL ASPECTS OF THE NARCOTIC DRUG PROBLEM.

With Particular Reference to Medical Practice.

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The statute known as the Harrison Narcotic Law was passed by Congress and became a law on December 17, 1914. Section 2 of this statute, so far as material for the purpose of this paper is concerned, provides in substance that no sale or other disposition of the drugs specified in Section 1 shall be made except pursuant to a written order of the purchaser, which must be made upon a blank form issued by the Commissioner of Internal Revenue.

Order forms must be bought from collectors of internal revenue, and are not permitted to be sold to any person except one who has registered and paid a tax as provided in Section 1. No person except an original purchaser from the collector is permitted to use an order form to procure the drugs. By Section 1 of the act the drugs covered by it are specified to be "opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof," and the persons entitled to register and required to pay a tax are limited to importers, manufacturers, producers, dealers, physicians, dentists, veterinary surgeons and other practitioners.

It will be apparent from the foregoing summary that none of the specified drugs can lawfully come into the possession of any person as a consumer, and that such drugs may legally be obtained only by those whose business or profession involves the manufacture of, dealing in or use of the drugs. Section 2, however, contains certain exceptions to this rule, two of which, exceptions A and B, are alone material for the present purpose. Exception A permits the dispensing or distribution to a patient by a physician, dentist or veterinary surgeon registered under the act, in the course of his professional practice only. Exception B permits the sale, dispensing or distribution by a dealer to a consumer under and in pursuance of a written prescription issued by a physician, dentist or veterinary surgeon registered under the act.

The general scope and purpose of the law thus appears to be a regulation of the distribution of narcotic drugs, and the limiting of their consumption by human beings to cases where they are administered, prescribed or dispensed to a patient by a physician or dentist. Such regulation and limitation of consumption are not in themselves within the powers of Congress under the United States Constitution, as they fall within what in legal parlance is termed the "police power," which is reserved by the individual states to be exercised within their borders. The Constitution gives to Congress full power of taxation for the purpose of raising revenue, and in order to bring the regulatory features of the law within the constitutional power of Congress the attempt was made to frame the act as a revenue measure, with the regulatory provisions as incidental features. To the lay mind, and from the viewpoint of practical administration and effect of the law, the relations would naturally appear reversed, and the imposition of a nominal registration tax and fee for order blanks would seem to be incidental to the main purpose of limiting consumption.

Naturally enough, this led to grave doubt as to the constitutionality and construction of the law. Conflicting decisions on various points involved were rendered by the lower federal courts, and two questions, in particular, were so doubtful as to lead to serious difficulty in the enforcement of the statute. One was whether the restrictions attempted to be imposed on the distribution of the drugs were constitutional. The other, involving the construction of the law, was whether there was any limitation of the discretion of a physician as

to the cases in which, and the manner in which he might prescribe or dispense narcotic drugs. Two cases finally reached the Supreme Court, and on March 3, 1919, that court handed down decisions in these cases, by a vote of five to four, which constitute a final determination of those questions.

The decisions were rendered in the cases of *United States v. Doremus*, and *Webb, et al., v. United States*, both reported in full in volume 249 *United States Reports*, on pages 86 and 96 respectively. The court held the provisions of Section 2 of the Harrison law to be constitutional, on the ground that the act was a revenue measure, and that the restrictions imposed were germane to and legitimately incidental to the main purpose of raising revenue. The restrictions upon sales, in the opinion of the court, "tend to diminish the opportunity of unauthorized persons to obtain the drugs and sell them clandestinely without paying the tax imposed by the federal law." On the question of construction the court held, in substance, that exceptions A and B did not permit the dispensing or prescribing of narcotic drugs to an addict where it was done neither for the treatment of any disease nor in the course of professional treatment in the attempted cure of the habit. This construction was also based upon the revenue raising purpose of the statute; the court suggests that an addict receiving a quantity of a drug might not use it all for himself, but might sell some to others without paying the tax, and that Congress "may have deemed it wise to prevent such possible dealings because of their effect upon the collection of the revenue."

The practical effect of these decisions is to deny to physicians the right to prescribe or dispense narcotic drugs to drug addicts in any case except 1, cases in which there is a legitimate medical reason for the use of the drugs, other than drug addiction, and 2, cases where the drugs are legitimately used in the course of bona fide professional treatment for the cure of the addiction. While this greatly clears up the legal situation as compared with its status before the rendering of these decisions, there is still considerable room for doubt and misunderstanding, and it seems desirable that physicians should be informed of some of the questions likely to arise, and that some of the possible applications of the decisions be explained.

The first point that should be clearly understood is that the Harrison law, as construed by the Supreme Court, is the paramount law governing the subject matter. Some of the States have laws covering the same ground, and some municipalities may have regulations dealing with the subject. These laws and regulations cannot alter, modify or effect the rules laid down by the Harrison law and by the federal courts in cases arising under it. They can impose additional restrictions and requirements, which are binding within their jurisdiction, so long as they do not conflict with the federal law. In other words, in all respects in which the local rules are stricter than the federal rules, they are valid; in all respects in which they are less strict, they are invalid, and will not protect a physician complying with them from prosecution under the federal law. One or two hypothetical examples

may help to make clear the limitations upon the scope and legal effect of such local rules. Let us assume that some State law or regulation defines a drug addict as one who regularly takes narcotic drugs for a certain specified period. Under the federal law the question of whether a person is an addict, or, to use the phrase more characteristic of the federal court practice, "an habitual user," is a question of fact to be determined in each individual case. No physician could safely rely on the assumption that a person who had used drugs for less than the period specified in the local definition was not an addict, for purposes of federal prosecution of the physician. As another example, suppose a local law or regulation authorized the administering, prescribing, or dispensing of cocaine to an addict of that drug as part of a course of reduction treatment for the cure of the addiction. It would still be open to the federal government, upon the prosecution of a physician using such treatment, to prove by competent medical testimony that the reduction treatment was not a legitimate method of cure in the case of addiction to that particular drug; the federal courts would not be bound by the provisions of the local law, nor would the physician be protected by such provisions.

This brings us to the second point, which is a consideration of the application of the Supreme Court decisions to actual medical practice. As regards treatment for the cure of addiction, there can be no doubt that treatments involving the continuance for a certain time of the use of narcotic drugs, such as the reduction treatment, or treatments in which the dose is maintained, with other medication, during a period preparatory for actual withdrawal, may be legitimate under conditions in which the drug is administered by a physician or nurse, and the period of administration not unnecessarily prolonged. The question of the legitimacy of these methods is to some extent a medical, rather than a legal question, as was indicated in the foregoing reference to cocaine. If it were clearly established, as a medical proposition, that cocaine using is a mere habit, that its immediate discontinuance does not injure the patient, and that there is no medical reason or excuse for curative treatment by "tapering off," then it is probable that such method would be held illegitimate and its use evidence of professional bad faith. A more serious question arises when we consider the legal status of the so-called "ambulatory" treatment, in which the narcotic drug is placed in the possession and control of the patient, for self-administration. It is generally conceded that this method is not usually successful in curing patients, but it is contended by some that it could be successfully used under conditions whereby the patient would be prevented from securing elsewhere supplies of drugs in addition to the amount allowed him by the physician treating him. It has in fact been recently attempted, in the city of New York, to put these conditions into effect by means of a system of registration and identification of addicts, designed to prevent their being treated under assumed names by several physicians at the same time. The fact that such a system has been actually adopted in that

city, considered in connection with the legal principle adverted to above, that no physician is protected against federal prosecution by any local law or ruling, makes it necessary to give careful consideration to the status of the "ambulatory" treatment under the Harrison Law.

In the case of *Webb et al. v. United States*, before mentioned, the Supreme Court answered a question propounded to it by the lower court as follows:

Question.—"If a practicing and registered physician issues an order for morphine to an habitual user thereof, the order not being issued by him in the course of professional treatment in the attempted cure of the habit, but being issued for the purpose of providing the user with morphine sufficient to keep him comfortable by maintaining his customary use, is such order a physician's prescription under exception B, of section 2?"

Answer.—"To call such an order for the use of morphine a physician's prescription would be so plain a perversion of meaning that no discussion of the subject is required. That question should be answered in the negative."

The inference that might be drawn from the question is that the lower court considered that it would be legitimate for a physician to issue a prescription for morphine to an addicted patient in the course of professional treatment for the purpose of cure. No such inference can be drawn, however, from the Supreme Court's answer, unless it be merely from the failure of that court to discuss the matter further. The absence of an extended opinion in the *Webb* case was due to the fact that the court on the same day handed down its decision in the *Doremus* case, and deemed that its views were sufficiently expressed in the opinion which accompanied that decision. It was in the *Doremus* case that the court laid down the proposition that an addict was likely to dispose illegally of narcotic drugs coming into his possession, and declared that the purpose of Congress in imposing the restrictions upon physicians in prescribing or dispensing these drugs was to prevent such illicit dealings. While it cannot be said, therefore, that the Supreme Court has definitely decided that the "ambulatory" treatment, when given for the purpose of cure, is illegitimate, it is obvious that such a decision would be in harmony with the principles that it has laid down in construing the Harrison Law, and that this would be irrespective of the medical merits of the treatment, or of any precautions that might be taken to insure its curative efficacy by cutting off the patient's access to other possible sources of supply, unless these were supplemented by adequate means of preventing the patient from disposing illegally of the drug prescribed or dispensed to him.

The use of narcotic drugs in treatment of patients who are not drug addicts is not affected by the Supreme Court decisions. Their use in treatment of other pathological conditions is not rendered illegal by the fact that the patient may be an addict. The only cases of this sort in which a physician might run the risk of successful Federal prosecution would be cases in which he had made a

false diagnosis in bad faith or with a gross lack of professional care, or in which he had prescribed or dispensed an amount of drug in excess of the possible legitimate requirements of the patient. It is important, however, that he should differentiate, or at least make an honest attempt to differentiate, between the symptoms due to the addiction and those due to some independent pathological condition. The safest plan, where circumstances render it necessary to treat withdrawal symptoms apart from a course of treatment for cure, and where the physician is not reasonably sure of the existence of an independent cause, is to do so by direct administration rather than by prescribing or dispensing.

Some mention has been made in preceding paragraphs of professional bad faith, and this suggests the consideration of a question often raised in this connection. The prescribing or dispensing of narcotic drugs in bad faith by a physician undoubtedly renders him liable to prosecution, but does good faith inevitably protect him? Section 2 of the Harrison Law does not make use of either of these phrases, and the use of them has been brought about by attempts to give a more specific meaning to the words "in the course of professional practice." The general rule of law is that when an act is specifically prohibited by statute the motive or intent of the person who commits such an act is immaterial, and the innocence of such intent does not protect him against conviction. Applying this rule to the provisions of the Harrison Law, we find that the disposal of narcotic drugs, except to registered persons using official order forms, is specifically forbidden, and that the issuance of prescriptions "in the course of professional practice only" is allowed by an exception to the prohibition of the law. The purpose of the law has been declared by the highest court to be the prevention of the possible disposal of narcotic drugs without tax payment, and supplying them to an addict in order to keep him comfortable has been judicially held incompatible with this purpose. There are physicians who do not agree with the policy of the law as thus laid down, and who maintain in good faith that in many cases it is medically proper to keep an addict supplied with a moderate amount of narcotic so that he can go about his business and be free from pain and discomfort until such time as he finds it practicable and convenient to be cured. This is in accordance with the customary course of professional practice, which contemplates the relief of pain and discomfort.

It seems hardly necessary to point out that the holding of these views by a physician cannot give him a license to nullify the plain purpose of the statute. To the extent that the maintenance of an addict's supply is forbidden by the judicial interpretation of the law, it is obvious that the court's holding was not based on the determination of a medical question, but on the decision of a legal point, and that difference of medical opinion was not considered as material to the decision. The possible and probable bad faith of the addict was the decisive feature, and the act of the physician

in keeping up his habitual supply was held to be illegal *per se*. It would seem to follow from this that even though a physician might supply an addict with narcotics for the purpose of cure, honestly believing the "ambulatory" treatment to be a medically legitimate curative treatment, he might nevertheless be held guilty as doing an act contrary to the policy of the law. He could not justify himself from the legal standpoint merely by proof that he believed, from the medical standpoint, that the method was meritorious, or even by proof that it was meritorious, since there are other methods of curative treatment which are medically at least as sound, and which do not involve any act in conflict with the policy of the statute.

Since the foregoing was written the Commissioner of Internal Revenue has handed down Treasury Decision 2879, under date of July 2, 1919, which is in accord with the views herein expressed. Treasury Decision 2200, dated May 11, 1915, had permitted the prescribing or dispensing of an amount of drug larger than that necessary to meet the immediate needs of a patient, provided the good faith of the physician was shown by a decreasing dose, in the case of treatment of an addict. The ruling issued July 2, 1919, revokes the earlier ruling, and states that the revocation shall be applicable in all cases, whether a decreasing dose is indicated or not. This recent ruling, issued in view of the Doremus decision mentioned above, thus ignores the element of good faith as a criterion of legality.

52 BROADWAY.

CEREBROSPINAL FLUID FINDINGS IN SO-CALLED SPANISH INFLUENZA.

Isolation of the Organism.

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Following the literature in the present pandemic, a marked degree of variation was noted in the bacteriological and pathological findings. This was most striking in the blood cultural reports. Although complete as the reports have been, no mention was made of the cerebrospinal fluid find-

able to obtain results easily, and of a more uniform nature. My present report is based upon twenty-two such cases, the patients ranging from seven to forty-two years of age. Previous to my following this procedure, a general study was made of the blood and urine of all patients admitted to the hos-

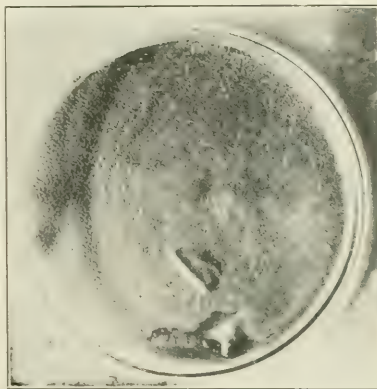


FIG. 2.—Growth on glucose agar.

pital, and results similar to those of Dever, Boles, and Case (1) were noted. Leucopenia was marked in all cases, and a study of the sputum showed a marked degree of variation, with a predominance of gram negative organisms mostly diplococci; in numerous cases streptodiplobacilli were also noted, this was found to be gram positive. It has been the custom to use Czapelewski gentian violet method, decolorizing with pure absolute methyl alcohol repeatedly in all gram stains performed.

In all the cases only three patients presented symptoms of meningeal irritation, although rigidity of the muscles involved was not marked. In the rest of the series the patients were devoid of any external evidence or signs of meningeal involvement.

The history showed that in practically all cases the onset was insidious in character. In some of these diagnosis was almost impossible, due to the varied course of symptoms, until the first week had elapsed. In no instance was a distinct chill noticed, the main complaints were chilly sensations noted by patients. The general appearance, cyanosis, fancies, labored breathing, epistaxis, presented in all cases a bad prognostic outlook. The most striking feature of all these cases, and especially the most serious ones, was the clearness and the unaffected condition of the patient's mind until the time of death. No patient showed delirium. The patients could at all times be very easily aroused. The temperature ranged from a minimal rectal of 102.4° to a maximal of 105.3°. No definite course was noticed, although in some the rise would be greater in the afternoon, and in others in the morning, the curve approximating very closely a septicemia chart, with corresponding changes in the pulse and respirations. The blood pressure was unusually low in many cases, some

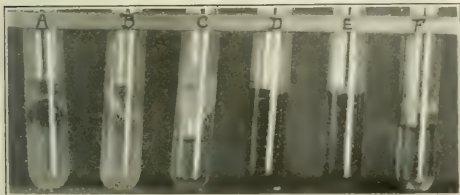


FIG. 1. Cultural characteristics on various media.

ings. I undertook to study the cases presenting symptoms characteristic in the more severe forms, such as nosebleed, cyanosis, hyperpyrexia, labored breathing, carphologia, and partial unconsciousness. These cases were selected with the hopes of being

presenting a systolic as low as 85 with no diastolic reading. This was most predominant in cases which gave a positive spinal culture. Unfortunately no study could be made on the cadaver; no necropsies were performed, as most of the cases were

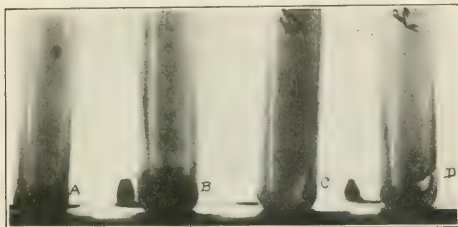


FIG. 3.—Growths on subcultures.

among private patients. The method followed in performing rachientesis was that of Quinke, as described by Regan, and in no instance was any difficulty encountered (2).

Media.—In each instance a freshly prepared bouillon made from chopped beef was used. Titration was +3 to phenolphthalein, to which two per cent. glucose was added. For solid media two per cent. glucose nutrient agar gave excellent results. Blood glucose bouillon was also used, but the growth was not as rapid. The same was true of

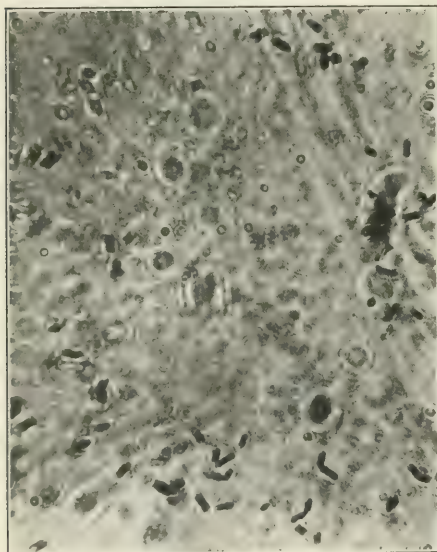


FIG. 4.—Stained specimen organisms standing alone and attached to each other.

blood glucose agar. Gelatin was of the standard type, freshly prepared.

Technic.—The patient was placed on his right side and the skin over the area of operation was cleansed with benzine, followed by a thorough soap

and water cleansing. Alcohol and iodine were used to sterilize the operative field, absolute precautions were taken to keep field sterile, the patient being draped with sterile sheets and towels. Test tubes sealed with rubber corks were used to collect fluid, and were sterilized twice in the autoclave for a period of fifteen minutes under ten pounds pressure. For each rachientesis two tubes were used; in the first tube about five or ten mls of the fluid was collected for the cell count and chemical analysis, in the second tube the rest of fluid was received which was used for cultural purposes.

Findings.—In all cases an increase in the pressure of the spinal fluid was noted. This varied from a strong full stream to a rapid flow of drops. The first important point of interest noted was the clearness and translucence of the fluid; in no case was the fluid turbid or cloudy. The globulin reaction of Noguchi was strongly positive in all; a flocculent precipitate showing immediately upon adding the sodium hydroxide solution. A constant

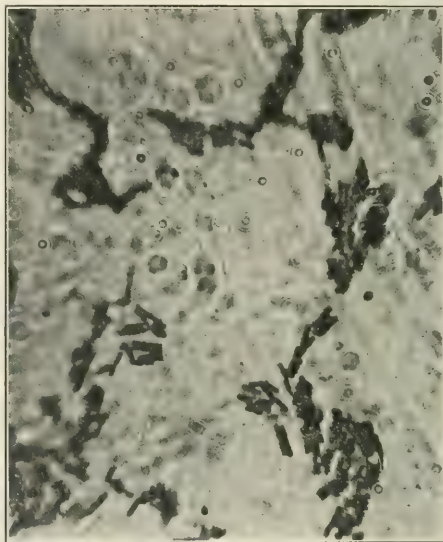


FIG. 5.—Beaded or granular changes in cell bodies.

deep canary yellow color was present in performing this reaction, just before the precipitate was formed, and on forming, the color would disappear entirely. The reduction of Fehling's solution was present in a marked degree. The cell count was found to be low (see Chart I). In only one case it was over forty to the cubic millimetre. Differential count of cells showed a predominance of polymorphonuclear cells over the lymphocytes, although disintegration of these cells was marked. No organisms were found after rapid centrifuge of smears made from the fluid. From the twenty-two cases studied, eighteen showed a positive culture. All of these cases ended fatally, except one.

Cultural methods.—The fluid obtained in second tube was used. About five mls was poured di-

rectly over the glucose broth, care being taken not to make ends of tube come in contact with each other. This was repeated in two other tubes making a total of three glucose broth cultures. The same was done with glucose nutrient agar, three plates were inoculated with about three mils of fluid in each one. The agar was kept liquefied at a temperature of 42° C. The temperature of incubators for all work done in this series was the stand-

cultures from the broth and agar plates show the same characteristics (see Fig. 3, A and B). On old cultures of glucose broth, small filamentous processes again make their appearance in three weeks, and extend downward presenting a stalactite picture. These are very delicate and on slight agitation of the tubes they will become detached from the surface growth and fall to the bottom.

Stab cultures made on gelatin showed the same

CHART I.

Case No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Physical Exam.	Color	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	Translucence	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Consistency	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Volume	15	20	10	13	10	21	22	11	8	18	14	10	20	28	15	30	17	25
	Specific gravity	.007	.006	.007	.002	.001	.002	.002	.007	.008	.006	.003	.005	.003	.004	.003	.002	.005	.005
Chemical Exam.	Reaction	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Sugar	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str
	Butyric test	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str	Str
	Microscopic Exam.	42	36	18	25	32	16	40	24	28	32	39	35	21	16	18	26	39	23
Microscopic Exam.	Polynuclear	63	55	57	72	60	58	55	60	72	62	71	63	50	70	51	52	52	62
	Lymphocytes	25	25	43	28	40	24	45	26	28	28	27	27	27	27	27	27	27	27
	Endothelial	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Bacteria	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cultural Exam.	Growth on glucose media	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive

T. Translucent. C. Clear. N. None. A. Alkaline. Str. Strong. Cell count expressed in c. mm. Volume expressed in c. c. Specific gravity in thousandths plus 1.

ard 37.5° C. The gelatin was kept at room temperature.

Cultural characteristics on glucose broth.—In from forty-eight to ninety-six hours in the incubator a small filamentous process appears, extending from the bottom of the tube to the surface of the media. If this is left unmolested, in the course of six to eight hours the bottom attachment becomes free and tends to be retracted toward the surface. In the meantime a small grayish white growth appears in the centre of the surface. After twelve hours the growth has reached its full development and the filamentous process disappears entirely. The growth on glucose broth is peculiarly characteristic. It tends to grow on the sides of the tube to a height of one quarter inch, in some cases higher, the edges are irregular and corrugated and in the centre, bleblike projections extending far above the surface of the media are presented (see Fig. 1, E). If the growth is touched with a platinum wire it is found to be very coriaceous and the complete growth can be lifted from the surface of the media to the sides of the tube (see Fig. 1, C).

When the edges are loosened from the surface and sides of tube, and left unmolested, it will gradually sink to the bottom (see Fig. 1, A, B, D, and F). The under surface presents a reddish purple chromogenic quality, especially in cultures obtained from animal inoculation.

On glucose agar plates the growth is profuse (see Fig. 2), appearing after forty-eight to ninety-six hours' incubation. This begins with a small area and rapidly extends to the sides of the plate in from six to eight hours. The growth is very characteristic, presenting a wrinkled surface, resembling very much an alligator skin. This is most coriaceous and can be peeled completely off the surface of the agar with the platinum needle. Sub-

characteristic growth on the surface in thirty-six hours. Along the line of stab a growth very similar to that of a tetanus stab was formed after forty-eight hours. This is presented by a cloudy linear mass surrounded with radiating prolongations into the gelatin producing an arborescent effect, assimilating very closely an inverted pine tree. The gelatine begins to liquefy on the surface on the third day and is completed on the twentieth day. The growth along line of stab shows that the organism is a facultative anaerobe.

On the carbohydrates the behavior is shown in Chart II. For a basis Hiss serum water was used to which one per cent. of the sugars was added. Acid production was positive on all except raffinose. There was no gas produced. A decidedly strong coagulum of the serum was formed on dextrose and maltose.

Microscopical findings.—The organism is a bacillus ranging from 2.5 μ to 4 μ in length and 1 μ to 1.5 μ in breadth. Stains readily with the ordinary

CHART II.

	Dextrose.	Maltose.	Raffinose.	Mannite.	Inulin
Acid	—	—	—	—	—
Gas	—	—	—	—	—
Coagulation	—	—	—	—	—

aniline dyes and is decolorized by Gram's stain. It appears singly or in pairs attached end to end (Fig. 4). Involution forms are numerous. In a fresh twenty-four hour subculture the uniform rod shaped organism is found. In seventy-six hour cultures, a marked degree of variation in size and staining characteristics are noted (Fig. 5, 6, and 8). No capsule was found, motility was absent and no flagella were present. The formation of spores was very active.

Sporulation.—At first a beaded or granular

change takes place in the cell body. (Fig. 5. This picture is not very distinct.) This process is followed by a central highly refractile body larger than the breadth of the organism (Fig. 6). At this stage the staining becomes markedly altered, some stain deeply, others faintly and some not at all. The spores have a marked degree of resistance toward the stain. Moeller's carbolfuchsin method stains very unsatisfactory. During the process of sporulation, the cell body undergoes a process of degeneration so that only the plain spores are seen (Fig. 7).

COMMENT.

The spinal fluid has been neglected both from absence of real meningeal symptoms and lack of positive findings in the spinal fluid. A study of Chart I, will convince that with little difference in the specific gravity nothing of real importance can be gained. The chemical findings are positive, while the microscopic would be termed doubtful in value. The highest count was forty-two cells to the c. c. with absence of any organisms after rapid centrifuge methods. The cultural examination showed positive growths in eighteen out of twenty-two cases, or a percentage of 81.8. Another important feature noted in the study of these cases was, that with one exception, every case presenting a positive culture ended fatally.

The procedure outlined is a rather simple one, and can be easily carried out in all equipped institutions. A study of cases with the employment of these methods would make it possible to study the disease in a different light with interesting results.

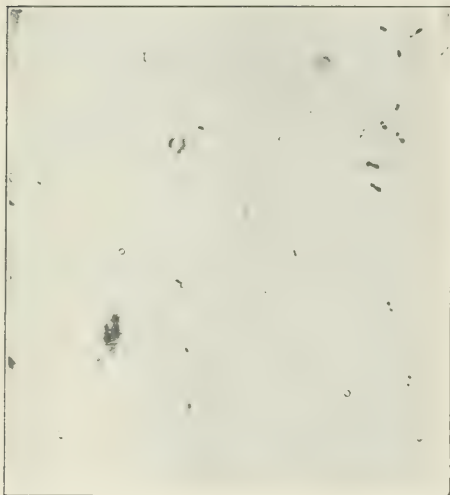


FIG. 6.—Central body, highly refractile.

At present numerous experiments are being performed upon animals and results in symptoms very similar to those in the human are observed. Intratracheal insufflations of the organism shows its presence in the blood with a terminal bronchopneu-

monia. These experiments will be published later in another paper.

CONCLUSION.

1. Spinal fluid cultures of so-called Spanish influenza reveals the presence of a characteristic organism in a large proportion of the cases.
2. The organism is a bacillus, gram negative,

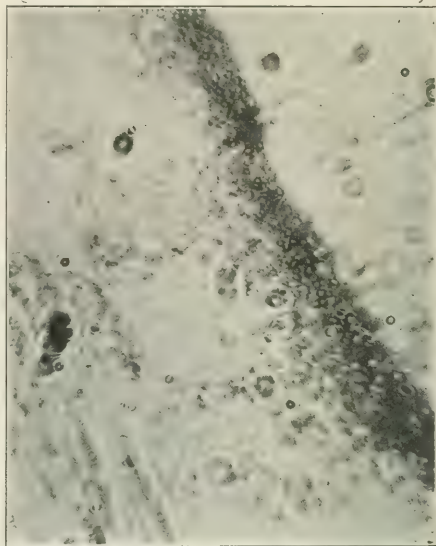


FIG. 7. Plain spores as result of degenerative process.

facultative anaerobe, nonmotile, acid producing, and forms spores.

3. The organism was found in 81.8 per cent. of the cases studied.

4. This organism is different from any heretofore isolated from the spinal fluid.

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New Incision for the Tympanic Membrane.—

R. Lake (*Lancet*, June 7, 1919) calls attention to the great tendency of the tympanic membrane to heal after incision for the liberation of pus and thus to defeat the purpose of the incision. To avoid this prompt healing he recommends the use of a semilunar incision along the edge of the membrane and through its posterior superior quadrant. The flap thus formed tends to fall away by gravity and thus keeps the membrane open for drainage. He also recommends the postoperative instillation of a mixture of equal parts of ten volumes of hydrogen peroxide and solution of chlorinated soda, mixed immediately before use and injected while effervescing. The mechanical effects of freshly liberated oxygen are thus combined with the action of eucalorine which is forced deeply into the middle ear.

DEMONSTRATION OF SPIROCHÆTA PALLIDA IN NERVE TISSUE BY DARK FIELD ILLUMINATION.

With Report of a Case of Paresis.

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Philadelphia.

(From the Clinical Laboratories of Mt. Sinai Hospital.)

The histological structures in tissue preparations for demonstration of *Spirochæta pallida* offer no impediment in making out the morphology of the organisms except in nerve tissues. Here the observer is confronted with a maze of fibrils that so closely simulate the spirochæta, both in ability to take the stain and morphologically that at times it is difficult and sometimes impossible to differentiate them. After many hours' search the worker is nearly always doubtful that the structures that seem like spirochæta may not really be the dendritic processes of a nerve cell. Because of our previous experience with this class of tissue we decided to try a method in which this difficulty may be eliminated, namely, dark field illumination, for by this means motile spirochæta if obtained, are conclusive evidence of the presence of syphilis, and confusion with nerve cell processes reduced to a minimum. The following case of paresis was particularly suitable for this method of examination, inasmuch as permission for autopsy was granted during life and the brain and spinal cords obtained within an hour after the patient expired.

CASE I.—I. S., white, forty-eight years of age, single, and a traveling salesman, was admitted to the Mount Sinai Hospital (medical service of Doctor Shmookler), complaining of loss of memory, general tremors, and nervousness. Past history of a tongue chancre seventeen years ago. Mercurial treatment for three or four years, and a period of perfect health until within several weeks of his admission, when he appeared irrational at times and complained of imaginary wrongs and insults. Physical examination revealed a normal temperature, pulse sixty-four and regular, the skin cold and clammy with lividity of the finger tips. Expression was dull and apathetic with marked mental hebetude, slow cerebration, incoordination of speech, and irregular gait. There was some catatonía, and depressive delusion and mutterings occupied the mind constantly. Pupils were unequal and reacted sluggishly to light and accommodation. The tongue protruded and was tremulous, and there were general tremors of the body. The extremity reflexes were slightly exaggerated. Beside a slight mitral murmur no other physical defects were noted. Urine, specific gravity 1.022, trace of albumin, and a few hyaline casts, no sugar and no acetone. Blood, hemoglobin, seventy-five per cent.; red blood cells 4,430,000, white blood cells, 11,000; polynuclears seventy-two per cent.; small mononuclears twenty-six per cent., large mononuclears two per cent. Wassermann test two plus. Cerebrospinal fluid

pressure 250 mm.; cell count 140 lymphocytes to the cubic millimetre. Noguchi globulin test four plus; acetoferricyanide test four plus; Heller's test four plus. Reducing substance plus; lactic acid one plus drop; potassium permanganate plus in a few seconds. Lange colloidal gold test 5,544-200,000 (syphilitic curve). Wassermann test four plus.

A diagnosis of paresis was made and the patient received beside courses of specific treatment about twelve intraspinal treatments (Ellis and Swift) of salvarsanized and neosalvarsanized serum during a period of four months. Although serologically the patient steadily improved, in that at the end of four months his blood Wassermann was negative and his cerebral spinal fluid pressure dropped to within normal limits together with a reduction to a two plus Wassermann, yet clinically he gave little evidence of improvement. At times his mental state seemed clearer, but only for a short interval when he again lapsed into a state worse than before, so that two weeks before death he was maniacal in his behavior. There suddenly developed a temperature of 103° F. with increased respiration, slight cough and edema of the right thigh due to femoral phlebitis. The patient's condition became gradually worse; he was weakened not only by his restlessness, but also by the complication, and he succumbed to an attack of pulmonary edema.

Autopsy was performed about an hour after death and the following was noted: On opening the skull the dura was found markedly thickened and adherent with hemorrhagic pachymeningitis marked over the frontal lobes. A diffuse leptomeningitis was present with serous effusion over the entire cortex. The cortex appeared atrophied especially over the frontal lobes and the vessels were markedly injected. Four milky spots about two by two centimetres were noted over the cortex along the great fissure. Spinal cord showed congestion of bloodvessels only; otherwise no abnormalities were noted. Both lungs were markedly congested and edematous and in the right lung there was a small area of infarction with a base about four by three centimetres on the upper lobe at the axillary line. The heart showed myocarditis and a thickened mitral valve. The aorta was normal. The spleen was congested and the follicles prominent. The kidneys were swollen, the capsules tense and upon incision the cut surfaces edematous and pale with cloudy swelling. Otherwise no abnormalities were noted in the other organs. On dissecting the right thigh the femoral vein was found thrombosed about six inches below Poupart's ligament with surrounding structures edematous. The clot was firm and occluded the vein for a distance of about three centimetres.

The brain and cord were immediately removed to the laboratory and by means of dark field illumination a few *Spirochæta pallida* were demonstrated in the cortex of the frontal, frontoparietal regions, and in the pons as well as the meninges, but only after prolonged search in the latter. As the brain tissue cooled it was more and more difficult to demonstrate organisms, until four hours after death

it was utterly impossible. No organisms were demonstrable in the spinal cord and cerebellum. To obtain clear preparations of cortical tissues for dark field illumination it is essential that the fresh smear from the cut surface of the cortex be mixed with a drop of sterile physiological saline solution. Inoculation into rabbit testes was made from the fresh material, but the animal was lost due to an intercurrent infection.

After prolonged search on Levaditi of many sections some organisms were discovered but owing to the great difficulty in differentiating between the other structures that simulate spirocheta, these findings would have been of doubtful value without the first dark field observations. The routine hematoxylin eosin preparations showed not only atrophic changes in cortical cells, but diffuse infiltration with small lymphocytes, with increased amount of fibrous thickening and adhesions of meninges to the cortex.

As far as the writers know no one has described this method of demonstrating *Spirocheta pallida* in fresh nerve tissues before, and they hope that it may be of aid to others, lightening their burden in their search for the organisms in syphilis of the nerve system.

1208 SPRUCE STREET.

CIRCUMCISION.

BY JAMES HOWARD HEACOCK, M. D.,
New York,

Former Chief of Staff, Volunteer Hospital, New York; Surgical Staff, St. Mary's Hospital; Surgeon, Northwestern Dispensary.

From a religious rite among the Hebrews and an early custom with the Persians, East Indians and early Egyptians, circumcision has developed into almost a universal practice especially with the highly civilized races. Putting aside all sects and creeds and barring all sentiment on such a delicate subject, there is not a matter that should be spoken of more often and urged on the public. Sex hygiene demands it, in fact it is not complete without frequently alluding to this one neglected question of personal care. Formerly mothers were wholly immune to suggestions along this line and even considered it an insult for a physician to say that her boy was not born normal and needed operative measures. Her answer was invariably, "No." Just as the old doctor resisted the theory of germs as the cause of disease, so it was with the good mother who failed to realize the benefit of such advice.

To carry on a propaganda through the JOURNAL columns may seem offensive to the profession but the means to the end can not be accomplished without constant agitation.

The Gentile would do well to establish a precedent in this event and one of the greatest fields of preventive medicine would be covered, not only relating to disease but to cleanliness as well. As this problem must be solved, education as to the ease with which the operation can be performed, the slight danger from hemorrhage with ordinary care, and the great comfort it affords to the indi-

vidual. In more ways than one the mothers get together and learn the new fads and fancies and they will astound you with their knowledge of asepsis and antisepsis; sterilization of the milk bottle; care of the rubber nipple and pasteurization or sterilization of the milk. Why is it not possible to teach them the proper hygiene of the genitalia?

How many young men today find that they are in need of circumcision on account of a marked phimosis, paraphimosis or a venereal sore or ulcer? Every surgeon has heard young men say, "I wish I had had this operation done when I was a kid" and rightly so too. However, criticism is not fitting when a lack of knowledge is at fault.

Universal circumcision as a hygienic measure would be out of the question at present. The public is not ready for it. It will take many years to educate the public to the necessity of circumcision.

114 WEST SIXTY-FOURTH STREET.

INTERPRETATION AND SIGNIFICANCE OF LABORATORY FINDINGS.

BY J. M. ROSENTHAL,
New York.

The object of this paper is to make an appeal for the standardization of laboratory reports, so that the physician when he receives a report from any laboratory will immediately be enlightened and not confused by its wording.

It is the practice of some laboratories to report of urine, albumin present in slight traces, faint traces, marked traces, or heavy traces. This, to my mind, has very little or no value, for the obvious reason that what one technician might consider a slight trace another would interpret as a heavy trace and *vice versa*. Therefore why not establish a set standard and come to some definite conclusions as to the basis of a slight trace and heavy trace, and let us represent certain definite quantities as one plus, two plus, three plus, four. In the following résumé I will present my proposed plan:

One plus albumin represents 1 gram to 1,000 c. c. of urine.

Two plus albumin represents 1 to 4 grams to 1,000 c. c. of urine.

Three plus albumin represents 5 to 8 grams to 1,000 c. c. of urine.

Four plus albumin represents 8 to 10 grams to 1,000 c. c. of urine.

If there is less than one gram to 1,000 c. c. it should be reported too small to estimate. In this method the physician would have a definite idea as to the quantity of albumin present. In reporting acetone, diacetic acid, and indican these symbols can be made use of in the same manner. In the microscopical examination of urine the number of casts and the type found in each field and the number of fields examined should be reported. For instance one cast in twenty fields means practically nothing, but five to a field may be a serious matter.

CASTS AND THEIR SIGNIFICANCE.

True casts are moulds of the uriniferous tubules. Their mode of formation is not entirely clear. Undoubtedly a colloid substance is thrown into the

lumen of the tubule and the latter solidifies forming a distinct cast of that particular tubule.

Hyaline casts.—They occur in any condition in which the kidney is altered by circulatory, toxic, or inflammatory disturbances. They are not pathognomonic of any one condition and may be found as a result of simple functional disturbances. No significance whatsoever should be attached to the presence of an occasional hyaline cast. When these casts become numerous they should then be interpreted as meaning a disturbance of the kidney, although the absence of other types would rather speak against a marked pathological change.

Granular casts.—These are modifications of the true hyaline casts, in the sense that the fine or coarse granules are found in the matrix of the hyaline cast. The granules are undoubtedly derived from the renal epithelium which has degenerated completely. The coarser the granules the more severe the inflammatory process.

Waxy casts.—Waxy casts were once believed to be pathognomonic of amyloid degeneration of the kidney. They appear early in this type of kidney lesion, but also occur in all varieties of chronic kidney disease. They are usually a bad prognostic omen as they indicate an advanced process.

Epithelial casts.—Epithelial casts are hyaline casts with inclusions of renal epithelium. The cast is indicative of a severe destructive lesion of the renal epithelium.

Fatty casts.—These casts are masses of epithelial cells which have degenerated and have fat globules contained within them.

Blood casts.—These contain a large number of blood cells and indicate a serious advanced lesion of the renal parenchyma.

Pus casts.—These are hyaline casts with enclosures of pus cells. They are formed within the tubes of the kidney and usually indicate an acute pyelonephrosis.

Cylindroids.—These are mucous bodies and have no significance. As a rule the granular types of casts are observed in chronic processes, while the cellular forms are usually present in acute conditions. Doctor Cabot's recent work shows that it is unwise to base a diagnosis of renal disturbance entirely on urinary findings, but should be used as a link in the diagnosis, because postmortem examinations of patients who had a urinary picture of nephritis, showed no renal lesion. The symptoms in the case as well as the laboratory findings must be taken into consideration.

It is poor policy for the laboratory worker to venture an opinion as to the diagnosis unless he is thoroughly familiar with the symptoms and the history of the case. The clinician who is thoroughly familiar with the course of the disease is the only one capable of interpreting the findings of the laboratory. The physician is likely to be misled if he is guided by the remarks of the laboratory entirely and disregards the physical findings.

The approximate number of pus cells to each field should always be reported. In a female the pyuria may be due to a leucorrhea; in a male it may be due to gonorrhea. A catheterized specimen should always be taken if the pyuria is very marked

and it is imperative in differentiating between a pyelitis and a cystitis. In cystitis the presence of 100 pus cells to a field, alkaline urine, triple phosphates, ammoniacal odor, bladder cells and mucus are the elements found. In pyelitis, 500 pus cells to a field and deep renal cells and very often hyaline casts are found. Pyelonephrosis is a very common condition at this period of the year, especially in children, and very often a urinary examination will clear up a diagnosis.

In sputum the report should state how many tubercle bacilli are found to a field and how many slides were examined, also if any other pathological element was found, for example pus cells, other bacteria, Cuschman's spirals, or fibrous tissue.

Smears for gonococci should not be reported slightly positive or suspicious, they are either positive or negative, it cannot be anything between. The report should state approximately how many cocci are seen, whether they are intercellular or extracellular, and how many slides or fields have been examined. Very often the *Micrococcus catarrhalis* is mistaken for gonococci, because the pathologist neglected to do a gram stain.

The medical profession should not lay too much stress on one single report and accept the data as final, but should have another specimen examined and if on subsequent examination the same elements are found, the report can be given greater value. For example, glucose may be present in the urine on one occasion and a few days later may be absent. The physician may have informed the patient that he has diabetes, and is surprised when he receives a second negative report. He immediately condemns the laboratory man, disregarding the fact that there is a condition known as transitory glycosuria, which may be due to a nervous state in the patient. If the physician is conservative in his practice these errors will not affect him in the least, but if he is radical he may be placed in a very embarrassing situation, and it may mean a financial and moral loss.

I think it is quite necessary at this time to consider the various methods of properly collecting specimens for pathological examination. It is surprising to see the strange containers which are sent to laboratories. I remember having received a specimen of urine in a tomato can, and you can readily see how a contamination of this kind influenced the result. The microscopical examination showed the urine full of calcium oxalates, and vegetable fibres. I will present the standard methods for the collection of specimens.

Collection of urinary specimens.—In all urinary examinations in which quantitative relations are to be studied it is necessary that a portion of the total twenty-four hour specimen be examined. This should be thoroughly mixed and carefully measured. In making a twenty-four hour collection the patient is instructed to empty his bladder at a specified time, preferably 7 a. m. This portion is thrown away, and all the urine passed from that time until the bladder is emptied at 7 a. m. the next day is saved.

A thoroughly clean bottle of from a half to a gallon capacity should be used as a container. This

should be corked after each addition of urine and kept in a cool place. As urine undergoes decomposition more or less readily, depending upon bacterial activity, some preservative should be used to prevent this. Doctor Sahli recommends the addition of a small amount of chloroform. He says, "Much work has been done by the clinician which owing to the faulty methods in which the urine has been collected has subsequently proved to be worthless."

It may be said without reserve that a fractional specimen of urine is of no value for examination, except for certain qualitative tests. These are specific gravity, reaction, presence of albumin, indican, glucose, bile, acetone, and a microscopical examination. All quantitative tests made with a sample of urine of which the twenty-four hour quantity is not known are useless. Unfortunately they may be worse than useless, for they may lead the clinician to use the results obtained for a diagnosis which is based on entirely wrong premises.

Of what importance is it to know that a urine contains four per cent. glucose, two per cent. or one per cent. albumin? It is of no value, except that it shows that it contains urea, albumin, and glucose. What is of importance, however, is to know that a patient is excreting thirty grams of urea, 100 grams of glucose, or one per cent. of albumin in the twenty-four hours. This information can only be properly ascertained when a twenty-four hour specimen has been obtained.

To obtain a specimen of urine for bacteriological examination, the following procedure should be followed to obtain the best possible results: In male patients the surface of the glans and the orifice of the meatus must be thoroughly washed with a bi-chloride of mercury solution followed by sterile water, and the first portion voided thrown away, the last portion may be collected in a sterile vessel and then it is ready for culturing.

In female patients it is absolutely necessary that catheterization be performed. The external genitalia and especially the orifice of the urethra should be washed with green soap and water. The opening of the urethra is then dried and covered with sterile cotton pads soaked in boric acid. A sterile glass catheter is inserted, care being taken that it touches only the orifice of the urethra. The urine is allowed to flow freely for a short time, when the last portion is collected for examination in a sterile vessel.

Throat cultures should be taken in the following way: Where patches are found the sterile swab should be placed at the edge of the patch and not in the centre, as the middle portion is very frequently filled with dead bacteria and necrotic tissue and consequently a sterile growth may result when in reality Klebs-Loeffler bacilli may be present. Never use antiseptics in the oral cavity before taking a throat culture because it is a waste of time.

Ear cultures.—In taking ear cultures be sure that the sterile swab does not touch the wall of the ear as this will lead to contamination, and the invading organisms will be masked by the growth of the contamination. As I previously mentioned in taking throat cultures antiseptics should not be applied

prior to taking the culture the same rule holds in taking cultures from the aural cavity.

Smears for malaria should be spread as thinly as possible as the thick smears give very unsatisfactory results. If the blood is properly smeared the cells and any abnormal element may readily be seen.

Smears for gonococci.—Smears of the exudate are made by receiving a drop of purulent material upon one end of a glass slide and spreading it in a thin even layer by means of a second slide. These smears should always be fixed by passing them through the flame before sending them to the laboratory for examination. The common error one often sees is that the smears are entirely too thick to stain, as the aniline dyes can not penetrate through these masses of mucous and cells. The proper labeling of specimens is another point worthy of our consideration. Specimens should be labeled as follows: Name and address of the patient; name and address of the physician; character of specimen; if urine, whether casual or a twenty-four hour specimen; if routine or any special examination; if urgent, mark so and the results can be telephoned; if catheterized, it should be stated.

A pathologist should bear the same relation to a physician as a consultant does in his particular field. I believe that the laboratory worker should be given the history of a case so that he can be familiar with each and every condition that exists in the patient. You would not call a heart and lung specialist and expect him to render an intelligent opinion without giving him the complete history of the case, but you send specimens without a word of explanation concerning the case. It is not absolutely essential that the pathologist have the history of a case, but you can expect much better work when you give it to him. For instance, the laboratory worker does not have to know that the patient gives a history of gonorrhea in order to find the gonococci in a smear, but if he has this knowledge he would probably exert more effort in order that he might find the cocci. Some physicians might assert that the pathologist would be biased in his report if he knew the history of each case, and make his report conform with the physician's physical findings. This does not hold for a conscientious worker would not sign his name to a report unless his finding justified it. I think that it should be the pathologist's duty to call the clinician's attention to any deviation so that if he was basing his diagnosis on an error he could be set on the right track. If you have confidence in your laboratory worker, and cooperate with him, I am sure that you will be greatly enlightened in many ways concerning new tests and methods, which may be of great advantage to yourself and to the patient.

In this paper I have endeavored to set forth to the medical profession some of the cardinal factors which should be borne in mind when sending a specimen to a laboratory for examination, and if these principles are carried out, I am confident that reports will have greater significance and the work of the clinician and pathologist will be greatly mitigated, and lastly the patient will be the one most benefited by our work and care.

355 EAST 149TH STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

VISCUM ALBUM AS A VASODILATOR.

A drug which has found favor as a vasodilator, particularly in France and Switzerland, is *viscum album*, or mistletoe, and deservedly so. The American mistletoe (*Phoradendron flavescens*) has not the same action as *viscum album*, as it is rather more a hypertensor of the vascular system. Gaultier, who has carried out exhaustive researches on *viscum album*, always used the galenical preparations, because he considered that they were the only reliable ones since our knowledge of the active principles of the drug was still incomplete. He employed a watery decoction of the leaves and bark of the mistletoe of the oak tree (twenty-five grams of the fresh plant in 100 c. c. of physiological salt solution), and gave it by intravenous injections. Gaultier noted: 1, A constant and persistent drop of the arterial pressure; 2, an acceleration of the heart beats. The fatal dose (five grams for a dog) produced an arrest of the heart's action. At autopsy hemorrhages in the gastrointestinal mucosa and endocardial suffusions were found. Ingestion of the drug is inoffensive and produces little, if any, intestinal irritation.

Mistletoe owes its general hypotensive action to the fact that the drug acts on the central vasomotor nervous system. It has no hemolytic or coagulating action. However, Doyon and Gaultier have shown that the extract of *viscum album*, when given in large doses by intravenous injection, causes a loss of coagulability of the blood, but this is only temporary. *In vitro*, the extract is without action on the blood, although a slight retardation in the coagulation resulted. Intravenous injection of the extract produced a profound state of calm, even a state of pseudonarcosis, in the animal. Fubini and Antonini have shown that mistletoe is not toxic for the tissue cells of animals since cells with vibratory cilia of the frog's pharynx retain their mobility after contact with the drug. The toxicity of the juice of mistletoe, which is quite high for the frog, is low for the guineapig (fifty centigrams per kilogram of animal). An intense vasodilatation is produced at the site of the injection. The muscle structures are very sensitive to the action of *viscum album*; there is a tendency to contracture, especially of the unstriated fibres, after which there results a progressive diminution of their excitability and a rapid exhaustion. The action on the heart and circulatory system can be compared to that of digitalis: an increase in systolic energy and a slowing of heart beats. According to these writers, *viscum album* is also a hypotensor which owes its action to a paralysis of the vasomotor centres. The peripheral vasodilatation is due primarily to the central nervous system and to a diminution of the excitability of the vasoconstrictors. Mistletoe also possesses an intense diuretic action which favors nitrogen elimination and consequently diminishes the action of the vasoconstrictors. The hypotensive action is, according to Dossin, preceded by a short period of hypertension.

The doses and exhibition of *viscum album* are as follows: Decoction, six to fifteen grams in 250 c. c.; the watery extract at the dose of twenty centigrams to one gram daily in pill form (that made from the fresh plant is to be preferred); the fluid extract of the fresh plant at the dose of twenty to sixty drops daily. It may also be given subcutaneously or injected into the muscles, in which case the dose is one cubic centigram of salt solution containing twenty centigrams of the extract. A good formula is:

Pulv. hamamelis 10 centigrams
Ext. viscum album aq. 20 centigrams
M. f. pil. No. 1. D. tal. dos. No. xl.
S.: Two to five pills a day.

This prescription will be found useful in cases of metrorrhagia, arterial hypertension, hemoptysis, and other arterial disorders.

As will be seen, the therapeutic indications for this admirable drug are all types of arterial or venous hypertension, arteriosclerosis, cardiac hypertrophy and turgescient hemorrhoids. Mistletoe clinically possesses a most remarkable hypertensive action, from the regularity of its effects as well as from their duration. It controls not only temporary hypertension but permanent hypertension as well. This medicament is consequently indicated particularly in the treatment of congestive hemorrhages and above all hemoptysis and certain forms of tuberculous hemoptysis which have as principal causes a temporary hypertension. There is no doubt that in a series of hemoptyses, hypertension and congestive flux play important parts, and any treatment which can cause a rapid and powerful vasodilatation with a general drop of the blood pressure will be most potent for the cure of these hemorrhages.

In this respect Gaultier prefers *viscum album* to the nitrites and says: "By prescribing from four to six pills daily, each containing five centigrams of the extract of mistletoe, or by the injection of one c. c. of a watery solution, I have seen the arterial tension become notably lower and the hemorrhages stop." His clinical reports seem conclusive. Where a temporary hypertension exists which may create hemorrhages in those affections where hypotension is the rule, as in typhoid fever, for example, it was quite natural that an essay should be made with *viscum album*, and for intestinal hemorrhage arising in this infectious disease it has been successful in overcoming the loss of blood by lowering the vascular tension.

Bardet has injected mistletoe with success in one case of cerebral hemorrhage. Gaultier and Crouzon have employed it in congestive metrorrhagia, while Bardet and Menci  re resorted to it in symptomatic metrorrhagia. Dalch   advises its use in the hemorrhages of the menopause. Finally, Gaultier advises *viscum album* in injections in the treatment of epistaxis, especially when the loss of blood is the result of arteriosclerosis or the menopause.

Mistletoe is an essentially French discovery and so far as I am aware it is unknown to German clinicians.

Editorial Notes and Comments

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NEW YORK A WORLD CENTRE FOR MEDICAL INSTRUCTION.

It is to the leaders in science that the Western Hemisphere may well look to seize the opportunity which the upheaval of world conditions has brought. Not to the turn of Fortune's wheel, but to the energetic thrusting of an appreciable wedge into this opportunity is due the proposition to launch a nation wide campaign for the establishment of a world medical centre in New York city. The organization has already been formed, its constitution and by-laws adopted, and its application filed at the office of the Secretary of State in Albany. The national campaign will be for the purpose of raising the necessary funds, the sum of \$50,000,000.

This is not an entirely new project, for Dr. Wendell C. Phillips, who is president of the new association, had such a conception in mind before the war, but conditions are especially favorable now to establish this world centre at a time when the former centres of Vienna and Berlin are in the decadency and the world is everywhere facing a new awakening. This is particularly true since the western world has been drawn into closer and more active contact with the old world and has been able to prove its readiness in men and means to cooperate with older organizations and institutions.

It would be well, however, to bear in mind that here a temptation arises to which our younger nation has not always been immune—that of an over-

estimate of its independence of older nations. The best results will be obtained and the object of the new association attained not by competition but by cooperation and a rivalry that lies within the limits of this cooperation. This will make available in the most advantageous manner the larger facilities in hospital beds and laboratory equipment which the organizers lay claim to for New York in excess of those of European centres. The broadest policy of investigation and instruction would be built up, which would advance this city as such a world centre to the students of this hemisphere. It would offer to them an accessible and available place of study and at the same time it would maintain an avenue of connection with the also newly awakened world of Europe and keep in close touch with medical advance there as elsewhere. The tradition and continuity of medical growth would thus be healthily maintained and the new institution be rightly a broader and more vigorous instrument in the way of advance. Such will no doubt be the association's highest aim.

The specifically stated objects are the improvement and extension of the methods of graduate and undergraduate teaching; the utilization of teaching material now unemployed in the city, including the vast amount of clinical material; the bringing together, in a working affiliation in the service of the best educational interests, of the medical schools, hospitals and laboratories and the public health facilities; the initial establishment in New York city of a medical educational foundation in order that funds may be available for all forms of medical education and investigation. Membership in the organization will be open on the one hand to all physicians in good standing, teachers of auxiliary sciences, and investigators in related problems and on the other hand, in a more limited membership, to medical teachers and medical men affiliated with hospitals or appointed to such.

BIG, ROUND SPECTACLE LENSES.

Some of our readers may be surprised to learn that a protest was made at the recent meeting of the American Medical Association against the so-called library and Windsor styles of spectacle frames. Several of the members were wearing such glasses, yet no dissent was made to the statement that they are apt to be harmful for two reasons, the lenses are too large and widely separated, and they turn in the frames. The only reason why they are worn is that it is fashionable to wear

them. We wish to endorse this protest, and while doing so, try to give an idea of the way in which these glasses do damage, the attempts which have been made to mitigate the harm, and the reasons why those attempts have failed. The two faults mentioned above are that the lenses are too large, too widely separated, and that they turn in their frames. The first may cause a certain degree of artificial muscle imbalance, concerning which much could be said, but the second is far more serious. A very large proportion, perhaps the majority, of the glasses prescribed today, are not primarily intended to improve vision, but to relieve eyestrain due to astigmatism. This relief is accomplished by placing in front of the eye a segment of a glass cylinder with its axis held rigidly to correspond with the axis of the astigmatism. A cylindrical lens improperly placed before an eye does not correct the existing astigmatism, but imposes an additional burden.

The sufferer from eyestrain goes to a doctor, who carefully and accurately determines the amount and axis of the astigmatism and prescribes the same in writing. The prescription is taken to an optician. To the patient a pair of glasses is a pair of glasses, that is all, no matter how painstakingly the doctor may have tried to impress on him the necessity of keeping the axis of that cylindrical glass exactly right. Large, round glasses in a hideous frame are fashionable, so he instructs the optician to fill the prescription in this style. Both the doctor and the optician know what will result. The round lenses sprung into the frames are held from turning by nothing except friction. Sooner or later they will be turned more or less while the grease and dust that will accumulate on their surfaces are being wiped away. Suppose they are rotated fifteen degrees when replaced in front of the eyes the wearer has his own astigmatism uncorrected and has in addition an equal amount of artificially produced astigmatism at another axis. If the rotation is exactly ninety degrees his astigmatism is practically doubled. Often the person has been warned of this. Sometimes two little scratches have been made, one on the glass and one on the frame, and he has been told to see that these form a straight line at all times, but it is human nature to neglect such little annoying details. Sometimes the optician places a little cement between the lens and the frame, but this is of only temporary value. More than one doctor, and more than one optician, has devised a little bar or peg inside the frame which, when let into a little nick to be ground in the edge of the lens, would hold the latter from turning, but none have been able

to have them made. Some time ago an eminent ophthalmologist circularized his brothers in the profession begging them to write to the manufacturers of the frames and insist upon the adoption of some device to prevent the turning of the lenses. Several devices were exhibited and the replies of a number of manufacturers were given.

It seems to us that the causes of this failure to do away with a serious fault are not far to seek, and that they are beyond our control. Manufacturers have an antipathy to adding minute costs to their products unless they can see their way clear to recompense through increase of sales. But, as it is the proper thing to wear these frames, sales are at their maximum and we can promise no increase should such a holding device be added. Will they assume this small addition to the costs for humanity's sake? Ask them. What we are up against, in the final analysis, is a decree of Dame Fashion, who can be reached by neither reason nor ridicule. If the lenses could be made slightly oval they could not turn, but she says they must be large and round. It is better to be dead, or to suffer, rather than to be out of style. Protest is futile. Until she decrees the big, round lens to oblivion our best endeavors to relieve eyestrain must largely go for naught. May such a decree come soon.

HUMIDITY AND TEMPERATURE.

"Almost every one realizes the supreme importance of the right kind of air; but our ideas of what is really right are still hazy. A dry climate, for example, is generally supposed to be better than a moist; cold waves are thought to do much harm in winter; and a uniform climate with the right temperature is assumed to be better than one subject to pronounced variations. These are regarded by the layman as well established principles, and are generally accepted by physicians. Yet a study of death in a score or more countries suggests that they are fallacious."

With this statement Ellsworth Huntington, research associate in geography at Yale University, begins a stimulating article in *Modern Medicine*, May, 1919, describing some investigations to determine the relation of health, or more specifically deaths, to temperature and humidity. In this investigation, use is made of climographs, by which the author means charts on which is plotted the average departure of the death rate from the normal under the climatic conditions indicated by the temperature figures at the side and the humidity figures at the top. "Such climographs give a good insight into the effect of climate. The difference between cities plays no part since each city

is compared only with itself. The effect of epidemics is also eliminated, except in rare instances, . . . but the averaging of a large number of cities and of a large number of years almost completely smoothes out the effect of all epidemics such as occurred during the years in question."

Basing his views on the study of the relation of about sixty million deaths to temperature and humidity, the author comes to the following conclusions:

"People of all races seem to have the best health at approximately the same mean temperature, 64° F. Apparently there is no such thing as acclimatization. Cold waves are highly beneficial to health; continued cold, however, leads to increased morbidity. On this basis frequent use of a sudden but temporary drop of temperature would appear advisable as a therapeutic agent. Alternations of temperature from warm to cool, and the reverse, appear to be decidedly favorable to health. Hence our practice of sending patients to uniform climates seems erroneous. We need to live out of doors in a moist, variable climate with a mean temperature of about 64°, but with many cold waves. In hospitals such conditions should be simulated."

FUNCTIONAL REEDUCATION.

The principal thought that was brought home in the First Anniversary Meeting of the opening of the Clinic for Functional Reeducation was the permanency of the work done. An institution has been established, and has flourished for a year, gradually increasing its scope of work and usefulness. Materials and data have been gathered from every country in Europe in an effort to give the returned men the best treatment that the medical men of the world have been able to devise.

The work will be permanent, for in the industries of the country with high speed machines, transportation facilities, the mines, mills, and factories, and the accidents of civil life not directly attributed to industry, there will always be occasion to employ the methods which have been devised in the great war laboratory.

It is interesting to note in connection with the reeducational work done in this country that Congress has modified the original bill which President Wilson vetoed on account of the sum, six million dollars, being too scant to adequately provide for the teaching and care of the disabled. The new bill provides for an appropriation of eighteen million dollars—a small sum for a great work—a small sum in comparison to the expenditures for the war—a small sum for repair in comparison with the money spent in destruction, a very small sum.

The object of the appropriation is excellent. May the money be well spent. The type of work done by the Clinic for Functional Reeducation could well be followed as an example.

THE THERAPEUTIC VALUE OF MUSIC.

The value of music as a health measure has been emphasized by a series of concerts which are being held on the green at Columbia University. Between twenty and twenty-five thousand persons assemble in this out of door stadium to enjoy the music. The music is furnished by Goldman's Military Orchestra, Edwin Franko Goldman conducting.

It is interesting to note the change in the expression of the faces of the audience while they listen to the strains of the orchestra; one by one the cares of the day drop away, and are replaced by pleasant thoughts and when they are called upon to join in the community singing, they sing heartily as if they did not have a worry in the world. The benefits of the relaxation and the pleasurable transitory warding off of the world's burdens are evident. The influence of the mental attitude of people is as important as the sanitation of the community in which they live. An effort is being made to raise funds to enable this orchestra to play in the crowded districts of New York. Physicians should be interested. The idea is a good one. It is a hygienic measure.

A TRIBUTE TO ABRAHAM JACOBI.

By S. ADOLPHUS KNOFF, M. D.,
Of New York.

Dr. Abraham Jacobi was born in Hartum, Westphalia, Germany, May 6, 1830; he received his preliminary education at the gymnasium in Minden, from which he was graduated in 1847. He entered the University of Greifswald as a student of medicine the same year, studied in Göttingen in 1848, and received his degree of M. D. at Bonn in 1851. He joined the German revolutionary party with Carl Schurz in 1848 and was imprisoned in various places for his political activities and for *lese majeste* from the summer of 1851 to 1853, in which year he fled to England and from there came to the United States. Doctor Jacobi married in 1873 Dr. Mary Putnam, a sister of Major George Haven Putnam, of this city. Dr. Mary Putnam Jacobi was one of the first women physicians of this country and the first woman who was graduated from the celebrated University of Paris. She died in 1906.

Doctor Jacobi was the first to occupy a chair for diseases of children in an American college. He held this position in the New York Medical College from 1860 to 1864, in the University of New York from 1865 to 1870, and from 1870 to 1902 in the College of Physicians and Surgeons. He remained professor emeritus of diseases of children in that institution (Columbia University) up to his death. In 1903 he received a call to the chair of pediatrics from the University of Berlin, which he refused.

There is not a position of honor which the American medical profession did not bestow upon Abraham Jacobi. He was president of the New York Pathological Society, the New York Obstetrical Society, the New York State Medical Society, the New York Academy of Medicine, the American Pediatric Society, the Association of American Physicians, the American Climatological Society,

and the American Medical Association. He has been an honorary member of many of the medical societies of the United States and abroad and an official delegate to nearly all the international medical congresses held during the last half century.

His literary contributions are too numerous to be summed up here. The eight volumes of *Collectanea Jacobi* give a fair idea of the literary activity of this great man. His textbooks on diseases of children have become classic and been translated into a number of foreign languages. He has been honored with the degree of LL. D. by the Universities of Michigan, Columbia, Yale, Harvard, and Jefferson. Abraham Jacobi was not ungrateful for the honors bestowed upon him by past or present generations, nor had he forgotten the hospitality accorded by the United States. On the first page of his *Collectanea Jacobi* we read: "In memory of great and good men long departed, citizens of a hospitable country.

In gratitude for countless favors and honors received at the hands of colleagues, pupils, societies, and universities during half a century."

No one has been able to tell the world the personal qualities of Abraham Jacobi in more beautiful language than his lifelong friend, the late Carl Schurz, who, on May 6, 1900, at the seventieth birthday celebration, spoke the following impressive words: "For fifty years I have loved him and been proud of him as a man of science of whom I know how learned, how conscientious, how indefatigable, how helpful and how justly renowned he is; as a citizen of whom I know how patriotic, how courageous, how unselfish, and how public spirited he is; and as a

friend, whose nobility of heart only those can cherish and esteem as it deserves who know him best." I feel sure that all who had the rare privilege of knowing Jacobi intimately have always had the same thoughts of him in their hearts.

And now the master, the sage, the friend, the mentor, the lover of little children, the ardent patriot, the great physician, is no more. He passed away peacefully last Thursday, July 10th, at Lake George, surrounded by the members of his family.

He entered public life in the stress and storm of the German revolution; he left it peacefully in the quiet of his beautiful country home in his much loved America, his second fatherland, where he had been beloved and honored for wellnigh seven decades by countless friends, pupils and patients.

A simple but impressive funeral service was held over the remains of the great physician at the Academy of Medicine on the afternoon of Monday, July 14th. The auditorium of the Academy was crowded to the doors by the men and women who had gathered there to pay the last honors to their departed friend. Major George Haven Putnam spoke of the sterling qualities of Abraham Jacobi as physician, as a man, as a patriot, emphasizing the sturdy



*Yours sincerely
A Jacobi*

Americanism of his battles against overwhelming odds. He praised Doctor Jacobi as an ideal citizen who had rendered invaluable service to this community by his activities in building up the Civil Service Reform Association, whose counsel had been sought not only in sanitary and medical but in civic affairs as well. Dr. Reginald Sayre spoke of the medical career of Doctor Jacobi, calling attention to the invaluable work which he had done for the Academy of Medicine. This may justly be

called his best monument, for it was due to Doctor Jacobi's wisdom, foresight, and sagacity that this great medical institution has attained the high standing which it now enjoys in our community. Doctor Jacobi may, however, be remembered longest through his ministry to the little ones, for as Doctor Sayre well said, "Abraham Jacobi is dead but his spirit still lives, and his influence will be felt as long as children are born and require medical care."

A life such as Doctor Jacobi's should and must be an inspiration to the present as to future generations. Scientific medicine, pure Americanism, civic obligations, and our duties toward our neighbor and mankind at large, have been taught to us by him. The world is enriched because Abraham Jacobi has lived.

Dr. Reginald H. Sayre said in part:

A great light in the medical profession has gone out. Abraham Jacobi is dead, but his spirit still lives, and his influence will be felt as long as children continue to be born and need medical care. Cast off by the country of his birth which failed to recognize in his striving for improved conditions among its population the prophetic vision of the future, and saw in it only destruction of the present, he came to this country with nothing but his inherent ability to aid him, and starting at the bottom of the ladder received every honor which it lay within the power of the medical profession to bestow and reached a position of such eminence that the very country which cast him in prison for his revolutionary ideas as a young man besought him repeatedly in his maturer years to return and accept a professorship in Berlin.

It is most fitting that these funeral ceremonies should be held in the Academy of Medicine, as this building itself is a monument to his wisdom and sagacity. The Academy was very dear to Doctor Jacobi's heart, and to it he devoted an extraordinary amount of time and attention. It was through Doctor Jacobi and Doctor Loomis that the site on which this building now stands was purchased, and largely through his efforts that the money to erect the building was secured.

As an officer of this association for twenty years I was brought into very intimate contact with Doctor Jacobi, and realize more fully perhaps than any one else how deeply his heart was wrapped up in the institution, and how zealously he guarded it against any step which he thought might tend to its injury. For many years Doctor Jacobi attended the meetings of all the various sections of the Academy and frequently took part in their discussions. What he had to say was always to the point and always worth listening to, and it was marvelous that one mind could be broad enough and one man have time enough to keep in touch with such a vast range of different topics and be intelligently informed on all.

Doctor Jacobi's learning was founded on a solid substratum of common sense, and he never allowed himself to be led astray by the fashionable medical novelty of the hour, which is taken up for a time and lauded by the ignorant, only to be discarded after experience has failed to demonstrate the truth

of the assertions that have been made for it. He felt that the physicians should do more than heal the sick, and by timely advice in regard to modes of life, point out how many of the preventable diseases might be avoided.

He took great pride in the magnificent collection of medical monographs comprised in the *Festschrift* presented to him by his former pupils on the occasion of his eightieth birthday and felt wonderful satisfaction in the fact that he had been instrumental in stimulating the interest of such a large number of celebrated men in the medical profession, as these men one and all felt, and said, that he had been a great inspiration to them in the prosecution of their labors.

To the young men who showed ability he was most kind and generous, and many a prominent man in this city can trace his rise to the helpful aid of Doctor Jacobi. The poor as well as the rich were welcome to his aid, and any little child that was sick and suffering called forth all the great depth of sympathy that was his. His own grandchildren were his great delight, and no one who has seen him in his country home surrounded by them, as I have done, could fail to appreciate the great tenderness which filled his nature, and see why he naturally turned to the study of pediatrics. We shall miss his wise advice, his kindly face, and his pleasant smile, but we rejoice that he was taken from us in full mental vigor, and that he, as it were, fell asleep among friends.

Extracts from Major Putnam's address:

I have been asked to give a brief word on the service rendered as a citizen by Dr. Abraham Jacobi. Work done by a public spirited physician like Jacobi is itself citizen's work and my subject should, therefore, be the citizen's service rendered to the community other than that given as a physician.

In thinking of Jacobi as a citizen well in advance of his career as a great physician, my thought goes back to the boy of nineteen who with a group of other young idealists were, in 1847-48, looking forward to the regeneration of Europe. The author of the Hebrew Book of Proverbs says, "Where there is no vision, the people perish." These youngsters in Germany, and the young men of similar purpose in France, were in 1848 inspired by a vision. For this vision, this ideal, these students were willing to risk their careers, even to imperil their lives. It was the hope of the group of the patriotic students in Bonn, and in other university centres, that the fire that they would be able to kindle in the centre of Europe would prove to be strong enough to consume the whole bundle of medieval rubbish and of claims of government by divine right with which Europe was at that time burdened.

The year 1848 gave to America the best that Germany had to give. Jacobi's busy life made clear that he was ready to use for his adopted country every ability that he possessed. Hardworking physician that he was, he always made time and, in the later years as he secured an income, was always ready with money for citizens' work, for causes that needed help.

The men who, like Jacobi, not only fulfill their immediate duty to their families and to their professional business work, but recognize the larger duty that belongs to the life of every citizen, the men who carry out not only the obligations that come to them, but obligations for which they have themselves reached out, and who in so doing maintain the highest ideals of their profession and of their citizenship, these men are the salt of the earth. It is they who make wholesome the life of the community. It is their leadership that the members of their profession are glad to accept and their fellow citizens ready to follow. We may, therefore, be thankful that the Revolution of 1848 gave to our country and to this community of New York men like Jacobi, Schurz, Sigel, and others, who have through the example of their lives and by the high standard maintained throughout their careers rendered the highest service of which a citizen is capable.

News Items.

New York Death Rate Low.—For the fourth consecutive week the death rate in New York city has been below ten a thousand, according to Health Commissioner Royal S. Copeland. Influenza, he said, is no longer a factor.

Bequests to Hospitals.—Under the will of Warren Snyder, lately of Brooklyn, \$10,000 goes to Hudson Hospital, Columbia County, N. Y., \$10,000 to the Brooklyn Home for Consumptives, and \$5,000 for hospital purposes to the Long Island College Hospital.

Colorado Congress of Ophthalmology and Otolaryngology.—A congress of the Colorado Ophthalmological and the Colorado Oto-Laryngological Societies will be held August 4th and 5th in Denver. Dr. Harry L. Baum is secretary of the Congress.

New York Army Hospitals Closing.—The War Department has announced the abandonment of two New York army hospitals. The facilities at Ellis Island have been turned over to the Department of Labor, and orders were issued for the discontinuance on July 15th of the army debarkation hospital in the Greenhut Building, New York.

Antivenereal Disease Campaign in Canada.—A Canadian National Council has been organized for the purpose of combating venereal disease in Canada. Its program comprises education, recreation, medical treatment, and law enforcement. Cooperation is to be established between the different boards of health of all the Dominion provinces and also with the new federal department of health soon to be organized.

Soldiers Healthy When Discharged.—More than ninety-three per cent. of the 2,000,000 men demobilized since the signing of the armistice have been discharged with a clean bill of health, according to a statement issued by the Surgeon General's Office. Six per cent. were reported to the Bureau of War Risk Insurance for disabilities and one per cent. were held on account of communicable diseases under development.

Osler Bulletin.—The July number of the *Bulletin of the Johns Hopkins Hospital* is devoted to memories and appreciations of Sir William Osler.

Addition to Mount Sinai Hospital Planned.—Mount Sinai Hospital, New York, is planning an eight story addition at an estimated cost of \$500,000.

Clinic for Functional Reeducation.—The Clinic for Functional Reeducation celebrated its first anniversary Tuesday afternoon, July 15th, at 5 Livingston Place, New York.

Diphtheria and Typhoid.—More than 2,300 deaths in New York State last year were due to diphtheria and typhoid, according to a bulletin of the State Department of Health.

New Mexico Establishes Board of Health.—A bill providing for the first State board of health in New Mexico was passed during the last session of the New Mexico Legislature.

Influenza in Samoa.—Since the influenza epidemic started in Apia, Samoa, 3,265 men, 2,704 women, and 1,574 children, a total of 7,543, have died out of a total population of 38,176.

University Bridges Gap.—The Missouri State Legislature failed to pass the appropriation necessary to maintain the laboratory division of the State Board of Health, and the State university has come to the rescue to continue the service.

Yellow Fever in Yucatan.—It is reported that yellow fever has been discovered at Merida, Yucatan. Port officials are endeavoring to prevent a spread of the disease and strict quarantine measures will probably be instituted.

Memorial Hospital for Staten Island.—A hospital in memory of the young men of Richmond who lost their lives in the war is to be established in Prince Bay Road, Staten Island. A fund amounting to \$30,000 has already been raised.

Influenza Mortality in Alaska.—Ninety-five per cent. of a native Indian population of more than nine hundred persons died of influenza at Bristol Bay, Alas., according to the report of Lieutenant W. R. Leahy, senior medical officer of a relief expedition sent to Alaska.

French Mission to Rumania.—At the request of the Roumanian government a mission composed of representatives of all the colleges of the University of Paris and the College of France has been sent to restore French culture to Roumania. Doctor Balthazard represents the medical faculty.

Gift to Cincinnati Medical School.—The College of Medicine of the University of Cincinnati is the recipient of a gift of \$50,000, to be known as the Francesca Nast Gamble fund. The income from \$25,000 is to be used for research by the chair of bacteriology.

University of Montreal.—Laval University, in Montreal, has been granted separation from the parent Laval University at Quebec and will be known in future as the University of Montreal. This university was granted its charter as a branch of Quebec University and degrees were granted by the council of the Quebec section. Hereafter these will be granted by the University of Montreal itself. The faculty of medicine at Montreal was established in 1879 and that of arts in 1887.

Medical College for Vladivostok.—A circular letter has recently been addressed to "certain American and Canadian men of science" announcing the establishment of a medical faculty in Vladivostok to form the nucleus of a complete university in the near future. As funds are badly needed, the hope of the projected university is help from abroad, especially from the United States, Canada, and Japan. Anatomical charts, diagrams, plaster models, instruments for dissection, microscopes, microtomes, microscopical preparations, books, especially in Russian, English, French, or German, are asked for on terms of credit.

Tuberculosis Increasing in Boston.—Tuberculosis is increasing in Boston, according to a statement by Mr. Seymour H. Stone, secretary of the Boston Association for the Relief and Control of Tuberculosis. The death rate from tuberculosis has increased from 13.82 out of every 10,000 residents of Boston in 1915 to 15.12 in 1918. Mr. Stone attributes the increase in part to the great increase in work and the high wages paid during the war, which tempted people to work who should have been under treatment in hospitals or sanatoria. Other reasons may be the high cost of food and the lack of physicians and nurses due to war conditions.

American Society of Tropical Medicine.—At the annual meeting of this society held in Atlantic City, June 16th and 17th, the following officers were elected for the ensuing year: President, Dr. Henry J. Nichols, of Washington, D. C.; first vice-president, Dr. John M. Swan, of Rochester, N. Y.; second vice-president, Dr. Karl F. Meyer, of San Francisco; secretary, Dr. Sidney K. Simon, of New Orleans; assistant secretary, Dr. J. Allen Smith, of Philadelphia; treasurer, Dr. Sidney K. Simon, of New Orleans. Councillors, Dr. J. H. White, of Washington, D. C.; Dr. V. C. Heiser, of New York; Dr. C. L. Furbush, of Philadelphia. New Orleans was selected as the next meeting place.

Personal.—Dr. William H. Haskin, who for the last two years has been serving as post surgeon at the United States Military Academy, West Point, has resumed private practice at 40 East Forty-first Street, New York.

Dr. Evarts A. Graham, of Chicago, has accepted the position of professor of surgery, Washington University Medical School, to succeed Dr. Fred T. Murphy, who resigned not long after his return from army service. Doctor Graham will be the head of the department of surgery and have charge of that department in the Barnes Hospital and Children's Hospital.

Dr. Frank P. Norbury, who served as acting medical director of the National Committee for Mental Hygiene, in New York, has returned to his home and resumed private practice in Springfield, Ill.

Lieutenant Elam F. Srygley, who before the war was attached to the New Jersey State Hospital, Greystone Park, has been awarded the *Croix de Guerre* and promoted to a captaincy. Before that he had already been awarded the Distinguished Service Cross for bravery under fire at the battle of Blanc Mont Ridge.

Honorary Degrees.—Recipients of honorary degrees conferred at the recent Harvard Commencement were the following: Herbert Hill white, business manager of the Harvard Surgical Unit with the British forces from June, 1915, until the armistice; Major George Cheever Shattuck, who helped fight typhus in Serbia and later served in the Harvard Surgical Unit; Captain Charles Davis Morgan, of the English Ambulance, and Captain Walter Williamson Manton, medical officer of a battalion, who attended the wounded though his own arm had been rent by a bursting shell.

New York the World's Medical Centre.—Plans for making New York the successor of Berlin and Vienna as the world's medical centre have reached the stage of active effort with the organization of the New York Association for the Advancement of Medical Education and Medical Science. The movement is directed toward the creation of a great medical centre coordinating the medical institutions and utilizing the clinical facilities of the city to care for students who formerly sought European universities for specialized courses. A campaign to raise \$50,000,000 is already under way. Dr. Wendell C. Phillips, who is the originator of the idea, was planning before the war for an institution that would rival Vienna and Berlin.

The purposes of the association as stated in the constitution are: 1, To improve and amplify the methods of graduate and undergraduate teaching; 2, to perfect plans for utilizing the vast clinical material of the city for teaching purposes and to make use of teaching talent now unemployed; 3, to bring about a working affiliation of the medical schools, hospitals, and laboratories, as well as the public health facilities of the city, to the end that the best interests of medical education may be conserved; 4, to initiate the establishment of a medical education foundation in New York city whereby funds may be secured to meet the financial requirements of all forms of medical education and investigation. There will be two classes of membership in the organization: 1, A general membership of all physicians of good standing, teachers of the auxiliary sciences of medicine and investigators of problems relating to medicine, and, 2, a corporate membership consisting of medical teachers, medical men with hospital appointments or affiliations, teachers of auxiliary sciences.

The general business management will be under the direction of fifteen trustees elected by a majority vote of the corporate members. The mayor, the commissioner of charities, the health commissioner, and the president of Bellevue and Allied hospitals are ex officio members during their term of office. The officers of the association are: President, Dr. Wendell C. Phillips; first vice-president, Dr. George D. Stewart; second vice-president, Dr. Glentworth R. Butler; secretary, Dr. Haven Emerson; treasurer, Dr. Arthur F. Chace; trustees, Dr. Charles H. Peck, Dr. William F. Campbell, Dr. John E. Hartwell, Dr. Emanuel Libman, Dr. Frederick Tilney, Dr. Otto V. Haufman, Dr. Adrian Lambert, Dr. Samuel A. Brown, Dr. Alexander Miller, and Dr. George W. Kosmak.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS RELATIVE TO THE PROPHYLAXIS AND TREATMENT OF INFLUENZA.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 70.)

Prevention of lung complications in influenza, if it is to be carried out in a specific manner, manifestly demands as a prerequisite some definite knowledge of the nature of the bacterial cause or causes of these complications. Numerous careful bacteriological studies conducted during the recent epidemic have yielded illuminating though variable results in this connection. Indeed, one of the outstanding conclusions reached—a conclusion having a marked bearing on the institution of pneumonia prophylaxis—is that the causes of the complication differ totally in different patients, groups of patients, or special localities.

As far as the so-called influenza bacillus itself is concerned, the question as to whether it constitutes the primary cause of the epidemic disease will have, for the present, to be left in suspense. Whatever this primary agency may eventually prove to be, it seems clear that one of its most salient effects is a violent reduction of the resisting power of the tissues to invasion by various bacteria—an effect doubtless in some manner related to the leukopenia typically present in the disease, which may continue even after pneumonia has set in. Bacteria previously harbored in any portion of the respiratory tract, or introduced from without, are thus enabled, through lack of the usual tissue resistance, to multiply as though growing upon a favorable culture medium and to become markedly pathogenic. A number of observations suggest that the influenza bacillus (bacillus of Pfeiffer) behaves sometimes in much the same manner as the other organisms—pneumococcus, streptococcus—credited with being the cause of the pulmonary complications. It appears to occur, like these other organisms, frequently in normal throats in the absence of any influenza epidemic. In the report of the pneumonia commission appointed to make studies of pneumonia at Camp Pike, which report was written a considerable time before the epidemic of 1918 began, Pfeiffer bacilli are stated to have been found in thirty-five per cent. of 132 normal persons. Again, as Kinsella, 1919, emphasizes, the Pfeiffer bacillus has been found with great frequency by a number of different observers in the throats of patients with measles, whooping cough, diphtheria, and scarlet fever, particularly when complicated by a rather special form of bronchitis or bronchopneumonia, to which the bacillus in question has seemed to be related. This special form is marked by the presence of an unusually purulent type of exudate in the bronchi and bronchioles—a peculiarity already pointed out by Pfeiffer him-

self in connection with this organism. As for its morbid influence in actual cases of influenza encountered in the recent epidemic, Kinsella states that among ten necropsies, with bacteriological study, conducted at Camp Dix in patients succumbing to pneumonia, three stood out from all the others in that they displayed the pathological appearances described by Pfeiffer, i. e., a purulent type of exudation. These were the very three cases, out of the ten, in which the Pfeiffer bacillus was the predominating microorganism found. Only in these three cases were Pfeiffer bacilli obtained in cultures from the lungs themselves, though five other cases showed them in cultures from the trachea or bronchi. According to such an observation, the Pfeiffer organism would not seem likely to be the primary cause of influenza, but merely a secondary invader like the rest, although one producing a special, purulent type of inflammatory disturbance.

The other organisms found predominating in individual cases of pneumonia following influenza include the pneumococcus—four types—the hemolytic streptococcus, the staphylococcus aureus, the Micrococcus catarrhalis, and possibly the pneumobacillus of Friedländer. MacCullum, 1919, in bacteriological studies of pneumonia cases at different military camps and hospitals, found that whereas at Camp Lee most cases showed pneumococcus, type IV, without any influenza bacilli, and at the Johns Hopkins Hospital none of the cases showed any influenza bacilli, at Camp Dix, under identical bacteriological procedures, all the cases showed influenza bacilli. Apparently the nature of the organism which will most often invade the lungs secondarily to influenza in a given region or community depends to some extent upon which of the potentially pneumonia producing bacteria is the most prevalent in the throats of healthy persons in that region or community. According to MacCullum, a pathological distinction can in some degree be made between the pneumonias due to the pneumococcus, the hemolytic streptococcus, and the Pfeiffer bacillus. These theoretically separate pathological conditions are, however, in practice subject to variation from the fact that in a given case there may be successive infections, the secondary invasion being followed by a tertiary or even a quaternary infective process.

Thus, from the prophylactic standpoint, no great stress can be laid on any particular organism as being that to be specially guarded against. Apart from vaccine administration, the chief purpose should be to prevent exposure of the patient to any extraneous infection which, implanted in a soil rendered favorable through loss of defensive reacting power, might induce pneumonia. In the home, this involves isolation of the patient and interdiction of the visits of friends, not only to obviate extension of the primary disease, but to prevent the infliction of unnecessary complications on the sick.

In the hospital it involves, in the first place, refusal to admit visitors, and likewise separation of pneumonia patients the one from the other, in order that cross implantation of several different pneumonia producing infections may be forestalled. The absolute necessity of this is suggested in the observation recorded by Opie, Freeman, Blake, Small, and Rivers, 1919, that even the four different types of the pneumococcus may produce entirely separate clinical reactions, when implanted successively in a single patient. Patients suffering or recovering from a pneumococcus pneumonia due to one type may be reinfected with another type of pneumococcus, with fatal results. For the prevention of pneumonia due to the hemolytic streptococcus, which has been shown definitely to be capable of producing an epidemic of streptococcus pneumonia when introduced by a single carrier into a ward full of measles patients, he recommends that all pneumonia patients be swabbed before admission into a pneumonia ward, in order to determine if they harbor hemolytic streptococci; if so, they should be kept in a special ward by themselves. The ease with which successive pneumonia producing infections may become established would seem to render advisable the administration of a multiple vaccine rather than one protecting against only a single form of microorganism.

(To be concluded.)

Treatment of Colles's Fracture.—A. N. Besse-
sen (*American Journal of Surgery*, June, 1919) states that fracture of the radius near the wrist joint is of frequent occurrence. When the fracture is reduced the normal concavity of the anterior surface of the radius should be restored. The styloid process of the radius is brought into position slightly lower than the styloid process of the ulna. An anesthetic should be given if required, the dressings removed on the fifth or seventh day, and displacement corrected. To reduce the fracture the patient's arm is held in the left hand with the surgeon's scaphoid tubercle against the projecting lower end of the shaft. The right hand is then placed on the dorsum of the patient's wrist with the operator's scaphoid on the projecting lower fragment. A firm grip with slight traction and twist of the wrist completely reduces the deformity. The fragments are retained in position by slight pressure of the finger and thumb, one on the upper fragment just above the seat of the fracture and the other on the dorsum of the wrist joint and styloid process, to prevent backward and outward rotation. Tendency to recurrence is not great if the reduction is complete. The fracture is then held in position by a pad of wool on each of these two points and retaining pads with splints. The trend of treatment, due to the ease with which the fragments are held in place, is the use of molded splints, Jones's spiral splint, Bond's splint, the Gordon pistol shaped splint, or the Walker papier-maché splint. Plaster of Paris splints should not be used as the cast interferes with frequent inspection. Splints should not be removed early, support should be given for six weeks.

Albee's Spinal Graft in Pott's Disease.—G. R. Girdlestone (*Journal of Orthopedic Surgery*, July, 1919) gives results in fifty cases done at Baschurch. The advantages of the operation are: 1, Permanent immobility in the corrected position; 2, reduced period of confinement in bed; 3, a safeguard against a recrudescence of the disease. The special value of the operation is in cases where recrudescence tends to occur after prolonged periods of treatment. The contraindications are: 1, Patient under three years of age; 2, location of the disease in the atlantooccipital or atlantoaxial regions; 3, the active phase of the disease; 4, the presence of a septic focus or discharging sinus at or near the site of operation. Unopened abscesses are left unless they are enlarging or tending to point, when they are opened by aspiration, or a small incision and suture—but no drainage or lavage, or if there are signs of secondary infection associated with a high temperature, then the abscess is opened, washed and sutured, drainage being avoided. The preoperative treatment consists of: 1, Splinting by the use of the double Thomas frame and plaster of Paris in special cases; 2, reduction of deformity where advisable depending on the site of the lesion; 3, general treatment of feeding, open air, and warmth. For the operation ether is preferred to chloroform. The theatre should be warm and a suitable table used. Hammering should be avoided except for the few taps required to change the drill holes into transverse cuts in getting the graft from the tibia. The postoperative complications are the development of pressure sores which may be avoided by careful padding and turning the patient every other day, the protrusion of one end of the graft which may be due to insufficient suturing. The postoperative treatment consists of the immediate treatment for shock and the dressings later. The first dressing is done four to ten days after the operation. A cuirass should be employed. The patient is turned once a week to refresh the protective padding.

Plastic Amputation.—Warbasse (*American Journal of Surgery*, June, 1919) asserts that the old mechanical attitude and accurately planned lines of amputation which have been used should no longer be followed. No set rules can be adhered to. The presence of living tissue beyond the amputation should bring up the question of the necessity for amputation and an effort made to excise the diseased part and supply the deficiency by grafting. If limited to the bone a graft is a simple matter. Bone, skin, muscle, tendons, fascia, bloodvessels, nerves, and joints are all capable of restoration. They may either be supplied from other parts or turned down and the attachments changed. The old practice was an effort to get a skin flap to cover the amputation. When an amputation is made other than for gangrene the remaining bloodvessels are sufficient to nourish more than the stump. It is rarely necessary to do a one stage operation. As much tissue as possible should be saved. The higher the operation the greater the shock. A few centimetres more may cause death. The operation should be viewed from the angle of plastic and reconstructive surgery.

Treatment of Purulent Arthritis.—C. Willems (*Surgery, Gynecology, and Obstetrics*, June, 1919) states that while no therapeutic law has been more firmly established than that of obligatory immobilization for every type of joint injury, it was known that the results were rapid atrophy for certain muscles as the femoral and quadriceps and stiffness of the joints. It was also known that these harmful results were difficult to overcome with physiotherapeutic aftertreatment, and even in the less complicated cases it was necessary to continue treatment over a long period of time before results could be obtained. Immobilization has been considered the proper treatment to allay pain and prevent irritation and inflammation. In purulent arthritis the limbs were placed at rest in order to prevent the dispersion of the inflammation and extension of the infection. In recent years, however, it has come to be recognized by certain surgeons that immediate mobilization of noninfected joints was advisable. Willems began the process of mobilization, beginning gradually by the use of evacuatory punctures to drain traumatic effusion of the knee, hemarthrosis and hydarthrosis, and by making the patients walk immediately. They did this without difficulty and their lesions were cured in a few days. His method of treating traumatic effusions by puncture followed by movement had been used in industrial accidents. During the war the method was used in the simplest and most severe conditions, after operation for penetrating joint wounds with or without the presence of a foreign body and for all varieties of intraarticular fractures. Cases of purulent arthritis were treated in this manner and the success had been astonishing. In the simple lesions the object had been to prevent atrophy and ankylosis—while in purulent arthritis the object was to drain the articulation. In the first case the joints should be completely closed while in the second they should be left widely open.

The technic was the same whether the wound was aseptic or infected. In recent injuries the soft parts of the wound were first excised followed by eventual esquillectomy of the fracture area, extracting projectiles and hermetically closing the joint. In purulent arthritis it was necessary to first perform arthrotomy and leave the wound wide open. But starting from this movement he always proceeded in the same way for mobilization. The mobilization should be active, made by the patient by muscular contractions. The movements should reproduce the essential normal movements: extension, flexion, and rotation. The object was to restore the physiological function of the articulation as much as possible—walking in the case of the knee. When complete functional restoration was not possible he was content to secure the chief active movements with the patient lying down. Active mobilization could not be replaced by passive mobilization which did not call the muscles or limb into play and tended to restore mobility alone. Mobilization should be immediate, as soon as the patient awakens from anesthesia, and he should not be permitted to rest. The movements should be pushed to the maximum in every

direction and kept up uninterruptedly. Careful supervision is required.

Active mobilization is always possible and the movements become much easier as they are repeated. The process is not painful in the true sense of the term, except when large bone fragments are displaced and then it is contraindicated. To allay pain during rest periods resume the movements. The principal aim in applying mobilization to articular suppuration was to secure drainage. It was observed that at each extension and each flexion the synovial surfaces were forced together by muscular contraction and pus was expressed. The more vigorous the movements the more complete the expression. The suppuration evolved like an abscess, lasting for a few weeks, abundant at first, lessening and finally disappearing. Edema of the periarticular tissues diminished rapidly. Periarticular abscesses were practically unknown. The general condition of the patients improved rapidly. No tubes or irrigations, which were considered harmful, were required to effect drainage. In addition to drainage, articular mobility had been preserved. Atrophy had been avoided. Movement was retained because the area of infection was limited and did not enter the cartilage or bone. As soon as suppuration decreases the arthrotomy wounds are gradually closed. An opening only large enough to allow the pus present to escape is left. Pain is present when drainage is insufficient and retention takes place. Patients may walk before their wounds are healed. If the ligaments or the articular capsule are destroyed the treatment is not practicable.

The Curative Properties of Electric Light.—

J. R. Bingham (*American Journal of Electrotherapeutics and Radium*, December, 1918) asserts that in his use of various lamps he has had more satisfactory results than could be produced by any other form of treatment. He does not agree to the method of Oshner of applying wet dressings covered with rubber tissue to the wounds. He feels that this is an aid to bacterial growth as the tissues are macerated, the resistance lowered and the bacteria increased. It is essential to secure free drainage, which the dressings do not permit. He feels that if the lights are applied to open wounds and advantage taken of the capillarity of dry gauze there will be no destruction of bony structure.

The healing in one month of chronic leg ulcers which had been seen in various hospitals for years with no benefit is reported. Facial acne and nearly all skin eruptions are cured or benefited by the treatment. Satisfactory results are reported in postoperative ileus, tympanites, and abdominal pain. Varicose veins are also reduced by treatment. A case of facial erysipelas which had not received treatment for several days and in which one eye was almost closed by the swelling was cured. The light was applied for an hour five or six times the first day and less often the second day. The pain was relieved by each treatment and the swelling and redness began to recede at once. The last trace of the disease to disappear was the swelling of the ear which disappeared on the third day.

X Ray Treatment of Neuralgic Conditions.—Belot, Tournay, and Dechambre (*Presse médicale*, April 3, 1919) report favorable results from x ray treatment in severe cases of neuralgia. Cases relative to three different portions of the nerve pathways are referred to, viz., instances of superior radiculitis, of unilateral funiculitis, and of neuritis of the median nerve. Exposure to selected rays from a high intensity Coolidge tube caused sudden, complete, and permanent disappearance of pain in cases in which all other therapeutic procedures tried had failed.

Treatment of Pulmonary Tuberculosis with Iodine by the Pleural Route.—Gustavo Escobar (*La Semana Medica*, April 3, 1919) reports the case of a man of thirty years successfully treated by injections of iodine in doses of from two to twenty c. c. into the pleural cavity. He eulogizes iodine for its bactericidal power, diffusibility, rapid absorption and elimination, its slight toxicity, and the dehydrating power of the alcohol in the tincture and its stimulation of phagocytosis. The pleural route is chosen as providing accessibility to the lungs and because the pleura is rich in lymphatics, readily permeable, and favorable to exosmosis.

Treatment of Menorrhagia with Radium.—Leda J. Stacy (*Minnesota Medicine*, March, 1919) reports the use of radium in 175 cases at the Mayo Clinic since 1915. The conclusions arrived at are that radium is the treatment of choice in: 1, Cases of menorrhagia of the menopause not associated with large fibroid tumors, and in which the possibility of carcinoma is definitely eliminated; 2, cases of menorrhagia in patients between the ages of thirty-five and forty years who have small submucous fibroid tumors, or who have no demonstrable lesions; 3, cases of myomata in which there is a definite contraindication to operation; 4, cases of menorrhagia in the young person which have resisted all medical treatment. In such cases a very small dose should be given.

Treatment of Pulmonary Tuberculosis with Saccharose.—O. Amrein (*Correspondenz-Blatt für Schweizer Aerzte*, April 12, 1919) tried Lo Monaco's injections of saccharose in nine patients who had profuse expectoration, and in whom the physical findings appeared to be stationary. The only apparent effect obtained was a reduction in the amount of the expectoration in many of the patients. The degree by which the amount of sputum was reduced varied from twenty to eighty per cent. Care and accurate observations of the patients are needed in this treatment, for it is not borne well by all.

Acridine in the Treatment of Gonorrhea.—John Armstrong (*British Medical Journal*, June 7, 1919) disagrees with recent writers who recommend the use of acridine for the treatment of gonorrhea. He finds that the one to 1000 solution causes severe smarting and dysuria after about ten days; that it is not very effective in destroying the gonococci, in twenty-six per cent. of his cases the patients still showing them after three weeks, and no case having been completely cured during the period of observation. In submucous infiltration or soft strictures the drug tends to cause retention of the urine.

Modern Treatment of Emetine Resisting Amebiasis with Neosalvarsan.—Cornelio A. Saenz (*Cronica Medica*, March, 1919) considers that arsenic is indicated in cases of amebiasis which resist emetine, no matter what the form of the disease may be, myositis, hepatitis, enteritis, etc. Neosalvarsan is the arsenical compound of choice owing to its powerful parasiticide power and its weak toxicity. Emetine is preferred in cases where the ameba is in a motile state and arsenic where the cystic form of the infection exists. In acute cases the dose of neosalvarsan should be small and the doses increased, whereas in chronic cases the doses should be exactly as in syphilis.

Tincture of Iodine in Intensive Doses in the Treatment of Tuberculosis.—John Ritter (*Illinois Medical Journal*, June, 1919) strongly advocates the administration of tincture of iodine in tuberculosis, erysipelas, and other infectious diseases. He attributes its beneficial action in tuberculosis to the production of lymphocytosis with a resultant fat splitting element which dissolves and breaks up the tubercle bacillus, which is of a fatty nature. The vehicle of choice is milk, beginning with one drop of tincture of iodine in a half glass of milk at the first meal, two at the second, three at the third, and so on until a dose of twenty or thirty drops is reached.

Treatment of Uterine Carcinoma with Benzol.—Juan Bordarampe (*Revista de la Asociacion Medica Argentina*, February-March, 1919) describes excellent results in two cases of inoperable carcinoma of the uterus by the use of benzol. He made use of the benzol in two ways, viz., direct application of pure benzol for five minutes to the neoplasm, followed by a dry sterile tampon, and two irrigations a day of two litres of hot water containing fifty drops of benzol. One notes the disappearance of fetor and the diminution of secretion and pain, followed by a slow, gradual, and complete destruction of the affected region and its covering epithelium. In every case there is a rapid gain in weight, in some cases amounting to over one kilogram a week.

Operative Treatment of Empyema.—B. F. Stevens (*Southwestern Medicine*, May, 1919) considers that the method used at Camp Travis is the most rational he has seen. A simple puncture was done under novocaine with a trocar, a large catheter was introduced through the trocar and the latter withdrawn. The muscles and pleura contracted on the catheter, making an airtight connection, and through this a few ounces of pus were allowed to run out at the time of operation and every two hours afterward. When all the pus was out, Dakin's solution was instilled every two hours, day and night, and as the catheter was clamped off in the interval no air was allowed to enter and contract the lung. The pus was gotten rid of in from three to ten days and the entire treatment averaged not more than three weeks. Dakin's solution must be fresh to get results, and any one can make it by running chlorine gas from a cylinder through a five per cent. solution of sodium carbonate. Its antiseptic effects last about half an hour, so frequent instillations are necessary.

Miscellany from Home and Foreign Journals

The Infecting Agent in Influenza.—T. Yamanoi, K. Sakakami, and S. Iwashima (*Lancet*, June 7, 1919) were able to study the infecting agent of influenza by inoculation into fifty-two human volunteers, obtaining the following results: An emulsion of the sputa from forty-three influenza patients, made with Ringer's solution, was injected into the nose and throat of twelve healthy persons and the Berkefeld filtrate of the same emulsion was similarly injected in twelve other healthy persons. Six of the twenty-four persons so inoculated had previously suffered from influenza and all six remained free from symptoms. In the remaining eighteen persons influenza developed after an incubation period of two or three days. A filtrate from blood of influenza patients was injected into the throat of six healthy persons and in all six the disease developed. Four healthy persons were inoculated subcutaneously with the filtrate of the sputum emulsion and four with that of the blood, and in all but one influenza developed after an incubation period of two to three days, the one resisting having previously had the disease. Fourteen healthy persons were inoculated into the nose and throat with either a pure culture of Pfeiffer's bacillus, or a pure culture of that organism mixed with pneumococci, streptococci, staphylococci, and other organisms. All remained normal. From these crucial experiments the authors conclude that the organism of influenza is a filter passer; that it can infect either through the mucous membranes of the nose and throat, or after subcutaneous inoculation; that it is present in both the blood and sputum of influenza cases; that the commonly known organisms present in influenza are not the primary cause of the disease; and that the organism produces immunity in those who have been infected.

Prophylactic Vaccination against Pneumonia at Camp Wheeler.—Russel L. Cecil and Henry F. Vaughan (*Journal of Experimental Medicine*, May, 1919) instituted voluntary vaccination against pneumonia at Camp Wheeler. This camp had a very high pneumonia rate; 13,460 men, or eighty per cent. of the men, were vaccinated with pneumococci, one c. c. of a lipovaccine containing ten billion each of pneumococcus types I, II and III being used. The use of the lipovaccine largely eliminated the infiltrations which were noted at Camp Upton following the saline preparation. The authors believe that the elimination of these infiltrations is one of the most important advances in prophylactic pneumococcus vaccination. There was very little reaction, either local or general, among the troops. Of the total number of men vaccinated only 104 (0.7 per cent.) had to be admitted to the Base Hospital, and eighty of these men were unseasoned recruits who received influenza vaccine at the same time. None of these men were seriously ill. Most of the men who received vaccine were under observation for from two to three months from the time of inoculation. During

this time there were thirty-two cases of pneumonia due to types I, II and III among vaccinated men (eighty per cent. of the strength of the camp), and forty-two cases of pneumonia due to these types among the unvaccinated twenty per cent. Of the pneumonia cases due to type IV, 298 were among vaccinated men, and 256 among the unvaccinated. Altogether, there were during the period of observation 363 cases of pneumonia among the vaccinated, and 327 among the unvaccinated. As protective bodies do not appear in the serum before the eighth day after injection of pneumococcus lipovaccine, it seems fair to exclude from the vaccinated group the cases of pneumonia occurring within one week after inoculation, which would leave only eight cases of pneumonia due to types I, II and III, all of which were secondary to severe cases of influenza. The weekly incidence rate for all types of pneumonia was lower among the vaccinated troops than among the unvaccinated. No observations were made which would suggest that pneumococcus vaccine, even temporarily, is a predisposing factor to either pneumococcus or streptococcus pneumonia. Influenza causes a marked reduction in resistance to pneumonia, even among the vaccinated men. The results are sufficiently encouraging to justify the further extension of the use of pneumococcus vaccine to civil life.

Diphtheroid Infection of Wounds.—R. M. Janes and N. O. Thomas (*Canadian Medical Association Journal*, May, 1919) say that 63.5 per cent. of open wounds examined in the Granville Canadian Special Hospital, Buxton, England, showed diphtheroid organisms. Judged from those cases in which pure cultures were obtained, 6.4 per cent. of open wounds showed infection with *Bacillus diphtheriae*. Clinically it is impossible to differentiate between diphtheroid and true diphtheritic infection of wounds; a membrane does not necessarily indicate the presence of the diphtheria bacillus. It is also impossible to distinguish between diphtheria bacilli and wound diphtheroids by morphological characters; this can be done only by sugar reactions obtained from pure cultures, and it is only after positive animal inoculation that it is advisable to diagnose diphtheria in wounds. Flavine appears to have given better results than any other form of local treatment employed. It is important to give a sensitizing dose of antitoxin in cases of diphtheria in wounds, because the patients have received previous injections of serum; if this rule is not followed severe anaphylactic reactions will occur in some cases.

The following technic was employed: A sterile cotton swab was rubbed well over the surface of the wound and sent to the laboratory by the medical officer in charge of the case. This swab was planted on a tube of Loeffler's blood serum, and the inoculated tube incubated for a period of eighteen hours. Smears were then made from the growth obtained and stained with methylene blue, as well as by Gram's and Neisser's method. This was

carefully searched under the microscope for gram positive bacilli showing diphtheroid arrangement. If diphtheroid organisms were found a loopful of growth from the original culture, at a place where the majority of the colonies were of the character of those produced by diphtheroids, was emulsified by thorough shaking in a tube containing about four c. c. of bouillon. A loopful of this broth was then smeared on a plate of neutral nutrient agar, which was incubated for twenty-four hours, when suspicious colonies were fished. If no likely colonies appeared the process was repeated, and this time a loopful was also smeared on a plate of Loeffler's blood serum, as *Bacillus diphtheriae* are occasionally hard to grow on agar. The agar was used as routine because, being a transparent medium, it is easier to fish the colonies, and, moreover, the diphtheroids grow quite well on it. Any suspicious colony was inoculated on a tube of Loeffler's blood serum and the tube incubated. This growth was next day examined for purity, and, if pure, the sugar tubes inoculated from it. Sugar reactions were always carried out on Hiss's serum water, to which one per cent. of the desired sugar was added. Before the sugar reactions were finally read each tube was planted again on agar, in order to ensure that latent contamination had not occurred. Sugars were incubated for four days before final readings were taken.

Paralytic Rabies in a Child.—Pierre Marie and Charles Chatelin (*Bulletin de l'Académie de médecine*, April 8, 1919) report the case of a boy of eleven who, about five weeks after being bitten on the upper lip by a dog, began to suffer from headache and frequent nocturnal spasmodic attacks, without salivation or unconsciousness. In the daytime the child spoke constantly of his death and stated that he had already been buried. Some days later complete, flaccid paralysis of the lower extremities supervened. Upon examination sixteen days after the onset, a slight Kernig sign was noted. There was no salivation but some difficulty in swallowing. The rectal temperature was 39.6° C. and the pulse rate 118. Lumbar puncture yielded a slightly turbid fluid under high tension, with marked leucocytosis, especially polymorphonuclear, and corresponding hyperalbuminosis. Soon after the patient showed deeper prostration. Paralysis of the upper extremities gradually came on, and the child passed into a state of profound torpor. Death took place from progressive paralysis of the respiratory muscles, without typical bulbar manifestations, two days after admission, i. e., eighteen days after the onset. The diagnosis of this uncommon, primarily paralytic form of rabies is seldom made clinically, although, as is well known, the paralytic form is typical in the rabbit, and Pasteur produced it in the dog by intravenous injection. The clinical picture is that of a rapidly progressive acute poliomyelitis, and the history may not suggest rabies; at times the incubation period is of several months' duration, and contamination may occur, not alone from the bite of a dog, but from licking or mere contact of an open surface with a contaminated object. Histological study of the central nervous tissues showed a definite poliomyelitic process.

X Ray Diagnosis in Renal Tuberculosis.—Braasch and Olson (*Surgery, Gynecology, and Obstetrics*, June, 1919) state that in twenty-two per cent. of the patients who had been operated upon in the Mayo Clinic during 1916-1917 shadows suggestive of renal tuberculosis had been found. These data are of value in conditions as follows: 1, When cystoscopic findings, due to a contracted condition of the bladder or stricture of the ureter, are inadequate; 2, when cystoscopic findings are not typical of renal tuberculosis; 3, when the clinical findings are not suggestive of renal tuberculosis or in any involvement of the urinary tract, as may occur with a closed tuberculous pyonephrosis; 4, in the presence of bilateral renal tuberculosis when the typical shadows frequently render cystoscopy or further clinical examination unnecessary. The shadows are caused by a deposit of calcium in the tuberculous area. They may be differentiated from stone shadows by: 1, Variability in density, as it is irregular in its density in different portions; 2, by a shadow of lesser density throughout than usually observed in a stone; 3, by its irregular and indefinite outline. The shadow may be the same as a stone shadow and other data required in order to differentiate them, but seventy-five per cent. of the tuberculous shadows may be recognized. Tuberculous shadows are classified into three groups: 1, Multiple scattered small areas; 2, single or a few localized areas of a centimetre or more in diameter; and 3, large, irregular, diffuse areas involving either a large portion or the entire kidney. Shadows may be caused by the complete caseation of the kidney assuming the outline of a complete cast of the kidney. Renal stone formation is rare in a tuberculous kidney. Extrarenal shadows must also be differentiated. These may be caused by deposits in glands. Shadows caused by substances in the bowel may also be confusing. Gallstones may occasionally cast a shadow which simulates renal tuberculosis. The deposits may occur with tuberculosis in the ureter, usually the lower portion is involved. These deposits are usually accompanied by caseation of the kidney. Calcium deposits secondary to tuberculosis in the prostate gland cause shadows suggestive of renal stone. The outline of the kidney is not of much practical value. Both kidneys may be involved and the diagnosis made by the x ray, though in this case the shadow may only be seen in one kidney.

When the condition of the bladder makes cystoscopy impossible the appearance of a shadow may be of considerable value in the following conditions: 1, When the healthy kidney has been catheterized and it is impossible to find or catheterize the other side; 2, when neither meatus can be found but the functional tests and the condition of the patient indicates one healthy kidney; 3, when the catheterized kidney evidences disease and there is a shadow cast by the other kidney which can not be catheterized. The changes in the pelvic outline which are considered characteristic of tuberculosis consist of one or more of the following: 1, irregular inflammatory dilatation of the pelvis; 2, areas of cortical necrosis; and 3, stricture in the ureter.

Carbon Monoxide Poisoning.—V. Balthazard (*Bulletin de l'Académie de médecine*, April 8, 1919) notes that the long held view of carbon monoxide hemoglobin as a highly stable combination can no longer be held correct. While carbon monoxide hemoglobin does not become dissociated *in vacuo*, it readily breaks up in the presence of oxygen. That red corpuscles, the hemoglobin of which has even but momentarily been combined with carbon monoxide, are thereby killed is an error; animals surviving profound carbon monoxide poisoning show no red cell cadavers either in the spleen or the bone marrow, and the number of red cells in the blood is found undiminished. Alleged renal, hepatic, and nervous lesions due to carbon monoxide are mere cadaveric changes, and the multiple neuritis ascribed to it is purely hypothetical. That carbon monoxide is a general protoplasmic poison remains unproved; indeed, experimentation tends to show that it is simply a poison to the hemoglobin. Animals whose blood contains no hemoglobin live without difficulty in an atmosphere heavily charged with carbon monoxide. Physiological experiments indicate that anoxemia accounts for all the symptoms of acute carbon monoxide poisoning. At the moment of death from this gas the blood was found by Nicloux and the author to contain but one third of the normal amount of oxygen. Air containing 0.1 or 0.2 per cent. of the gas does not kill man, even after prolonged exposures; 0.33 per cent. becomes dangerous only after several hours, but death is certain and rapid in a one per cent. mixture. Different subjects show varying degrees of resistance to the effects of the gas. In brief, while recent views on carbon monoxide do not in the least reduce the importance of avoiding admixture of this gas in air to be breathed, they do offer hope that good results may be secured by rational administration of oxygen or compressed air to those suffering from carbon monoxide poisoning.

Minor Indications of Aerophagia.—G. Leven (*Presse médicale*, April 7, 1919) asserts that aerophagia, considering the importance of its indirect effects on the stomach, intestine, heart, vessels, and respiratory functions, is not yet receiving on the part of clinicians the attention it deserves. One of the minor signs permitting of its detection is an unusually red, moist, and shining tongue. Such a tongue occurs commonly among long standing dyspeptics, and is an expression of undue salivation, which ultimately irritates the tongue. The lips may likewise be red, moist, and shining. Sometimes the patient will admit, upon inquiry, that saliva dribbles from his mouth on the pillow at night. Patients with sialorrhea swallow frequently to remove the excess of saliva; the unusual frequency of deglutition induces irritation in the laryngeal region, this in turn resulting in a more or less distressing local sensation of tension, which prevents these patients from wearing tight collars. Aerophagics sleep on the right side; they are unable to lie on the left side without experiencing dyspnea and pain or becoming aware of the heart beats. Inquiry for the above minor indications of aerophagia is supplemented by a study of other symptoms, which then become of absolute

diagnostic value. The patient will sometimes complain of having eructations. Actually these so-called eructations are associated with the swallowing of air and might better be termed inructations. Others state they do not have eructations, but while answering the examiner's questions, lower the head more or less frequently upon the chest, bringing the chin in contact with the latter. These are unconscious acts of deglutition during which saliva and air are swallowed. Care should be taken to differentiate from aerophagia sounds due to spasmodic contraction of the pharynx. Again, aerophagia may exist in the absence of conscious eructations, the air noiselessly taken in passing out by way of the intestine.

Blood Transfusion by the Citrate Method.—Alexander Fleming and A. B. Porteous (*Lancet*, June 7, 1919) have used this method in a large number of cases and believe that it has many advantages over the other methods in use. It seldom requires cutting down to expose the veins, and entirely avoids the disadvantage of having to ligate the radial artery of the donor. The amount given can be measured accurately. The donor and recipient do not have to be together, but the blood can be taken and given wherever convenient. The presence of citrate does not alter the coagulation time of the recipient's blood, and the results obtained with citrated blood are quite as good as those following transfusion by any of the other and more complicated methods.

Faradic Stimulation of Nerve and Muscle during Operations.—Harry Platt and E. S. Brentnall (*Lancet*, May 24, 1919) strongly urge the employment of the faradic current for stimulation of both nerves and muscles during operation, since by this means the divided nerves can be accurately identified and approximated with precision, and physiological integrity or lack of integrity of the several muscles can be positively determined. In addition accurate observations can be made upon the state of the nerves and muscles which not only permit of more complete and perfect repair, but also provide the basis for the determination of the degree of subsequent success of the operation. A simple, sterilizable bipolar electrode for the purpose can be made from two steel probes, encased in rubber tubing.

Croupous Affections in Influenza.—Coray (*Correspondenz-Blatt für Schweizer Aerzte*, April 12, 1919) tells us that during the epidemic of influenza at Zurich, Switzerland, in 1918, some form of croup developed in many children. His own material consisted of eighteen cases, of which ten were of pure influenza croup, six of influenza croup with pneumonia, and two of influenza with a secondary infection with diphtheria. All of the patients in the first group recovered, eight without surgical intervention, one after intubation, and one after both intubation and tracheotomy. Five of the six patients in the second group died; intubation was performed on two, intubation and tracheotomy on two. In the diphtheritic cases both patients died after intubation. Coray recommends that when croup appears entotoxin should be given as a routine measure, although the drug will be without influence unless diphtheria is present.

Certain Chronic Colopathies.—Edouard Joltrain, Paul Baufle and Robert Coope (*Lancet*, May 31, 1919) investigated 102 consecutive cases of chronic colitis in seventy-three of which they were able to discover the existence of a definite initial acute stage. Thirty-eight cases followed amebic dysentery, three followed Shiga bacillary dysentery, twenty-four followed acute dysentery of unknown cause, four followed gastrointestinal influenza, and four followed gas poisoning. The chronicity of the colitis did not appear to bear any relation to the severity of the initial acute attack, and the treatment applicable to the acute stage of bacillary or of amebic dysentery failed to give very appreciable results in the chronic sequelæ. From this it was seen that it was specially important to prevent the acute forms from passing into the chronic, for which the disinfection of the intestine during convalescence by intestinal antiseptics and even more by rigid dietetic restrictions was essential.

Poisoning by Bismuth Subnitrate.—Raul F. Vaccarezza (*La Semana Medica*, April 10, 1919) divides the toxic accidents into two classes. The first class comprises buccal lesions as well as renal and gastrointestinal, dependent on the direct action of the metal which is absorbed in the form of a soluble albuminate. In the second class are grave and rapid phenomena of cyanosis, collapse, and methemoglobinuria due to absorption of nitrites elaborated in the intestine through the action of the intestinal flora on the subnitrate. Its external use should be accompanied with caution, never using more than three c. c. of Beck's ten per cent. paste. It is better avoided in thoracic, abdominal and joint fistulæ, also in infancy. In gastrointestinal therapy it should not be prescribed for the adult in quantities greater than twenty grams a day, remembering that in children the intestinal flora seem to favor the transformation of the subnitrate into the nitrite. It should never be used in gastrointestinal radiography, the subcarbonate of bismuth or the sulphate of barium being substituted and the opaque substance being rapidly gotten rid of by enemata, purgatives, or gastric lavage.

Intravenous Antimony Tartrate in Kala Azar.—George C. Low (*British Medical Journal*, June 7, 1919) records a case of kala azar which he had under treatment in England by the intravenous injection of tartar emetic and in which the disease had been apparently cured so far as clinical evidences were concerned. A total of more than four grams of the drug had been injected. Just after the disease had been apparently cured the patient contracted influenza from which he died. A very careful autopsy was performed with a view to discovering whether the kala azar had been truly cured, and also to determine whether the antimony had had any deleterious effects upon the patient's organs. No *Leishmania donovani* were found in an exhaustive examination of smears taken from the spleen, liver, bone marrow, mesenteric, and inguinal lymph nodes, the kidneys, lungs, and heart. It was therefore evident that the disease had truly been cured by the antimony injections and that the drug could be regarded as a specific. The liver was enlarged, fatty, and cirrhotic and the kidneys

showed considerable cloudy swelling. The same findings have been reported by Breinl and Priestley as following the prolonged use of antimony tartrate. The author therefore concludes that antimony should not be given for longer periods than necessary, and it is therefore important that some definite test should be evolved which will indicate when the patient is cured. A similar test is required if antimony is finally proved also to cure infection by the *Schistosoma hematobium*. The patient should be confined to bed in all cases for the day of the injection and the day following. He should be carefully watched throughout the course and the treatment should be stopped at once on the appearance of any indications of gastric or constitutional disturbance. Never more than two injections should be given weekly and the solution used should not be too concentrated.

Thyroendocrinic Hyperthermia.—Léopold-Lévi (*Presse médicale*, April 7, 1919) asserts that this form of hyperthermia may occur in three types, viz., as a diffuse, continuous rise in temperature; as a localized rise in temperature, continuous or in "flushes"; as a false sensation of fever; or as a mild febricula, a fever running an intermittent course, or a prolonged fever with remissions. Vasomotor, congestive, and sensory disturbances, as well as changes in the sweat function and increased thirst, accompany the hyperthermia. The latter occurs in nervous subjects, in neuroarthritics, during rapid growth, in persistent juvenility, in the various Basedow conditions, in thyrotesticular cases, at any stage of the sexual life in females, and in some high pressure patients. The hyperthermia is due to hyperthyroidism, as is proven by animal experimentation, by alimentary thyroidism, by the presence of hyperthermia in exophthalmic goitre, and by the opposite condition—hypothermia—met with in hypothyroidism. Ovarian and adrenal disturbances may also induce hyperthyroidism with consequent hyperthermia.

Effect of Bile on the Clotting Time of Blood.—Herbert Haessler and Marianne G. Stebbins (*Journal of Medical Research*, May, 1919) performed experiments to determine whether or not bile or bile salts, which are present in the blood in jaundice, are *per se* capable of causing the increase in coagulation time which has been noted by Minot and his coworkers in a number of cases of jaundice. A series of test tubes, each containing two c. c. of plasma and .5 c. c. of ox bile solution of varying concentrations were set up, and to each tube the amount of calcium chloride which had previously been found to form a firm clot in the minimum time with the same plasma was added. The time necessary for the formation of a firm clot was noted. The same experiment was carried out, substituting sodium glycocholate for bile. The results suggest that the clotting time is delayed in proportion to the amount of bile or bile salts present. Further work was done to determine whether the bile salts prevented the formation of thrombin or merely interfered with the change of fibrinogen to fibrin, and the results indicate that the bile interferes with the latter process and not with the formation of thrombin.

Proceedings of National and Local Societies

AMERICAN SURGICAL ASSOCIATION.

Fortieth Annual Meeting, Held in the Hotel Traymore, Atlantic City, N. J., June 16, 17, 18, 1919.

The President, Dr. LEWIS S. PILCHER, of Brooklyn, in the Chair.

The Influence of War Surgery upon Civil Practice.—Dr. LEWIS STEPHEN PILCHER, of Brooklyn, in his presidential address referred to the distinct surprise which had come to the assembly of the Congress of the International Surgical Society in New York in 1914 when President Depage had announced as the theme of his inaugural address War Surgery, for was not such an assembly to which his words were addressed a guarantee of the continuance of that peace of the triumphs of which those men were such eminent representatives? Yet before that address had appeared in print the world had been plunged into a strife which was to array those representatives as enemies, to array in battle sixty millions of men and to cause the direct loss from the world's workers of more than ten millions of men.

Of the active members of the American Surgical Association a very large proportion had worn the uniform of their country's service. Of the remainder there was not one who had not regretted that by reason of years or of civil duties it had been impossible for him to follow his younger colleagues. Those who had sealed their devotion to duty, their patriotic fervor, and their professional enthusiasm with their blood belonged to a legion of honor more illustrious than that of any modern government. The cross that marked their graves indicated a distinguished service of which no other badge could be more significant. That in this most recent of wars there had been inaugurated the most important and desirable change of granting to medical men degrees of rank suitable to their responsible duties Doctor Pilcher felt was an act meriting an expression of appreciation by the medical profession. The granting of degrees of rank to medical men had to do with that intangible, undefinable, altogether admirable thing called morale which Doctor Pilcher regarded as the surest precursor of success and the most important element in the attainment of ultimate victory. The United States Congress in establishing in the medical corps of the army the higher grades of rank gave to that branch of the service deserved recognition and with it increased in a notable manner the morale of the whole service.

Doctor Pilcher expressed the belief that the highest, most important, most beneficent of contributions which the surgery of the late war had given to the civil life of the nation was a quickened, ennobled, more efficient body of surgeons, who in the hard school of war had received an endowment of enthusiasm, an illumination of spirit, and an ability to persevere and to succeed under difficulties, which qualities they would retain through life and in some measure transmit to, or create in their successors.

General Considerations as to the Treatment of War Wounds.—Dr. ANTOINE DEPAGE, of Brussels, Belgium, regarded the scientific contributions to surgery in the late war as epoch making. In consequence of the fact that the majority of wounds were contaminated, débridement had become a formal indication of the first rank. Since January, 1915, they had followed at l'Ambulance de l'Océan débridement and epluchage, with primary suture, in favorable cases, or secondary suture as soon after dressing as the surfaces of the wound indicated clinical asepsis. Emphasis was placed upon the method of application of the Carrel-Dakin solution. The following routine was followed by Doctor Depage in his work:

1. Upon admission of the patient the injured region was shaved and then washed with a neutral solution of oleate of soda.

2. Débridement and epluchage of the wound were practised immediately thereafter.

3. At the same time were installed the Carrel tubes introduced to the bottom of the wound in such fashion as to permit the irrigation of the entire wound surface.

4. Application to the entire surroundings of the wound of compresses smeared with petrolatum in order to prevent irritation of the skin.

5. Dressing with compresses of absorbent material.

6. After the return of the patient to bed, the Carrel tubes were connected up with the receptacle containing the Dakin solution and irrigation was carried on every two hours, controlled by a simple pressure forceps of Mohr.

7. The dressings were renewed every day, careful lavage of the wound being made with oleate of soda.

Until a regular determination of the abundance of the microorganisms in the wound exudates had been made it had not been possible in Doctor Depage's work to obtain all the benefits of the Carrel method. Such bacteriological control was then repeated in the same wound every two days, tracings being made of the microbic strength. Infected wounds were rendered sterile by Carrel treatment in from six to eight days. To better determine the most favorable moment for suture the bacteriological control had been supplemented by cultures instituted regularly after débridement and before the suture. The conclusions from this study were:

1. For wounds feebly infected from the first day with ordinary microbes, suture was permissible when at the second examination the smear yielded only one microbe in a visual field.

2. For wounds strongly infected by ordinary microbes, resort to suture might be made from the moment when the curve came down to one microbe in four fields.

3. For streptococcic infection suture should not be instituted, but the wound should be treated, preferably by the Carrel treatment, and suture delayed until the streptococci had disappeared or become sufficiently attenuated to permit primary

union. Streptococcic vaccination might here render great service. Doctor Depage dealt further with the indications for immediate primary, delayed primary, and secondary suture, the consideration of peculiarities arising from the organ or tissue wounded, and with the results of suture. From June, 1916, to November, 1917, in thirty-one secondary sutures after amputation, there had been twenty-six complete successes, four partial successes and one failure. In joint wounds there was shown the superiority of immediate suture after wide arthrotomy, closing of the joint cavity, over any other method of treatment. In wounds of the elbow and shoulder, however, the Carrel treatment followed by secondary suture or by cicatrization by second intention was indicated.

The Most Important Factor in the Treatment of War Wounds and the Most Important Factor in Civilian Surgery—the Good Surgeon.—Dr. GEORGE W. CRILE, of Cleveland, said that after four years of intensive study there was emerging from the conflict of views regarding the treatment of wounds a universal recognition of the good surgeon as the one agent of successful military surgery. Thus, the vast experience in traumatic surgery had taught the profession the lesson already learned in civil surgery, that sound surgery only would bring success. The wound surgeon, the author asserted, considered the wound as well as the patient, respected the tissues of the anesthetized man as well as of the unanesthetized, played all the defenses and reparative forces of the patient, was the exponent of no single method, but adapted his methods to the military situation, the possibilities of aftercare, the type of transport—seeing clearly the tomorrow of the wound, and weighing accurately his chance for success.

What Would Be the Benefit to the Civilian Surgeon in the Experience Gained by Our Military Surgeons in the Recent World War?—Dr. EDGAR A. VANDER VEER, of Albany, in this paper said that early in the war the attempt at aseptic technic had broken down and that the system of treatment of fractures by the Allied surgeons had revealed great confusion. In the treatment of wounds army surgeons had been obliged to return to antiseptic methods and such experiments had led some British surgeons to abandon almost entirely the use of strong germicidal solutions, finding that sterile water alone maintained satisfactory healing conditions. While the Carrel-Dakin method had accomplished much Doctor Vander Veer felt that it was an expensive, painful, and somewhat protracted form of treatment. The antiseptic treatment, however, had been employed to a great extent in the third and fourth years of the war. Reference was made to the excellent system of transportation which had been developed and to the short history accompanying the patient, both of which had spared the patient much suffering. The standardization of splints in the treatment of fracture had been of great benefit and their proper application, with the use of tetanus antitoxin, had in the author's opinion lowered the mortality. Ether and chloroform he believed would continue to be the most trustworthy anesthetics.

The Problem of the Slightly Wounded in Military and Civilian Practice.—Dr. WILLIAM E. LOWER, of Cleveland, observed that the great war had supplied to medical officers a postgraduate course in organization, transportation, sanitation, hospital construction, management of supplies, treatment of every kind of wound by every variety of method, and in noting what not to do. The tendency in rush periods to leave the slightly wounded to the attention of the less trained men had proved a dangerous hazard to the man power of the army. The equal importance in civilian practice was especially marked in the smaller manufacturing plants. In many hospitals also there was the tendency to turn over to inexperienced operators the care of minor injuries. With the serious resultant effects which had been too long endured all were familiar, and the author felt that the American Surgical Association should emphasize the need of proper organization to assure better attention to the less as well as to the greater injuries, to the minor as well as to the greater operations.

The Guillotine Amputation; an Unfortunate Resurrection.—Dr. JOHN H. GIBBON, of Philadelphia, gave as the reason for the designation given this form of amputation the frequent secondary hemorrhages, slow healing, the painful dressings and the numerous secondary operations following the no flap amputation. These complications were in his opinion obviated by the reflected skin flap amputation. The additional time required for making the reflections of the flap, he said, occupied but a few minutes and could not add to the shock. As soon as the wound had become clean the flaps were in readiness to cover it; whereas, in the no flap method a second operation or the employment for a number of weeks of some appliance to draw down the skin was necessary, and in many instances such efforts failed. While one reason given for doing the no flap operation was that it gave a good stump for the wearing of an artificial limb, in Doctor Gibbon's opinion the reflected skin flap amputation gave exactly the same kind of stump, gave it earlier and with less pain and danger. Were this not true, then the guillotine amputation was to be employed in civil practice, which procedure he doubted any one would be willing to inaugurate.

Dr. JOHN H. GIBBON, of Philadelphia, referred to the obligation he felt every surgeon working in France owed to Doctor Depage. To him more than any other man were they indebted for their treatment of war wounds. Differing in his experience from that of Doctor Crile, he had seen practically no benefit from blood transfusion in acute infection. Men badly shocked would be braced up for a time and then die. This experience had obtained in the advanced hospitals. With reference to the patient's reaction to infection he also was not in accord with Doctor Crile. While he had seen many men wounded in Belgium under the worst conditions of winter, and again in a much pleasanter part of the world in the spring and summer, he had observed no decided difference in the reaction of the individual patient to infection. Acknowledging that in the treatment of wounds the

first operation should be thorough and complete, he did not believe that the use of antiseptics could be eliminated in the sterilization of infected wounds.

Dr. THOMAS W. HUNTINGTON, of San Francisco, paid a tribute to the trained nurse in war surgery. In Italy where it had been at first thought inadvisable to have her, those in charge of the hospital work had later said they would be helpless without her. He believed that the encomiums of the trained nurse should be recorded in history.

Dr. ALEXIS V. MOSCHCOWITZ, of New York, observed that while it was well known that the Carrel-Dakin treatment would never take the place of good surgery it was a wonderfully valuable aid in the treatment of infected wounds. Given the choice of the two agents he would by all means take good surgery; if, however, he could have good surgery and the Carrel-Dakin treatment he would be well equipped.

Dr. HENRY H. M. LYLE, of New York, emphasized the danger of the general use of nitrous oxide except in the hands of men experienced in its employment.

Dr. GEORGE E. BREWER, of New York, regarded as the most important step in the treatment of shock during the war the organization of the shock team. This consisted of two men expert in the treatment, and from two to four each of nurses and orderlies. In the shock wards were every appliance for blood transfusion and other means of stimulation. The teams which had been installed in every front area hospital had, so far as he knew, been continued to the end of the war.

Dr. HOWARD LILIENTHAL, of New York, reported his experience in blood transfusion as differing from that of Doctor Gibbon. With a patient who had lost blood, whether or not he was septic, the most powerful influence for his good was the replacement of blood. This was a matter of pure mathematics. In his opinion there was nothing quite so good in profound anemia with sepsis as blood transfusion.

Dr. A. P. C. ASHHURST, of Philadelphia, recalled that in 1915 Doctor Depage had pointed out that if in the first six hours the red blood count fell below four million practically all the wounded died unless transfused. He felt it important that this should be remembered and emphasized the importance of knowing the full truth concerning war surgery.

Treatment of Recent Wounds of the Knee Joint.

—Dr. EUGENE H. POOL, of New York, and Dr. JOHN H. JOPSON, of Philadelphia, contributed this paper giving their observations based upon thirty-four cases in which they had operated. The principles of treatment were summarized as follows: Complete débridement of the tract of the projectile through the soft parts and bone, removal of foreign bodies, thorough irrigation of the joint, distention of the joint with ether, absolute closure of the joint by suture, primary or delayed closure of the superficial parts according to the rules laid down for primary suture of the soft parts alone; finally, early active motion. In extensive involvement of the articular surfaces effort should be made to save the joint, provided the conservable articular surfaces and soft parts were sufficient to warrant the hope of

a useful joint. It was to be remembered that stability of the knee was essential. When the joint could not be saved the question of extensive resection and amputation was to be carefully considered. With suspicion of infection aspiration was at once indicated with the making of a culture. In suppurative arthritis the important feature was early drainage. This was best instituted by lateral incisions well back though occasionally an incision elsewhere might be employed. Drains should not be used. Splints were to be dispensed with or arranged for support without joint fixation. Free mobility every two hours so that the active movements would evacuate the joint should be enforced.

Report of Eighty-two Knee Joint War Injuries with a Discussion of the Willems Treatment.

Dr. CLARENCE A. McWILLIAMS, of New York, and Dr. WILLIAM B. HETZEL, of Pittsburgh (by invitation), in this paper made a plea that the old immobilization treatment be discarded for the Willems immediate, continuous, active mobilization procedure. In thirty-two of the eighty-two patients no fracture was present; in eight there was simple fracture; in the remaining forty there were combinations of comminuted fractures; fifty-seven cases, or sixty-eight per cent., remained clean. In only six cases were the joints drained. In thirty-six of the clean cases nine patients had perfect function finally; three were ankylosed; in twenty-four there were varying degrees of motion. Seventy-three patients become infected, of which four finally became ankylosed; one was resected; three had amputations; four patients died of the infection; one had flexion of 90° while the results in three were unknown. Compared with these melancholy results of immobilization the statistics of Willems in one hundred knee cases, eighteen of which became infected, showed no deaths and no amputations; one resection, and two stiff joints. In the authors' cases nine patients had died. The authors believe that no joint should be evacuated within ten days after operation, that the joints should be completely closed at operation, that no splint should be used after operation, except where fragments would otherwise be displaced. They advocate that the Willems' after treatment of immediate, continuous, active mobilization be continued day and night in both aseptic and septic joints. In their opinion there should be in every hospital a day and a night nurse to see that these motions are carried out.

Transthoracic Laparotomy.—Dr. WILLY MEYER, of New York, said that in cases of injury, by way of the chest, to organs in the vault of the diaphragm it had been found best to attend first to the damage wrought in the chest and then to try to deal with the injured abdominal organs by a transthoracic laparotomy, i. e., by either incising the diaphragm or enlarging the wound in the same. Sauerbruch, the first to proceed systematically along such lines, had reported three cases successfully operated upon, in all of which a differential air pressure apparatus had been employed. Stress had been laid by Sauerbruch upon the importance of incising the diaphragm transversely or obliquely to the direction of its fibres in order to avoid injury of the phrenic nerve. In a case of accidental shot wound injury

in which Doctor Meyer operated in January of the present year the bullet had entered the thorax in the sixth interspace, fracturing the seventh rib and becoming lodged in the convexity of the liver. Pus had been unexpectedly found in the liver, indicating a beginning hepatic abscess and showing the wisdom of deciding to operate. This, in Doctor Meyer's opinion, also proved the importance of operating under differential air pressure in such cases, since the pleural cavity was found to be free of adhesions. In this way the otherwise inevitable occurrence of an acute pneumothorax was avoided. Drainage was considered the only safe course in view of the unknown character of the pus found. An uninterrupted recovery followed. Doctor Meyer expressed his belief that bullets in thoracic as well as abdominal organs were probably best removed, that the question of whether operation should be done immediately after the accident or later depended upon the seriousness of concomitant symptoms, that simultaneous injuries to chest and abdomen, as also injuries to the convexity of the liver or the spleen—without previous penetration of the chest, if not accessible from below, render the indication for trans-thoracic laparotomy. Involvement of intraabdominal organs could be determined before or during thoracotomy. These operations, he believed, are best done with the help of some differential pressure apparatus. Air and watertight drainage of the chest (Kenyon's) he regarded as the safest procedure for the aftertreatment.

Dr. WILLIAM H. STEWART, of New York, emphasized the importance of the use of differential air pressure in connection with the work described by Doctor Meyer and showed lantern slides of x rays of the abdomen taken after inflation with oxygen or air. A point for the injection of the oxygen he explained was selected below the umbilicus on either side, keeping away from adhesions. He used an ordinary lumbar puncture needle with a rubber bag filled with oxygen from which about one litre was gently passed into the peritoneal cavity, the amount being dependent upon the relaxation of the abdominal muscles. Two factors causing apprehension were infection and the possibility of puncturing the gut. The former was to overcome by the ordinary precautions. Concerning the second, it was known that the intestinal muscle showed a tendency to recede from a sharp article. This had been shown in the x ray by the passage through the gut of the open safety-pin. It also had been demonstrated that with a needle passed into the abdominal cavity of a live rabbit the intestine would recede; when the rabbit died puncture would occur.

(To be continued.)

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

*Special Meeting Held at the New York Academy
of Medicine, June 3, 1919.*

THE NARCOTIC DRUG PROBLEM.

At a special meeting held on June 23d for the purpose of discussing the narcotic drug question, the Medical Society of the County of New York passed a resolution affirming its willingness to co-

operate with the State Commissioner of Narcotic Drugs but asserting that drug addiction was "basically a disease problem" and that more good would be done by medical study and care than by police control. The meeting had been called because of reports that the New York City Department of Health contemplated the enactment of new regulations governing the relations of physicians to addicts under their care. A letter was read from Doctor Copeland denying that any rules would be enacted independently by the health department. The only new regulations would be those of the State Narcotic Commission. Dr. E. Eliot Harris read a long report explaining in detail what was required of physicians and medical institutions under the new regulations, and offered a resolution which was adopted after debate. The new regulations require the recording of the names of addicts with the State. A public hearing was asked at which proposed regulations should be submitted to medical bodies before their enactment. The resolution may be summarized as follows:

The Medical Society of the County of New York wishes to go on record as being deeply appreciative of the menace of narcotic drug addiction. It holds itself willing to cooperate with any agencies working for the betterment of conditions as long as those agencies conduct their activities "in a competent manner" and display appreciation of the many sides of the problem. In return for this co-operation it expects from such agencies or departments "reasonable recognition" of the difficulties faced under present conditions by the practitioner of medicine.

The society regrets that in the various forms of publicity so much stress has been laid upon the very few medical practitioners who may be open to charges of unjustifiable conduct and that practically no attention has been called to the many honest practitioners who have been trying to the best of their ability to treat and care for the addicted sufferer. Far more harm is done by the continued existence of smuggling and street peddling and illicit traffic in narcotics than by the few medical men whose activities may be open to question.

It has been shown conclusively that unwisely administered laws tend to drive the reputable practitioner away from the treatment of addicts and to send the addict himself to the "underworld."

The society is opposed to registration and identification of narcotic addicts under conditions which will injure the innocent and worthy persons suffering from this disease and which will subject them to the danger of blackmail and other annoyances. The society therefore asks that before regulations are promulgated, a public hearing be held and that they be submitted to the medical bodies in open meeting for discussion, in order that the practicability of their enforcement may be determined.

The Department of Narcotic Drug Control is respectfully requested to investigate the matter of so called "underworld" traffic and to direct its activities toward this "worst evil" as well as toward medical practitioners.

It is also respectfully suggested that the Department of Health direct its energies toward the promulgation of useful information as to the disease characteristics of narcotic addiction and that it refrain from disparaging statements as to "honest physicians" whose views of addiction may not agree.

The addiction situation has been determined to be basically a disease problem and there is as yet no commonly accepted and standardized form of handling. The ultimate solution must be in the medical profession. Senator Whitney has expressed the opinion, after long hearing of every side of this question, that the remedy lies more in medical and public health education than in any forcible police or other control.

The society demands that administrative officials recognize the facts above stated and asks of such officials "tolerance of opinion, slowness of judgment, and cooperation with others who are working in various fields."

The State Department of Narcotic Drug Control has promulgated the following restrictions concerning the treatment of addicts:

NEW YORK STATE DEPARTMENT OF NARCOTIC DRUG CONTROL.

Pursuant to the authority conferred upon me by Chapter 639 of the Public Health Law, Article XXII, Section 421 thereof, I hereby promulgate the following rules and regulations for the administration of the Department of Narcotic Drug Control of the State of New York:

Reg. 4. I hereby designate the counties of New York, Richmond, Bronx, Rockland, Westchester, Kings, Queens, and Suffolk as the First District; the counties of Putnam, Dutchess, Columbia, Rensselaer, Washington, Clinton, Essex, Warren, Saratoga, Albany, Greene, Ulster, Orange, Sullivan, Delaware, Schoharie, Schenectady, Montgomery, Fulton, Hamilton, Franklin, St. Lawrence, Herkimer, Otsego, Chenango, Madison, Oneida, Lewis, Jefferson and Oswego as the Second District, and the counties of Broome, Cortland, Onondaga, Cayuga, Tompkins, Tioga, Chemung, Schuyler, Seneca, Wayne, Ontario, Yates, Steuben, Alleghany, Livingston, Monroe, Orleans, Genesee, Wyoming, Cattaraugus, Chautauqua, Erie and Niagara as the Third District.

Reg. 5. For the purposes of this department the term "Drug Addict" is defined as follows: Any person who has needed or demanded the administering, prescribing for, or dispensing of cocaine, opium or their derivatives at more or less regular intervals for thirty consecutive days prior to the time such person applies to a physician or a physician of any institution for the administering, prescribing for or dispensing of any such drugs or their derivatives; provided, however, that upon the filing of the report of the case by the attending physician, or the physician of an institution in charge of the patient, with this department, it may rule that such person shall or shall not be recorded.

Reg. 6. A physician or a physician of any institution, before beginning the treatment of a person for drug addiction must make a thorough physical examination of such person and such other examination as is necessary to satisfy him that the patient is addicted to the use of cocaine, opium or their derivatives. *The physician or the physician of the institution must keep on file a statement of his examination with the name of the patient, his address, and the date of the examination.*

Reg. 7. A physician or physician of any institution, except in the City of Greater New York, prescribing for, administering or dispensing cocaine, opium or their derivatives daily for more than thirty days to a patient shall register with this department, or its authorized agent, the name of such person, together with a statement of the physical or mental condition of such person and a prognosis as to the probable future necessity for continuing the prescribing, administering or dispensing of cocaine, opium or their derivatives to such patient; such prognosis shall include an estimate as to the length of time which, according to the judgment of the registered physician or the physician of any institution, will be required to remove the necessity of administering the aforesaid narcotic drugs to such patient.

Reg. 8. A physician or physician of any institution is expected to cooperate with the Department of Narcotic Drug Control and is required to register, within forty-eight (48) hours, with said department, the name, address, physical and mental condition and any necessary circumstantial information regarding any person who applies for professional treatment and whom the physician or the physician of any institution thinks is an addict.

Reg. 9. A physician or physician of any institution issuing a prescription for administering, or dispensing cocaine, opium or their derivatives to an habitual user in any quantity whatsoever shall only do so upon the official triplicate prescription blank or official duplicate dispensing blank.

Reg. 10. The first paragraph of subdivision 5 of Section 427, Article XXII, Chapter 639 of the Public Health Law reading: "A physician may in the course of the legitimate practice in good faith of his profession and for the purpose of relieving or preventing pain or suffering on the part of a patient, or to effect a cure, administer, prescribe or dispense cocaine or opium or its derivatives as follows:"

shall be interpreted to mean that where a physician or a physician of an institution prescribes for, administers or dispenses opium, cocaine or any of their derivatives to an habitual user thereof, such prescribing for, dispensing or administering, not being issued in the course of professional treatment in the attempted cure of the addiction, or for relief in the treatment of any other disease or surgical operation, but being used for the purpose of providing the addict with the aforesaid drug or drugs sufficient to keep him comfortable, will be considered by the department as a perversion of the meaning of the words "good faith" contained in said subdivision.

Reg. 11. While opium, cocaine or their derivatives may legitimately be used in connection with or as part of the treatment for the cure of addiction, the prescribing for, administering or dispensing of such drugs to an addict for self-administration by such patient shall not be deemed to constitute in itself legitimate medical treatment for the cure of such addiction, unless the physician purposes either by a gradual reduction in the dose or by some other method of treatment to effect within a reasonable limit of time a cure of the addict.

Reg. 12. No person shall sell at retail or furnish to any other person than a duly licensed physician, dentist, or veterinarian, nurse attendant or intern of any institution an instrument commonly known as a hypodermic syringe or an instrument commonly known as a hypodermic needle, except upon the written order of a physician. Every person who disposes of or sells at retail or gives away to any person either of the above instruments upon the written order of a physician, shall, before delivering the same, enter in a book kept for that purpose the date of the sale, the name and address of the purchaser, and a description of the instrument sold, disposed of, furnished or given away.

WALTER R. HERRICK, Commissioner.

Letters to the Editors.

NARCOTIC PROBLEM AND THE LAW.

117 WEST SEVENTY-SIXTH STREET,
NEW YORK, July 12, 1919.

To the Editors:

Many physicians are refusing to prescribe narcotics owing to the danger and disrepute now attached by law to the legitimate use of these agents. They are doing this even at the risk of the suffering entailed upon their patients in order to compel attention to the necessity for the repeal of a law which places the practice of medicine in this State under a commission like pugilism, race track gambling, vice, and the public utilities.

The following comment appeared in the *New York Tribune* on July 6, 1919:

"It was also announced by State Commissioner Herrick that summonses for nearly eight thousand delinquent physicians, druggists, and veterinarians authorized to dispense narcotic drugs and who failed to register with the State Department of Narcotic Drug Control on or before July 1st will be obtained from magistrates throughout New York State beginning next Thursday.

Of the 17,000 physicians, dentists and veterinarians who are required to register, only 8,000 have complied with the law," said Commissioner Herrick. "I attribute the failing of the doctors to re-register to the fact that many are out of town. Some undoubtedly have been careless, but some probably are antagonistic to the law and these must be compelled to conform to the law."

It is said that "ignorance of the law excuses no one but the lawyer."

Commissioner Herrick, a lawyer as well as

narcotic drug commissioner, is in error when he states that "doctors are required to register under this law." They are required to do so only in order to prescribe what the law calls habit forming drugs.

JOHN P. DAVIN, M. D.

CUSTOM AND TRADITION.

177 CHURCH STREET, NEW HAVEN, CONN.,

July 9, 1919.

To the Editors:

May I commend your editorial entitled "Custom and Tradition" on page twenty-seven of the July 5th number. The editorial is timely, and the conditions it states are true; but if anything it does not hit hard enough.

There are more fool books and fool papers offered in medicine rehashing and copying old, ancient stuff, especially in therapeutic lines, than should appear in this progressive era. If some old clinician had a big name, some pet medicinal formula of his may show a record of fifty years or more of transference from book to book. What we want today is each man's personal knowledge and belief. We are tired of long quotations. This does not say that valuable compilations are not needed, but there is altogether too much copying done, although the authorities may be acknowledged.

It is also an American habit to refer to foreign literature and authorities rather than to recognize American authors, unless they happen to be well known laboratory men, or perhaps are favored surgical experts.

There is also a tendency in this country to elevate laboratory and experimental findings far above clinical investigations, even if such investigations are made by experts. This is a mistake. Experimental findings are suggestive; they may be clarifying; but most laboratory examinations are simply part of the clinical story, and are generally ordered by the clinician, and the expert at the bedside and at the operating table is still the one who bears the responsibility of the life or death of the patient.

OLIVER T. OSBORNE, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Rational Therapy. By OTTO LERCH, A. M., Ph. D., M. D., Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana. Illustrated. Troy, N. Y.: The Southworth Company, 1919. Pp. xv-560.

The importance of blood as a regulator of health has been emphasized, and in this volume the fact is driven home with forceful logic. The author demonstrates the inefficacy of the majority of drugs in affecting this fluid tissue and emphasizes the importance of various physical agents properly applied.

Great strides have been made during the war in the application of physical agents to the treatment of war injuries, both as regards their direct beneficial action and in reconstruction therapy. Doctor

Lerch utilizes these agents and applies them to pathological conditions caused by disease. He sets forth in detail the maximum advantages to be derived from simple remedies which are commonly neglected for drugs and nostrums. Special stress is laid upon the influence of the psychological factor upon disease conditions. The entire problem is handled in common sense fashion and not as a fad or a succession of fads. The value of the known methods of healing has been investigated, and due credit is given from the author's point of view.

It is true that a certain proportion of patients demand expensive pills and think they are not receiving proper attention unless they are given frequent and complicated prescriptions which they cannot understand. But there is a sufficient number of weapons in the physical armamentarium to keep the ordinary patient busy and reestablish the balance in the possible loss of these psychic pacifiers. Fresh air, the fresh air bath, sun baths, climate, diet and rest, massage, exercise, and hydrotherapy are among the agents carefully described. The object aimed at throughout is to improve the quality and distribution of the blood. It is to be regretted that typographical errors have been allowed to creep into the final revision of the book, but these do not detract from the value of the material presented. There are many problems which are handled in a novel fashion and which can well be incorporated as adjuncts by any physician.

Births, Marriages and Deaths.

Died.

- BALDWIN.—In Oneonta, N. Y., on Thursday, July 3d, Dr. Dorman Baldwin, aged seventy-one years.
BUNDY.—In Philadelphia, Pa., on Tuesday, July 1st, Dr. Elizabeth R. Bundy, aged seventy years.
ELISCU.—In New York, N. Y., on Friday, July 11th, Dr. Eugenie R. Eliscu, aged fifty-three years.
HARRIS.—In Chicago, Ill., on Wednesday, July 2d, Dr. Frederick Gillette Harris, aged forty-five years.
HERTZ.—In Philadelphia, Pa., on Monday, July 7th, Dr. Silas G. Hertz, aged eighty-eight years.
HOUGH.—In Ambler, Pa., on Tuesday, July 1st, Dr. Charles B. Hough, aged sixty-four years.
JACOBI.—At Lake George, N. Y., on Thursday, July 10th, Dr. Abraham Jacobi, of New York, aged eighty-nine years.
MAXWELL.—In Laurens, S. C., on Tuesday, July 8th, Dr. A. J. Maxwell, aged forty years.
MORRISON.—In Churubusco, Ind., on Saturday, June 21st, Dr. Thomas Ray Morrison, aged eighty-two years.
MURTAGH.—In San Francisco, Cal., on Saturday, July 5th, Dr. John A. Murtagh, Colonel, Medical Corps, U. S. Army, of Philadelphia, Pa., aged fifty-five years.
NELSON.—In New York, N. Y., on Thursday, July 3d, Dr. Horace G. Nelson, aged forty-five years.
PRESTON.—In San Francisco, Cal., on Wednesday, July 2d, Dr. Walton Preston, aged sixty-eight years.
PRICE.—In Philadelphia, Pa., on Thursday, July 3d, Dr. William Henry Price, of Atlantic City, N. J., aged fifty-four years.
SMILEY.—In Carmel, Cal., on Tuesday, July 1st, Dr. Virginia Wickliffe Smiley.
STONE.—In Bloomington, Ind., on Wednesday, June 25th, Dr. William O. Stone, aged eighty-five years.
VAUGHAN.—At St. Aignan, France, on Wednesday, June 4th, Dr. Victor C. Vaughan, Jr., Medical Corps, U. S. Army, of Detroit, Mich., aged forty years.
WILLIEN.—In Terre Haute, Ind., on Tuesday, June 17th, Dr. Jean T. Willien, aged eighty years.

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WHOLE No. 2121.

Original Communications

INFLUENZA AND BRONCHOPNEUMONIA AT CAMP LEWIS.*

*With a Study of One Hundred and Fifty-Two
Necropsies.*

BY WILLIAM J. KERR, M. D.,

San Francisco,

Major, Medical Corps, U. S. Army, Chief of the Medical Service;

HUGH K. BERKLEY, M. D.,

Los Angeles,

Captain, Medical Corps, U. S. Army,

AND

T. HOMER COFFIN, M. D.,

Portland, Ore.,

Captain, Medical Corps, U. S. Army.

INTRODUCTION.

In a previous communication by the pneumonia unit of the base hospital at Camp Lewis, Wash., (1) the opinion was set forth that the recent pandemic of influenza, as it affected this camp, was not an epidemic caused by the *Bacillus influenzae*, but an epidemic of acute respiratory disease of unknown etiology in which Pfeiffer's bacillus was rarely found. While the term influenza can be justly applied to such cases as were seen in this epidemic, it can no longer be maintained that Pfeiffer's bacillus was the etiological organism, and until the definite causative organism has been determined the term influenza is as satisfactory as any yet applied. Although, in our experience, the nonhemolytic streptococcus and Type IV pneumococcus have been constantly found, we would hesitate in attaching too great importance to these organisms as the etiological factors. It is possible that some, as yet undiscovered, organism or filterable virus is the etiological agent, and that these organisms are merely secondary invaders (2). The results reported by other writers, notably Lord, Scott, and Nye (3) bear this out. In this paper we present a summary of the work of the pneumonia unit, and the proof of our previous and present contentions. As the basis of this proof we have critically reviewed the records of 407 cases of influenza, and the records and necropsy findings of 152 fatal cases of bronchopneumonia. We have been particularly fortunate in having necropsy reports in practically every fatal case.

INFLUENZA.

The symptoms of influenza in the recent epidemic have been exactly similar to the symptoms of previous influenza epidemics. The onset, as a general rule, was attended with malaise, headache, chills or chilliness, diffused body pains, aching muscles and joints, and more or less severe prostration. The temperature and symptoms were out of all proportion to the physical findings; in fact, in the majority of cases (61.7 per cent.) the physical examination was entirely negative.

During the epidemic at this camp, there were 7,088 cases of influenza not including 1,126 cases showing definite signs of bronchopneumonia on admission. Of these 7,088 cases, 2,730 showed signs of bronchitis during the course of the disease, and bronchopneumonia developed in 858, an incidence of 38.3 per cent. for bronchitis and 12.1 per cent. for bronchopneumonia. Considering the cases diagnosed on admission as bronchopneumonia, secondary to influenza, the incidence of bronchopneumonia was 24.2 per cent.

Patients with influenza showing signs of bronchitis had a slightly altered ratio in the symptoms of which they complained, when compared to the simple influenza cases. In the latter, headache was the most common symptom, while in cases with associated bronchitis, cough was the predominant symptom. This is clearly shown in Charts I and II.

A.—CLINICAL COURSE.

The course of the simple influenza was very short. In most instances the temperature, which on admission ranged from 100° to 104° F., returned to normal in from forty-eight to seventy-two hours. Persistence of a fever over a longer period of time was almost invariably indicative of a complication or an extension of the process to the lungs. With the return of the temperature to normal all symptoms disappeared, and although general weakness persisted for a week or more, the majority of the men were able to return to their organizations in from seven to ten days after admission to the hospital. Cases showing a bronchitis ran a very similar course to those of simple influenza. The range and duration of the temperature were practically the same in either type of case. The signs of bronchitis usually persisted for a few days after the temperature had returned to normal. The cough frequently persisted for two or three weeks.

*Published by permission of the Surgeon General, U. S. Army.

B.—CLINICAL FEATURES.

Certain striking features were so commonly present as to require special note.

1. *Leucopenia*.—The presence of a leucopenia was noted early in the epidemic and was found to



FIG. 1.—Bronchial cast coughed up by a patient having a very severe bronchopneumonia.

be a constant characteristic. Even with a relatively high temperature, the blood count, in the majority of cases, was found to be well under 10,000 cells to the cubic millimetre. During the epidemic 1,149 leucocyte counts were made, the re-



FIG. 2.—Showing early bronchopneumonia of left lower lobe.

sults of which, with the relative percentage for various groups, are given in Table I. These figures also include leucocyte counts in pneumonia patients, and this table should be compared with the findings in the fatal cases to be given later.

Number of leucocytes per c. mm.
2,000-7,000
7,000-10,000
10,000-20,000
20,000-23,000

TABLE I.

Number of counts.	Percentage.
360	31.3
328	28.5
368	32.0
93	8.1

This leucopenia did not always obtain when complications arose or when pneumonia developed, a fact also demonstrated by other observers (4). The leucopenia may be a possible factor in the frequent occurrence of complications, being indicative of a diminished resistance on the part of the individual.

2. *Epistaxis and hemoptysis*.—Bleeding from the nose was a not infrequent occurrence in influenza, though usually not severe, and in no instance was it found necessary to apply special therapeutic measures for its control. This feature is at variance with observations reported by some other authors (4 and 5). In fact, it has been our observation that cases of influenza and also of bronchopneumonia with epistaxis, ran rather a somewhat milder course than those in which epistaxis did not occur.

Hemoptysis has been noted in only two in-

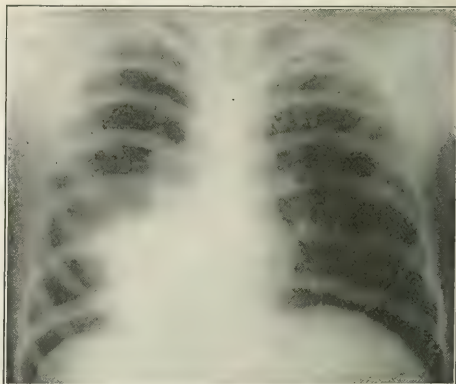


FIG. 3.—Showing early bronchopneumonia of left lower lobe.

stances. Both occurred in patients with influenzal bronchopneumonia, who presented extensive emphysema of the lungs. We believe that the hemoptysis bears a definite relation to interstitial emphysema of the lungs where dissection of air along the bloodvessels toward the hilus of the lung takes place (6).

3. *Abdominal symptoms*.—While abdominal symptoms have been rather infrequent during the course of the disease, they are, when present, the source of great annoyance. In two instances these symptoms led to operative procedures. At operation, one patient was found to have a normal appendix, and pneumonia developed later. Postoperative study of the case makes it seem apparent that the beginning of this bronchopneumonia was the cause of the symptoms. The other presented an acute gangrenous appendix, although the leucocyte count prior to operation was but 6,000 to the cubic

millimetre. Pneumonia was not found in either case prior to operation. In another instance abdominal pain, leucocytosis and a slight jaundice suggested acute cholecystitis. Empyema, with a resulting diaphragmatic pleurisy on the right side,



FIG. 4a.—Showing a very small area of bronchopneumonic involvement at the right base. Plate made at time of admission.

was found, and apparently produced this abdominal picture.

C.—COMPLICATIONS

Tonsillitis, pharyngitis, laryngitis, and tracheitis have been of such common occurrence among our cases as to be considered rather as integral parts of the disease than as complications. We believe the same to be true of bronchitis and even bronchopneumonia, that they are not true complications but a progressive extension of the initial process to the bronchioles or to the lung tissue, either because of a lowered resistance of the subject or because of an increased virulence of the invading organism or organisms; that the disease, influenza, in this epidemic, had a selective action on the respiratory tract, and that the development of a simple pharyngitis in some cases and bronchopneumonia in others was merely a clinical variation in degree of one and the same process.

1. *Otitis media*.—Acute suppurative otitis media, as a complication, was not infrequent. The subjective symptoms of otic involvement were usually very slight. Purulent discharge from the ear was occasionally the first indication. In a few cases the otitis media was of the nonsuppurative type, the symptoms then being pain in the ear, and a slight degree of deafness. The nonsuppurative otitis usually cleared up after a few days. The suppurative type, in most cases, cleared on treatment, but in a few cases progressed to a mastoiditis requiring surgical procedures.

In regard to the presence of mastoid involvement without symptoms, it may here be stated that the mastoid cells were opened at necropsy in twenty cases where no evidence of involvement was exhibited during life. Five of these patients showed acute changes in one mastoid, and changes

on both sides were noted in three patients. Cultures were positive in two of these cases, in one pneumococcus Type IV being obtained, and in the other the hemolytic type of streptococcus.

2. *Sinusitis*.—Involvement of the accessory sinuses was noted in several instances, the frontal sinuses being the ones most frequently involved.

D.—BACTERIOLOGY.

Sputum cultures and studies were made whenever possible in the bronchopneumonia patients, and in a large number of the influenza patients. During the epidemic 1,948 specimens were submitted to the laboratory for examination. Of this total 542 were found unsatisfactory because of difficulty in obtaining a specimen from the lungs. The findings in the 1,406 satisfactory specimens are given in Table II.

TABLE II.

	Sept.	Oct.	Nov.	Dec.	Total.	Percentage
Specimens studied	218	684	306	198	1,406	....
Pneumococcus total	166	684	306	198	1,354	96.37
Type I	20	20	1	2	43	2.91
Type II	1	4	0	2	7	0.49
Subgroup II	30	7	2	3	42	2.99
Type III	0	0	1	3	4	0.28
Type IV	115	653	302	190	1,260	89.61
Pneumococcus alone	66	20	09	41	240	17.70
Type I	8	0	0	0	8	0.56
Type II	0	1	0	0	1	0.07
Subgroup II	10	1	0	1	12	1.28
Type IV	30	77	09	40	222	15.79
Pneumonia with streptococcus	103	547	233	114	977	69.48
Streptococcus hemolyticus	1	0	0	0	1	0.07
Streptococcus anhemolyticus	88	0	233	112	433	30.80
Streptococcus viridans	13	537	0	2	542	38.55
Streptococcus mucosus	1	0	0	0	1	0.07
Pneumococcus with Bacillus influenza	5	210	20	8	243	17.28
Type I	0	0	0	0	0	....
Type II	0	0	0	0	0	....
Subgroup II	0	0	0	0	0	....
Type III	0	0	0	0	0	....
Type IV	5	210	20	8	243	17.28

It is to us very significant that the *Bacillus* in-

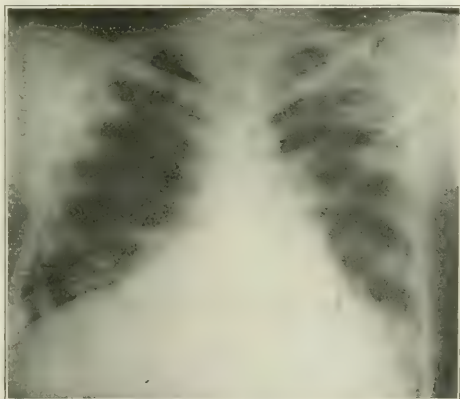


FIG. 4b. Plate of same patient as in Fig. 4a twelve days later, showing marked extension of the process at the right base and to the left lung.

fluenzae was found in only 243 of the 1,406 specimens, an incidence of but 17.2 per cent., and that when present it was always associated with the Type IV pneumococcus. From this it seems evident that the only part Pfeiffer's bacillus played in

the epidemic at this camp was that of a secondary invader, an observation quite in accord with that of Lord, Scott and Nye (2), and of Stone and Swift (7), but in contrast with the observations of Opie, Freeman, Blake, Small and Rivers (8).

Although many patients admitted to the hospital

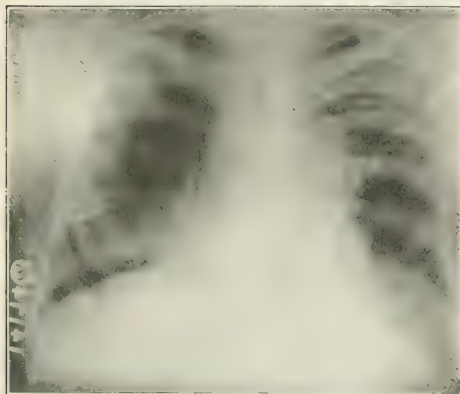


FIG. 4c.—Plate of same patient as in Fig. 4a taken several hours after Fig. 4b, showing further extension of the process in the left upper lobe and the right base.

during the epidemic evidently had bronchopneumonia at the first examination, it is not our belief that any of our cases could be considered as primary. On the contrary, we believe that all of the bronchopneumonia cases were secondary and, as stated above, all cases of pneumonia seen during the epidemic were merely those which through

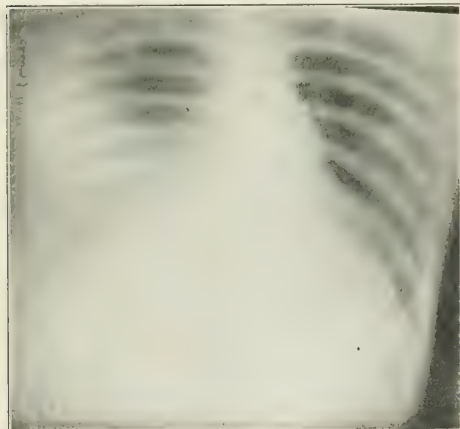


FIG. 4d.—Plate of same patient as in Fig. 4a taken three days after Fig. 4c and fifteen days after admission, showing complete consolidation of the right lower lobe and extension to all lobes of both lungs. Fluid was not present in this case.

lowered resistance or because infected with a more virulent organism, progressed to a point of actual parenchymal involvement of lung tissue. In accordance with this view it will be seen that there

is no sharp dividing line between a severe bronchitis, bronchiolitis, and a mild bronchopneumonia. With the methods of examination at hand it is impossible to determine when one stage of the process leaves off and the other begins. It is inconceivable to us that a severe bronchitis or bronchiolitis can exist without some associated parenchymal involvement.

In order to standardize our diagnoses as accurately as possible, it was accepted that the earliest signs upon which a diagnosis could be accurately based were: 1, A slight impairment of resonance over one or both bases with diminished or slightly increased breath sounds and vocal or tactile fremitus; 2, a shower of fine crepitant râles on inspiration over the dull area. We are unwilling to accept the unqualified opinion that all cases showing crepitant râles in the bases of the lungs, either with or without dullness, are cases of bronchopneu-



FIG. 5.—Chest plate, showing bronchopneumonia of the left lung with extreme dilatation of right heart.

monia, although we believe this statement is approximately correct. The general characteristics of the bronchopneumonia seen in the recent epidemic are more or less well known to the profession through personal experiences or through access to the extensive literature on the subject. For this reason we desire not to discuss the clinical pictures in detail but only to outline and emphasize certain of the salient features.

A.—CLINICAL PICTURE.

As we stated in the preliminary report (1) of the pneumonia unit of this hospital, the clinical and physical signs of the pneumonia seen in this epidemic were atypical. The usual signs of pneumonia, as seen in young adults, were conspicuously absent. Even men showing a definite bronchopneumonia on admission had reported on sick call only because they had a bad cold or felt weak. Interrogation, however, revealed the fact that they had been feeling poorly for several days with the same train of symptoms as given in the influenza cases (see Chart III).

Whether bronchopneumonia was present on entry into this hospital or developed after admission the clinical signs were identical. The face was flushed, a dry and unproductive cough was present and, although very uncomfortable, the majority of

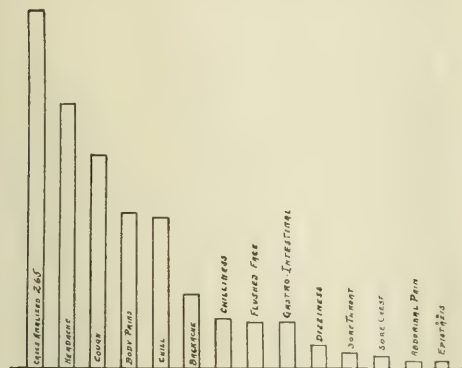


CHART I.—Ratio of symptoms in influenza cases (265 cases).

these patients did not appear seriously ill until the process in the lungs had become quite extensive. The respiratory rate was moderately increased, usually to twenty-four or thirty a minute. Unusual for pneumonia but very characteristic of the cases seen in this epidemic was the fact that, although the respiratory rate was increased, dyspnea or orthopnea was never present. Patients critically ill and having a respiratory rate of forty to fifty a minute seemed quite as comfortable in the supine as in the reclining position.

The pulse rate was relatively slow, practically never faster than would correspond to the rise in temperature. The quality remained good throughout the course of the disease except in those cases going to a fatal issue. In fatal cases it often became weak, thready, and irregular some twenty-four hours prior to death. In other patients, in whom death seemed imminent, there was a full bounding pulse. This observation, together with the recognized frequency of right heart dilatation and the fact that on the average patients having epistaxis did well, led us, in a few instances, to perform venesection. Four to eight ounces of blood were removed at one bleeding. Although as a rule this did not alter the progress of the disease, there were a few cases in which we feel certain that this procedure alone prevented a fatal issue.

The temperature, in the milder cases, seldom exceeded 103° F. and returned to normal in from three to five days. In the more severe cases the fever showed rather wide variations, so wide in fact that it may confidently be said that there was no relationship between the degree of fever and the extent of the process or the prognosis. In many fatal cases the fever did not exceed 101° F. The return of the temperature to normal was almost invariably by lysis, covering a period of from two to four days. In isolated instances there was noted a drop by crisis, similar in every respect to that seen in ordinary lobar pneumonia.

Cough was a constant and often a troublesome symptom. In mild cases, and early in the severe cases, it was of the dry and unproductive type. With the extension of the process the cough usually became productive, with a thick, tenacious, mucopurulent type. One patient coughed up a large and perfect bronchial cast, a photograph of which is given in Fig. 1. That the cough in many cases was severe, is evident by the occurrence of hemorrhage into the rectus muscles, and in a few instances by actual rupture of one or both of these muscles. Cough, *per se*, was not the only factor in the production of these changes as will be pointed out later. It is our belief also that cough was one of the factors responsible for the production of the subcutaneous emphysema and pneumothorax, two unusual phenomena encountered which have been previously reported (6).

Cyanosis was a very constant observation in cases of bronchopneumonia. This varied between the wide limits of a marked flushing of the face to the heliotrope and the dusky gray types described and reproduced in color in the article by Abrams, Hallows, and French (5).

B.—PHYSICAL SIGNS.

The physical signs in the cases of bronchopneumonia were probably the most varied of any of the unusual characteristics of the epidemic. After seeing a large number of these patients one realizes that the diagnosis of bronchopneumonia was often very difficult and that the prognosis in the case could by no means be wholly determined by the physical sign. Cases showing a relatively small lung involvement occasionally went to a fatal issue, while other patients showing a tremendous involvement recovered.

The signs on which we based our diagnosis of bronchopneumonia have been given and need not be repeated here. We may add, however, that why one patient should show decreased fremitus and breath sounds over a dull area, and another an increase in these signs, can only be explained by the relative position of the process in the lung tissue.

From these early and rather indistinct signs, the course of the disease changed rapidly. In a large majority of the patients the disease progressed no further, and went on to a prompt and uninterrupted recovery. The remainder showed a rapid



CHART II.—Ratio of symptoms in influenza cases having bronchitis (142 cases.) Compare with Chart I.

extension of the process, marked dullness with markedly increased or markedly decreased breath sounds frequently appearing but a few hours after the first indefinite signs were noted. Because of the rapid development of positive signs, it was possible to diagnosis twenty-nine per cent. of our fatal

cases as pneumonia within twenty-four hours after admission.

Owing to the variation in early signs, we have analyzed the records of the patients in which the disease was not diagnosed as pneumonia until forty-eight hours or more after admission to the hospital, in order to ascertain what signs existed in this prediagnostic period and also what signs a ward surgeon considered sufficient to make a positive diagnosis. The results of this study are given graphically in Chart IV. The gradually increasing percentage of patients showing moist or crepitant râles posteriorly; harsh bronchial or bronchovesicular breath sounds, and dullness or impaired resonance are very apparent.

It seems likely, in reviewing this chart, that

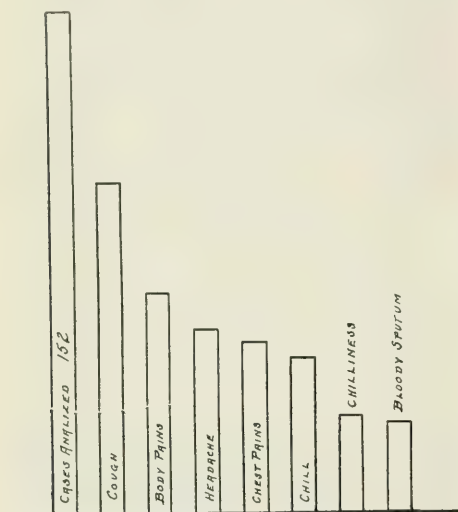


CHART III.—Ratio of symptoms in bronchopneumonia cases. Most of the statistics in this report have been compiled by Miss Stella Booth, A. N. C.

some of the cases not diagnosed as pneumonia until after two days in the hospital should have been recognized on the first examination, and a great many on the other examinations prior to diagnosis. In this regard it may, however, be said that this type of pneumonia was so entirely different from the type well known to all medical men, as to make ward surgeons very skeptical, and therefore over cautious in making an early diagnosis. Only by seeing a large number of cases, both during life and at necropsy, can one have the courage to make a positive diagnosis on the early and comparatively minor signs.

To ascertain the accuracy of the diagnoses made by the ward surgeons, we have analyzed the clinical records of all the cases coming to necropsy, and have compared the anatomical with the clinical findings. In 152 cases analyzed, it was found that the incidence of absolute accuracy of lobes involved was but 20.38 per cent. At first thought this would seem to be a relatively low average, but since even the smallest area of involvement found in a lobe

at necropsy, and not noted clinically, was considered an error, a higher percentage could scarcely be expected. No patient in whom the disease was diagnosed as influenza or influenza with bronchitis

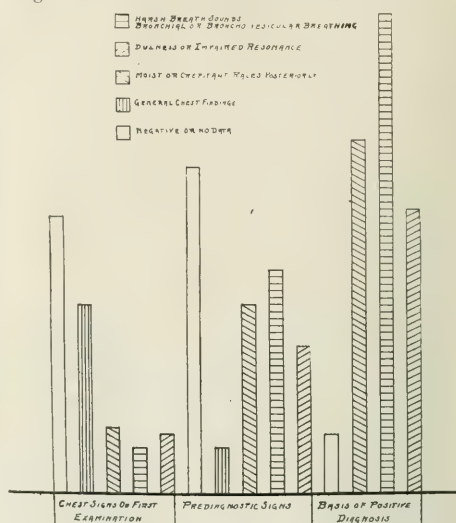


CHART IV.—Showing relative ratio of chest findings on first and subsequent examinations up to time of diagnosis.

died. The diagnosis of pneumonia was made in all but one of the fatal cases, and these diagnoses were pathologically confirmed in all cases, except in the few instances where postmortem examinations were not made. The one fatal case which was not recognized as pneumonia occurred in a soldier who walked to the hospital at 11:00 a. m., became suddenly comatose at 5:00 p. m., and died at 8:30 p. m., with no positive diagnosis made. Necropsy revealed a bronchopneumonia of both lower lobes

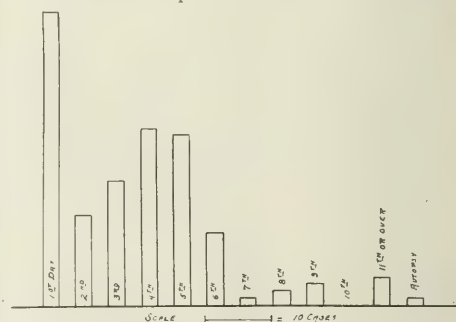


CHART V.—Day of diagnosis in bronchopneumonia cases.

with a markedly dilated right heart. This makes an error of but .6 per cent. in the recognition of the presence of pneumonia when the distribution of the process is not considered.

Lobar pneumonia has been mentioned by some authors as an occasional and by others as a frequent occurrence in this epidemic. Certainly the

physical signs are occasionally those of a lobar consolidation, with marked dullness, increased fremitus, and bronchial breathing. Early in the epidemic a few errors were made at this hospital because of these signs, and lobar pneumonia was diagnosed in cases which, at necropsy, revealed the true condition to be a lobar consolidation produced by the coalescence of lobular involvement. In the 152 cases coming to necropsy lobar pneumonia was anatomically diagnosed but six times.

In three of these cases there seemed to be no good reason to doubt this diagnosis, but in the other three instances a bronchopneumonia was present also, leading one to suspect that these possibly were cases of coalescent bronchopneumonia, though in the gross specimen it was not obvious. Granting, however, these were cases of true lobar pneumonia, the incidence is still less than four per cent. as judged by 152 necropsies.

Inasmuch as lobar and bronchopneumonia, pathologically, differ from each other macroscopically rather than microscopically, we wish to give here the macroscopic signs upon which our differentiation between lobar pneumonia and bronchopneumonia was based. The cases of bronchopneumonia showing small isolated areas of consolidation offer no special difficulty in recognition. The areas of consolidation,

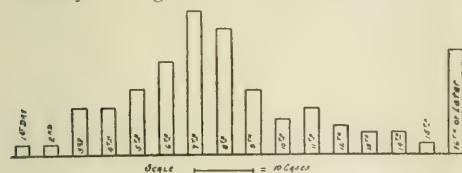


CHART VI.—Day of death in bronchopneumonia cases.

on cut section, stand out from the remainder of the lung tissue, are different in color, firm on palpation and sink in water. On palpation of the lung, prior to section, they are easily felt as firm masses surrounded by soft lung tissue. When, however, large numbers of these areas coalesce, the problem of differentiating the coalescent mass from lobar consolidation is often somewhat difficult. Palpation prior to section in these cases frequently, though not always, reveals irregularities in the consolidation. This irregularity, if present, is due to variations in the stages of consolidation of the lobules, some being merely in the stage of congestion while others are in the stage of red or grey hepatization. On cut section the surface is not the even, smooth surface of lobar consolidation. It is found, on close examination, to have slightly raised areas scattered about with distinct variations in color corresponding to the stage of the involvement. Invariably by careful dissection, small areas of air containing lung tissue can be found and dissected out as evidenced by floating the sections in water.

C.—EXTENT OF INVOLVEMENT.

Our experience has been that in the majority of the cases of bronchopneumonia, the process was not limited to a single lobe, but usually involved two or more lobes. The frequency of involvement of the various lobes, as found in the 152 cases examined at necropsy, is given in Table III.

TABLE III.

Showing relative frequency of involvement of lobes in 152 fatal cases.

Right lung.		Left lung.	
Upper lobe	127	Upper lobe	129
Middle lobe	105	Middle lobe (anatomical abnormalities)...	2
Lower lobe	145	Lower lobe	143

D.—THE ROENTGENOGRAPHY AN AID TO DIAGNOSIS.

The difficulties encountered in making an early and accurate diagnosis have been previously pointed out. As an adjunct in confirming diagnoses, the roentgenograph has been of great value. As far as possible all cases of bronchopneumonia were sent to the laboratory for fluoroscopic examination or to have plates made. As many as 152 plates of chests have been made in a single day. In this way several cases of unsuspected tuberculosis, empyema, lung abscess, pericardial effusion, and processes in excess of the clinical findings were recognized. The most important part played by the roentgenograph, however, has been the confirmation of the diagnosis of bronchopneumonia in the early stages of the disease.

The roentgenographic picture of the early stages of bronchopneumonia has been very clear and very characteristic, in many cases, as is indicated in the reproductions in Figs. 2 and 3. This early picture has been, in many instances, watched in its development by taking a series of plates. A series of this character is shown in sequence in Figs. 4 a, b, c, and d. The fact that the early shadows produced are due to parenchymal involvement has been substantiated.

Plates have been taken in some of the fatal cases after death and the findings of the radiographer confirmed on the necropsy table. Excised lungs have been radiographed before section, and the pneumonia areas shown by the radiogram have been demonstrated in the lung tissue. This, we believe, refutes the claims made by some other authors that the roentgenographic findings are produced by areas of hemorrhage or edema in the lung tissue.

Great credit is due Captain F. E. Deimer and Lieutenant McRae, of the x ray department, for their untiring work during the epidemic.

E.—ANALYTICAL FEATURES.

1. Age and length of service. The records in the fatal cases have been analyzed to ascertain the incidence of death according to age and to length of service. The results of this study are shown in Table IV.

TABLE IV.

Table of length of service.		Table of ages.	
1 to 7 days	10	10 to 21 years	18
8 to 14 days	7	22 to 23 years	20
15 to 21 days	11	23 to 24 years	25
22 to 28 days	3	25 to 26 years	25
1 month	30	27 to 28 years	24
2 months	49	29 to 30 years	23
3 months	23	31 to 35 years	14
4 months	16	36 to 40 years	2
5 months	4	Over 40 years	1
6 months to 1 year	2		
1 year to 2 years	4	Total	152
3 years to 5 years	2		
Total	152		

In regard to the length of service it seems

significant that forty per cent. had been in camp but one month or less, and that 65.7 per cent. had been in camp for a period not exceeding two months. We believe the reason for this is that during the first few weeks in camp the men go through a marked change in environment, are subject to typhoid "shots" and to vaccination, factors which undoubtedly tend to lower individual resistance. Although most men in this camp during the epidemic were relatively new in the army, probably the majority had been in camp for a period of more than six months.

2. *Day of diagnosis.*—A large proportion of our cases of pneumonia were diagnosed within the first twenty-four hours in the hospital. During the period from September 15th to November 15th, which covers the height of the epidemic, 150 of 757 cases of pneumonia were diagnosed on the day of admission. In Chart V we have arranged, graphically, the 152 fatal cases according to the day on which the diagnosis was made.

3. *Day of death.*—In the fatal cases analyzed, 51.8 per cent. of the patients died on or before the eighth day after admission to the hospital, and only 11.8 per cent. lived longer than fifteen days. The ratio of the deaths to the length of time in the hospital has been shown in Chart VI.

4. *Length of illness.*—The average length of illness in a case of influenzal bronchopneumonia was about three weeks. In a few of the milder cases the patients were able to be out of the hospital in a somewhat shorter time, but for the most part the postinfluenzal weakness prevented a return of the men to duty in less than three weeks. Complications, of necessity, delayed the return to duty in many instances.

5. *Leucocyte counts.*—Blood counts were made in seventy-one of the 152 fatal cases. The leucopenia, so characteristic in simple influenza cases, was found frequently to pertain still when the cases had gone on to a bronchopneumonia, though usually not to so marked a degree. In most instances the white count was found to increase as the pneumonia developed, e. g. 2,320 to 18,160 per c. mm. The highest white count encountered among the fatal cases was 28,800. The average white count was 10,023.

(To be concluded.)

A CASE OF SYPHILIS WITH MILD RELAPSING SYMPTOMS FIFTY-FIVE YEARS AFTER INOCULATION.*

By VICTOR COX PEDERSEN, A. M., M. D., F. A. C. S.,
New York.

This case was presented before the Genitourinary Section of the New York Academy of Medicine, in May, 1907. As noted, the paper was held for researches by the late Dr. Robert W. Taylor and myself among the office records of the former for several cognate cases. The purpose was to make a long comparative paper with at least suggestions, if not conclusions, as to the meaning of these long delayed, relapsing, and peculiar manifesta-

tations of syphilis. Surely very few physicians see any or many patients similar to this one. Speaking for myself, the case is the only one of the kind which I have seen in my own public or private practice or in those of any colleague. The unique features of the case warrant the publication of the report at this late date, twelve years after it was read. In the meantime the paper remained mislaid until a short time ago in the records of my office.

CASE I.—Charles A. M., born in the United States, white, aged seventy-nine, widower, present occupation peddler, pharmacist by profession. Diagnosis—syphilis in the tertiary stage manifesting itself as relapsing ulcers on the legs. As an intercurrent condition the man had a large partially reducible scrotal hernia. His former general history states that he had typhoid fever many years ago without complications; he has always been a steady but very moderate drinker of alcohol and both a smoker and chewer of tobacco. His former venereal history states that he had gonorrhea once, fifty-three years ago (1854) complicated with bilateral orchitis, notwithstanding which he had a fruitful marriage. The gonorrhea was treated by a druggist and himself for only a few weeks and as far as he remembers, by internal measures only, chiefly balsams. He ceased treatment, no physician having been consulted. He also had one attack of venereal warts very many years ago which were cut off by a physician. The wounds healed promptly.

His present venereal history states that his sexual habits prior to marriage and subsequently, were very active. In 1852 he became infected with syphilis obtained from a young widow, while he was making a delivery of drugs to her. One chancre developed about twelve days after intercourse.

The late Dr. Valentine Mott made the diagnosis and appears to have used mild caustic, wet dressings and powder on the sore. The powder is stated to have been calomel and bismuth. The secondary symptoms, adenopathy in both groins, appeared about two months after the chancre; the eruption occurred a few weeks later than this, chiefly on the chest, belly and legs. Patches appeared about the same time as the eruption, chiefly in the throat, and were treated by Dr. Robert W. Taylor. Treatment was followed for a considerable period, although the advice given by Doctor Mott and Doctor Taylor to continue treatment for a long time was not followed. Notwithstanding his steady and moderate alcoholic habit all symptoms of the syphilis seem to have remained in abeyance until about ten years ago when ulcers on both legs appeared, neither preceded nor accompanied by varicose veins. Since then these ulcers have relapsed every two or three years, the patient thinks, chiefly after exposure. The diagnosis of tertiary syphilis was made at the first outbreak of the ulcers ten years ago by a physician and each physician who has since then seen the ulcers has made the same diagnosis.

He was first seen by me at the House of Relief about a year ago (1906) when both shins presented

*Case report presented before the Genitourinary Section of the New York Academy of Medicine in May, 1907.

a number of ulcers varying in size from one to three centimetres in diameter and distributed over both legs, with punched out margins, indolent, moist or varnished bases and with very little redness about them. The ulcers were not tender to the touch in any degree. Mercurial salve was applied locally and the iodide of potassium administered internally. In less than a month, notwithstanding his years, the ulcers had entirely healed leaving behind slight atrophy of the skin with staining. Since last year the patient has been irregularly under my treatment which has consisted in moderate doses of iodide of potassium with intermissions during the hot weather. No tendency toward a return of the ulcers has thus far manifested itself.

In stating that this patient has syphilis, I do not wish to be understood that he has the disease in an infective stage. The case might be classed as one of parasyphilis, a term recently adopted by French authorities, I believe, by which they seem to mean that whereas the patient no longer has syphilis as such, his former syphilis so influences him in the present that one is able to know that he did in years gone by suffer from the disease. Another way of looking at the case and the one which I prefer, was stated to me by Dr. Robert W. Taylor in the following words last August (1907) when he saw the case with me, namely: "The patient has syphilis but it has lost its infectiousness, yet not its malignancy. In other words then, no one will acquire syphilis from this patient, nevertheless it is present in his system and would, if left untreated, slowly continue to damage him."

Those of us who have noticed Fournier's recent writings concerning late secondary syphilides remember that he cites cases as late as this. It seems that because of the relatively large number of such patients in his records and in the records of some of his colleagues, he could not understand the doubt among the profession against the existence of such late secondary lesions. It seems safe to say that to the last he refused to believe the reports of reinfection as correct, hardly because they could not readily occur, but really because of the impossibility of exclusion of late relapses, such as this patient of mine showed.

Doctor Taylor in the interview at his office where I took this patient verified the man's story with great care through reminiscences concerning the New York Dispensary where the man had been a patient during Doctor Taylor's service. Doctor Taylor also said that he had among his case records a number of similar instances of benign syphilis with relapse after many, many years subsequent to inoculation. He gave me the privilege of adding the reports of these cases to the one in hand but his death unfortunately occurred before I could avail myself of this advantage.

In the light of knowledge which has come to us since this case was presented in 1907, it is to be regretted that no blood tests after the method of Wassermann and Noguchi were ever done. I traced the patient to one of the city institutions during the winter of 1907-1908 and learned that he had died of pneumonia so that this valuable

detail of the diagnosis could never be supplied. Nevertheless, the diagnosis is correct as a foregone conclusion after the results of our repeated treatment and after the interviews and physical examination Doctor Taylor gave the man.

45 WEST NINTH STREET.

CARDIOVASCULAR RESPONSE TO INFECTION.*

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The heart muscle is susceptible to the influence of the extracardial and intracardial nerves of the heart. There is an abundant nerve supply from the central nervous system, the inhibitory vagus from the cranial autonomic parasympathetic system and the accelerator fibres from the sympathetic system. The nerves may be acted upon at their origin or periphery. The rate is altered by any influence that will raise or lower the blood pressure. Alteration in the pulse is caused by paralysis of the vagus or by toxins. Section of the vagi causes pronounced acceleration of the pulse on account of the loss of a restraining influence of this centre and there can be no slowing.

Acceleration of the pulse may be due to stimulation of the acceleration centres. The blood of asphyxia stimulates this centre as it does the vagus centre. In a peripheral vagus depression an increased excitability of the heart renders it less susceptible to vagus inhibition as is sometimes observed from the toxic action of digitalis, and there may be a change from retardation to acceleration and then an irregularity. Some drugs act on the vasomotor centres and, also on the vessels of the periphery. This action on the vessel walls is different from the central action, for by its peripheral action it dilates vessels of heart, kidney and brain.

Heat Centre.—We speak of heat regulation centres, but we know of no definite heat centre. We assume that there is a controlling central mechanism which secures coordinated cooperation of vasomotor and sweat centres which gives the necessary nervous impulses to control metabolism, that lies not lower than the midbrain.

In fever it is probable that a stimulation or augmentation of the excitability of the sympathetic nervous system, to which consequently the heat regulating centres belong, plays a causative rôle in the production of fever. Poisonous organisms or their toxins may be the etiological factors. Fever may therefore be considered as a symptom of stimulation produced by small amounts of toxins, and collapse as a symptom of the paralysis caused by larger amounts of these substances. This is the position taken by Meyer and Gottlieb.

Decreased cardiac activity may be due to the influence of fever and toxins, on the coronary vessels. In this condition, at each systole less blood goes into the aorta, and thence into the body. Cer-

*Read before the Monthly Scientific Seminar, Indiana University School of Medicine, April 25, 1910.

tain pulmonary lesions such as emphysema and empyema may cause a diminution in the available blood vessels, also atrophy, and the area of blood space is decreased. In edema and hypostatic congestion, the blood cannot enter the upper portion of the heart on account of the condition of the lungs and therefore the act of emptying the heart chambers is imperfectly done. Acute pneumonic or pleuritic processes with exudate and an obstructed blood current may produce stasis in the pulmonary artery and dilatation of the right side of the heart (Delafield). Low blood pressure is often an outcome, but perhaps there is an increased pressure in the veins and edema, hemorrhage and cyanosis results; thus there is cardiac weakness with dilatation followed by collapse. However, we must bear in mind the position of Schmous as shown by Goltz that collapse may result from depressing influences on the heart or from lesions of the muscle or coronary arteries, with marked anemia of the part, or as a reflex from various causes with an accompanying rapid small pulse.

These things we have seen demonstrated during the epidemic of influenza. We have also noticed the absence of ratio between pulse, respiration and temperature. It is true that we have always recognized this in certain types of pneumonia, but in these influenza or streptococcic and pneumococcic conditions we find it a frequent occurrence. There is evidently an acute hypertrophy, which may not be recognized, due to a pneumonitis or other pneumonic lesion which obstructs the blood stream, and, too, we might suggest, empyema, emphysema, bronchopneumonia or a tuberculous lung in which the process has been awakened and the same awakening may come to the myocardium where an old lesion has not given much disturbance.

In the epidemic we often found a toxic heart muscle, as is true of other muscles, favoring dilatation and functional valvular lesions but principally myocardial lesions. Hence we had an overworked heart in many cases, poor nutrition from defective coronary blood supply, influence of heat on the heart muscle and the action of the toxins directly on heart muscle. During the epidemic we consequently noted a rapid pulse, weak or strong, as the case might be, of myocardial lesions, and either a simulating or true myocarditis. It is especially recognizable in some patients whom I have seen that there seemed to be an atypical acute myocarditis and so frequently have I noticed the presence of a toxic myocardium that occasionally I have referred to it as an influenzal myocardium. Sometimes there is, I believe, a failure of coaptation of the valves and functional murmurs are present which disappear during convalescence.

Delafield has said that it has recently been shown that in the acute infectious diseases, such as influenza or pyemia, the media and intima of the coronary arteries may be involved in necrotic and hyperplastic processes which are apparently of great significance in leading to certain forms of sclerosis of the vessels. Here we find the reason why the heart muscle and all which hold a relationship to it may easily become defective. We also know that powerful contractions of the musculature of the heart can

lessen the nutritive supply to the heart even in acute conditions and it then lacks in the performance of its function. The various organisms of the infectious diseases are a prolific cause. If the condition is chronic, we recognize why chronic myocarditis and endocarditis eventually have a permanent decompensation and the end of the patient's life is not far distant.

Perhaps we should more frequently recognize the change in the vessels and muscle, in the interstitial tissue, when one of the acute infections is present. Minute abscesses occur in various parts of the body during influenza, emboli and necrosed tissue are not infrequent and the heart muscle may not escape. There may be as a result thrombi in the heart or any part of the body and pus may have previously entered any chamber. Concerning the diseased heart muscle in these conditions or others, Delafield has expressed the opinion that the streptococcus and staphylococcus are the most common causes, this again suggesting conditions found during our present epidemic of influenza. And in the disease Thomas Lewis states that we are not justified in attributing the whole breathlessness of lobar pneumonia to lung damage, since pneumococcic lesions in other parts of the body may also be associated with breathlessness, a nonvolatile acidosis being given often as the principal agent. When heart failure is added then the breathlessness is governed by two factors; first by the quantity of nonvolatile acid present and secondly by the deficiency of aeration. These two conditions create hyperemia. Urgent dyspnea belongs to this group.

Germane to this subject we present a few abstracts which have appeared in domestic and foreign journals. The condition of the myocardium from infection often suggests influenza and rheumatism as factors in the etiology. Mitral stenosis was given less attention previous to the world's war. Major M. A. Rothschild, of New York, speaks of mitral stenosis (1), concluding as follows: 1. Mitral stenosis is not an uncommon valvular disease in men between the ages of twenty-one and thirty-one. 2. Only forty per cent. of our patients gave a definite history of acute articular rheumatism. 3. The early cases require careful examination, as the murmur is variable. 4. The presence or absence of a thrill is of little value. 5. It must be differentiated from the overacting heart (the neurocirculatory asthenia complex). 6. Oculopupillary pressure has proved of great service in differentiating the two conditions. 7. Morison's amyl nitrite test is of value in proving the diagnosis in cases in which there are slow acting hearts.

As the result of streptococcic infection the heart is profoundly influenced and we know that this is especially true in influenza and that the pneumonias become closely related as a frequent complication. Cumming, Spruit, and Allen (2) in commenting on this fact conclude as follows:

1. The hemolytic streptococcus was present in the throats of thirty-five per cent. of all patients with measles on entrance to the hospital, and that ninety-four per cent. of the patients with measles in whom bronchopneumonia developed belonged to

this group of carriers, while in only six per cent. of the noncarriers pneumonia complications developed. 2. This streptococcus was found in pure cultures at necropsy in the serous cavities and heart's blood of all measles pneumonia patients, and in fifty-five per cent. of lobar pneumonia complications. 3. This streptococcus is the same as the beta streptococcus of Smith and Brown. 4. Type III hemolytic streptococci isolated from the serous cavities and heart's blood were always large zone hemolyzers. 5. The presence of hemolytic streptococcus in the throat and sputum of so-called lobar pneumonia patients and in the serous cavities and lungs at necropsy shows that in the classification and treatment of the pneumonias, the streptococcus must be as diligently sought for as the type pneumococci. 6. Laboratory men should acquire a technic for the recognition and isolation of the hemolytic streptococcus from throat swabs and sputums of measles and pneumonia patients. 7. In practically all cases (ninety-four per cent.), the hemolytic streptococcus is acquired before entrance to the hospital.

Prevention consists in: a, The pasteurization of all milk supplies, thus eliminating the possibility of septic sore throat followed by the carrier state; b, the removal of tonsils of those individuals who are identified as streptococcus carriers; c, the control of measles epidemics by the early recognition and isolation of patients; d, the segregation of streptococcus carriers in hospital wards; e, scrupulous cleanliness of the hands of attendants and patients, and f, the development of a reliable vaccine and serum treatment.

We have called attention in a previous paper to the fact that physicians have had a tendency to place too much stress, and unduly so, upon valve lesions of the heart to the exclusion of the myocardial lesions. Here is where the infections acquire an important inroad. Christian (3) states that valvular lesions comprise the bulk of the subject of cardiac lesions in textbooks. Scattered through the pages there is ample evidence that in the last analysis, muscle function determines cardiac efficiency or inefficiency, and various forms of chronic degeneration and interstitial inflammation of heart muscle are described. There rarely appears, however, a clear description of a common type of chronic cardiac disorder in which the fault is primarily in the heart muscle, and in which the valves themselves are normal. In just the same way, textbooks of pathology fail to give any definite satisfactory description of this common type of cardiac lesion, probably because very often, as we shall see later, the heart muscle and the coronary system present no lesion that the pathologist can describe in objective terms.

The valves may show no organic lesion and yet the heart muscle has failed and very frequently the disturbance is muscular. The pathologist can offer no reason why the clinical symptoms are purely the result of myocardial disturbance and yet the necropsy furnishes no evidence. Had the pathologist been able to obtain the evidence, Cabot, in his statistics, would have found a smaller number of negative cases. We must not call this an error on

the part of the clinician but rather conclude that certain symptoms which are present show heart muscle disturbance but the pathologist as yet can not determine the change or perhaps the functional myocarditis seen at the bedside may not show any perceptible change after death.

At the Peter Bent Brigham Hospital, Christian reports 407 patients with cardiac insufficiency of myocardial origin without valve lesions. He summarized as follows: "There is a common chronic cardiac condition, in a general hospital for adults, equal in frequency of occurrence to chronic valvular disease of the heart, which, for want of a better term, may be called chronic myocarditis. By this term is meant cardiac insufficiency from myocardial disturbance without organic lesion of the heart valves. A very large proportion (366 out of 407) of these patients on admission to the hospital, are over forty years of age, and somewhat more men than women. The heart is nearly always enlarged, and usually there is a systolic murmur at the apex; but whatever its intensity or transmission, it is very rare to find any thickening or distortion of the valve flaps or chorda tendineae. Acute rheumatic fever and syphilis are both relatively uncommon in these cases, and neither plays any considerable part in the etiology. Chronic use of alcohol occurs in about one-third of the cases. High blood pressure is often found, but is absent in more than half of the cases. Chronic nephritis is often present, as is hypertension; but in seventeen out of forty-one cases at necropsy, the kidneys showed no chronic nephritis. Coronary sclerosis is an important factor in only about half of the cases. Increase of interstitial connective tissue is the lesion most often found in the heart muscle, but in numerous cases this muscle seems practically normal except for hypertrophy of the fibres. Electrocardiography often gives evidences of disturbed muscle function. About half the cases show auricular fibrillation or flutter or the distortion of the ventricular complex, indicating some disturbance in the conduction system; but in even advanced cases the electrocardiogram often shows no significant disturbance. Digitalis in the earlier breaks in compensation is a very efficient drug, and diuretics produce marked diuresis."

Lutembacher (4) calls attention to secondary endocarditis in heart disease. This is an infectious endocarditis and the dilated cavities offer a favorable site for location of an infectious process. It may keep up for months and the end may be due to septic thrombosis and embolism. This makes germane the article by Scheltema (5) in which he speaks of a slow endocarditis of a *Streptococcus viridans* type, ushered in with influenza. There were sepsis, murmurs, anemia and when the infective condition in his cases disappeared the murmurs did also, showing it to be a heart muscle disturbance. Pugol (6) (Jania) reports a series of cases in which there was myocarditis due to the sepsis from the oral cavity; thirty per cent. of these patients recovered.

Many of the war wound heart cases had a pyemic factor in their etiology and often there was present the *Streptococcus pyogenes*. These were really

septicemic cases. In speaking of purulent bronchitis, Hammond (7) calls attention to certain conditions which are present in the body due to the influenza organism in which there is a toxic poisoning and the clinical features seem to distinguish them from the ordinary cases of bronchitis. In part, he says:

"The morbid anatomy consists of three groups of changes. a, The lung condition; marked purulent bronchitis, the smaller bronchi being filled with thick pus, from which air is notably absent. In some cases secondary bronchopneumonia and edema, pleurisy and emphysema are common; b, evidence of toxemia; especially seen in kidneys, spleen, liver, lymphatic glands and heart muscle; c, signs of right side heart failure and passive congestion. Some patients die of the toxemia and others of the cardiac failure. The histological changes are those of an acute purulent bronchitis affecting the smaller bronchi with or without some surrounding catarrhal pneumonia. Degenerative changes are seen in other organs, notably in the kidneys, where the appearances of a toxic nephritis may be found.

"Influenza (8) when in a virulent form, or perhaps it may be more correct to say when the disease is complicated with pneumonia, almost inevitably involves the heart. Consequently, when a medical man is called in to treat influenzal pneumonia he adopts frequently a routine treatment of stimulating the heart. What then are the cardiac complications of influenza and to what are they due?

Sir James Mackenzie deals with the question and states that the cardiovascular phenomena in serious cases are the same as in other severe cases of infection. The picture of an individual suffering from a severe attack of influenza complicated by pneumonia is not really one of heart disease, but of intense intoxication of the cardiac system. The reason why Mackenzie refers to this general intoxication as being the true source of danger is that in treatment, when the diagnosis seems to point to a particular organ as at fault, remedies are all directed to that organ, and it is often stated that the patient died of heart failure, in spite of energetic therapeutic treatment. As a matter of fact, it may be gathered from the postmortem study of the heart in such cases that the myocardium is so extensively damaged that it is useless to inject strychnine, caffeine, or oil of camphor. Mackenzie holds that these drugs are incapable of affecting the heart in health, let alone when in the grip of a severe poison, and for this reason, he holds drugs of the digitalis group are also useless. Moreover, Mackenzie says that he has never seen any case of influenza in which damage was limited to the heart alone, such as occurs in rheumatic fever.

If the patient is the host of some microbe, the treatment should be devoted to increasing his power of resistance. If he is poisoned, treatment should be devoted to the elimination of the poison. Should certain tissues be injured, then treatment should be devoted to their healthy renewal. Perhaps all will not agree with the position taken by Macken-

zie, but we must admit that the betterment of bodily resistance is an important factor.

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INTERPRETATION OF SEROLOGICAL FORMULÆ.

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It is my intention to bring before the medical profession the possible interpretation of the collective findings in the serum and cerebrospinal fluid. It is not conducive to clarity to attempt to gather into so-called types the various serological formulæ, as such designations at best are only arbitrary. Even general paresis on rare occasions may present an entirely negative serological formula. I will designate for the sake of brevity the various clinical conditions numbered in a separate table. As the various clinical states described herein and the conclusions arrived at are chiefly gathered from an extensive neurological experience, serologically and otherwise, the value of this contribution will be enhanced if I limit myself to this experience, and offer the opportunity to the internist and surgeon to obtain such information as they may find advantageous in the management of a given case. It is noteworthy that at medical meetings when the Wassermann reaction is the subject of discussion, the great specificity of this phenomenon loses much of its prestige. This does not occur when the physician handles the subject at the bedside.

The relinquishing of this very sane attitude and the employment of specifics to combat a nonexistent lues, produce a state of affairs that is detrimental to the patient, as the harm done bears a definite relation to the patient's resistance. If this communication succeeds in diminishing and ultimately eliminating such instances of archaic error and establishes a sane critical attitude concerning the specificity of serological findings at the bedside, the same as is obtained at medical meetings, my purpose will have been accomplished. Furthermore, the practising physician must be warned not to gauge the healing powers of a drug solely by the influence this drug has on changing the serological formula; a patient's condition is frequently changed for the better, and in some instances the *summum bonum* has been attained long before formula number twenty-six in the schedule has been reached. On the other hand it is my experience that some patients may be classed as serologically negative, and still complain of severe subjective symptoms. This only goes to

show that one must be well versed in serological peculiarities and also possess sound judgment in handling patients therapeutically and serologically. The time is at hand when totality of symptoms will guide a doctor in interpreting diseases, and their removal will constitute a cure.

Regarding the treatment of syphilitic affections, it is safer and in some instances advisable to stop treatment upon having obtained the comfort that the patient was looking for, and not push the drug or drugs until every vestige of abnormality has been removed from his serological formula. This applies particularly in those cases where the Wassermann reaction displays the so-called Wassermann fast type (1). It is evident that from a thorough and comprehensive study of a serological report or repeated serological reports, that not only diagnostic information but valuable therapeutic aid may be obtained.

I shall place at this juncture the enumeration of the more common diseases of the nervous system, which comprise affections of the brain, spinal cord and their coverings, as well as the peripheral nerves. The more frequent changes are of a gummatous nature, mild forms of inflammation, more severe forms of the same affection and the degenerations. Collectively, they may all be appropriately designated as cerebrospinal syphilis.

With the exception of gummata, general paresis and tabes, a consultant who is confronted with a neurological problem of a luetic nature makes a diagnosis of cerebrospinal lues if the condition does not clinically conform to the former three. It is my contention that a consultant in this capacity should also weigh with precision the serological formula and thus have additional support for his diagnosis. The serological formula one or ten can never mean anything but general paresis just as the serological formula number seventy-four will never be found in this disease. It is my impression that for ordinary clinical and therapeutic purposes the above classification of neural lues is adequate and workable and is used extensively in neurological practice. It is also important to register here the fact that all types of syphilis of the nervous system whether general paresis or tabes, began their special course from some form of cerebrospinal syphilis, and that the peculiar tropism of the patient, using a term employed by students of endocrinology, gradually swerved the lues into a path that determined its subsequent pathology and clinical aspect. It is quite certain that the type of neural disorder is by no means an accident, nor is it determined by a special brand of spirochetes. The future study of endocrinology will shed much information on this little understood phase of medicine.

This article shows two tables: one for the disease and the other for the serological formula. Each will be used in the discussion that will follow, the former being preceded by the letter D the latter by the letters SF. So that D-4 stands for tabes, while SF-35 stands for serum Wassermann negative, spinal fluid Wassermann negative, cells 0 to sixty, globulin negative, Fehling reduced, colloidal gold negative, frigolability negative, xanthochromia

negative, etc. By referring to the number at the right end of the serological formulæ table one will find the diseases in which such a serological formula is obtainable. Beside including the luetic disorders of the nervous system, the nonluetic diseases capable of furnishing an abnormal serological formula were also included as well as a few non-neurological clinical states where occasionally some deviation from the normal was obtained. The pituitary disorders and epilepsy being entities that belong to more than one special branch of medicine I placed under the heading of other diseases.

It will not be out of place to refresh the reader's mind concerning the term frigolability. This word was used by the author as the title of an article published recently (2). It describes the behavior of the cellular exudate in various conditions in which a cellular increase is obtained. The test is carried out by placing some of the spinal fluid in an ice-box over night and a similar quantity of fluid over night at ordinary room temperature. The cell content having been ascertained immediately after withdrawal, it is compared with the cell count obtained with the fluids left over night at room and at icebox temperature. All fluids from patients not suffering from general paresis display a greater fall in the cell count left at room temperature than at icebox temperature the reverse being true of paresis only, hence the term frigolability. The table of serological formulæ contains some very striking combinations, for instance, from one to eighteen inclusive only the various forms of general paresis are considered, and this is justly so, for every one of these serological formulæ shows a positive colloidal gold curve and the positive frigolability spoken of. It is understood that a positive colloidal gold curve is one that shows an uninterrupted stepladder curve from a complete discoloration of the colloid to the original red or almost red. At any rate, the curve must be uninterrupted and begin at five (complete discoloration) or four (almost complete discoloration), and follow a downward stepladderlike fall in its descent. An upward register in the course of the curve is not considered as the genuine reaction of a paretic patient's fluid and is obtainable in other conditions than general paresis. In the table of diseases under D-7 we have general paresis. This is the full fledged form of the disease and does not appear in the serological formula eighteen, because it is extremely rare for this type of the disorder to be free from a Wassermann reaction in the serum and fluid and shows no pleocytosis nor an excess of globulin.

TABLE OF DISEASES.

Syphilis of the Nervous System.

Cerebrospinal lues	1
Cerebral gumma	2
Spinal cord gumma	3
Tabes	4
Tabes, Wassermann fast type	5
Tabes hyperlymphocytic	6
General paresis	7
General paresis, early	8
General paresis, terminal	9
General paresis, juvenile	10
Cerebrospinal lues, acute exudative	11
Cerebral hemorrhage	12
Chancere	13

Nonsyphilitic Diseases of the Nervous System.

Meningitis, tuberculous	14
Meningitis, influenzal	15
Meningitis, pneumococcic	16
Meningitis, diphtheritic	17
Meningitis, epidemic	18
Meningitis, streptococcic	19
Meningitis, staphylococcic	20
Polio-myelitis, anterior	21
Multiple sclerosis	22
Lead poisoning	23
Combined sclerosis	24
Cauda equina disease	25
Cerebral tumor	26
Cord tumor	27
Cerebral hemorrhage	28

No. of S. F.	Serum Wassermann.	Cerebrospinal fluid Wassermann.	Globulin.	Fehling.	Cell count.	Colloid gold.	Frigeability.	Xanthochromia.	No. of disease.
33.	+	—	—	+	0 to 60	—	—	—	1, 2, 3, 4, 12, 13, 22, 23, 30, 31, 32, 33, 34, 35
34.	—	+	—	+	0 to 60	—	—	—	1, 2, 3, 4, 12, 13, 22, 23, 30, 31, 32, 33, 34, 35
35.	—	—	—	+	0 to 60	—	—	—	1, 2, 3, 4, 12, 13, 22, 23, 30, 31, 32, 33, 34, 35

Other Diseases.

Scleroderma	29
Scarlet fever	30
Measles	31
Malaria	32
Carcinoma hepatis	33
Secondary pernicious anemia	34
Pituitary disorders	35
Epilepsy	36

36.	+	+	—	+	0 to 60	—	—	—	1, 2, 3, 4, 12, 13, 23, 32, 34, 36
37.	++	++	+	+	0 to 60	—	—	+	2, 3, 12
38.	++	++	+	+	0 to 60	—	—	+	2, 3, 12
39.	++	++	+	+	0 to 60	—	—	+	2, 3, 12
40.	++	++	+	+	0 to 60	—	—	+	2, 3, 12
41.	++	++	+	+	0 to 60	—	—	+	2, 3, 12, 33
42.	++	++	+	+	0 to 60	—	—	+	2, 3, 12
43.	++	++	+	+	0 to 60	—	—	+	2, 3, 12, 32, 33

A discussion of the various clinical states and certain peculiarities of their serological formulæ will be given at the end of the table dealing with serological formulæ.

TABLE OF SEROLOGICAL FORMULÆ.

No. of S. F.	Serum Wassermann.	Cerebrospinal fluid Wassermann.	Globulin.	Fehling.	Cell count.	Colloid gold.	Frigeability.	Xanthochromia.	No. of disease.
1.	++	++	+	+	0 to 60	++	++	—	9, 10
2.	++	++	+	+	0 to 60	++	++	—	9, 10
3.	++	++	+	+	0 to 60	++	++	—	9, 10
4.	++	++	+	+	0 to 60	++	++	—	9, 10
5.	++	++	+	+	0 to 60	++	++	—	9, 10
6.	++	++	+	+	0 to 60	++	++	—	9, 10
7.	++	++	+	+	0 to 60	++	++	—	9, 10
8.	++	++	+	+	0 to 60	++	++	—	9, 10
9.	++	++	+	+	0 to 60	++	++	—	9, 10
10.	++	++	+	+	0 to 60	++	++	—	9, 10
11.	++	++	+	+	0 to 60	++	++	—	9, 10
12.	++	++	+	+	0 to 60	++	++	—	9, 10
13.	++	++	+	+	0 to 60	++	++	—	9, 10
14.	++	++	+	+	0 to 60	++	++	—	9, 10
15.	++	++	+	+	0 to 60	++	++	—	9, 10
16.	++	++	+	+	0 to 60	++	++	—	9, 10
17.	++	++	+	+	0 to 60	++	++	—	9, 10
18.	++	++	+	+	0 to 60	++	++	—	9, 10
19.	++	++	+	+	0 to 60	++	++	—	9, 10
20.	+	++	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
21.	—	++	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
22.	++	+	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
23.	+	+	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
24.	—	+	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
25.	+	—	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
26.	—	—	+	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
27.	++	—	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
28.	++	++	—	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
29.	+	++	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
30.	—	++	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
31.	++	+	—	+	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23
32.	++	—	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23, 29, 33, 35
33.	+	—	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23, 29, 33, 35
34.	—	+	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23, 29, 33, 35
35.	—	—	—	—	0 to 60	—	—	—	1, 2, 3, 4, 5, 12, 13, 23, 29, 33, 35
36.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 3, 6, 11
37.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
38.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
39.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
40.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
41.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
42.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
43.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
44.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
45.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
46.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
47.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
48.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
49.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
50.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
51.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
52.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
53.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
54.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
55.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
56.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
57.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
58.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
59.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
60.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
61.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
62.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
63.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
64.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
65.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
66.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
67.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
68.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
69.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
70.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
71.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
72.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
73.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
74.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
75.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
76.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
77.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
78.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
79.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
80.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
81.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
82.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
83.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
84.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
85.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
86.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
87.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
88.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
89.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11
90.	++	++	+	+	Over 60 to 4,000	—	—	—	1, 6, 11

In dealing with the positive Wassermann reaction only two designations were made use of, the single and double plus. The former signifies a weak reaction, the latter a strong positive. It is also to be emphasized at this point that reactions which resulted from a faulty technic were not taken into consideration, and that the single or double plus

results were obtained upon a number of occasions at different times and from more than one laboratory at the same time.

Serological formula 25 more truly pictures the findings in some chancre cases D-13 than serological formula 23, and is the reason why serological formula 24 does not contain D-13, for the serum in chancre cases always gives a positive Wassermann reaction before the fluid is affected. D-25 occasionally gives a xanthochromia, and may also show an absence of the Fehling reducing substance. The same is true of D-33, but here the Fehling reduction was always intact, and the xanthochromia is only an expression of the profound involvement of the biliary apparatus. Serological formulas 82 to 89 inclusive contain D-2 and 3, but in these clinical entities the cell count is always under 60. The same is true of serological formula 90, which contains D-26 and 27, conditions that rarely give a pleocytosis of more than ten to thirty, to the cubic millimetre.

With the exception of full fledged general paresis a serological formula can be changed by appropriate therapy to serological formula 35. In case of D-5 the positive Wassermann is retained regardless of treatment. The first serologic abnormality to change after proper treatment is the pleocytosis, and is frequently influenced by the performance of a lumbar puncture alone. In some luetic diseases of the nervous apparatus the pleocytosis cannot be reduced to a normal count, but may be brought to nearly normal. To spend one's energy in making a serological formula normal without regard to the rest of the patient's make up is to invite future trouble and reduce the patient's resistance to such an extent as to jeopardize his chances for a recovery. This enjoiner is particularly directed to salvarsan therapy, as the drug has great powers of reducing the protective resources of the body.

There are a great many serological formulæ in the table that are almost alike if taken and considered alone, but when even a cursory knowledge of nervous diseases is collated with the information received from a study of these tables, a very clear view is obtained, and many patients will be saved from the ignominy that goes with a commitment to a lunatic asylum, just because he did not have a serological formula to help in making the correct differentiation between general paresis and cerebrospinal syphilis. In this instance I am speaking in concrete terms, having in mind a patient who is absolutely well subjectively, and is successfully practising law, besides occupying a responsible municipal position. The non-agreement with the diagnosis made by the asylum authorities was greatly strengthened by the fact that the patient's serological formula was not among the formulæ found among the first eighteen, but corresponded to one in serological formula 58. It is not sufficient, however, to judge a clinical picture from the serological formula alone; one must be thoroughly versed in all the intricacies of differential diagnosis, and accept with a grain of salt any serological formula that is greatly at variance with the clinical findings in a given case. I wish to record a case in which repeated weakly positive Was-

sermann reactions on the serum, together with a history of repeated miscarriages, caused a series of salvarsan injections and mercury therapy with the result that the patient almost died from chronic arsenical poisoning. This was administered regardless of the fact that the patient showed a picture of the pernicious type of secondary anemia.

The tendency to accept the excellence of antiluetic therapy frequently decides in favor of its being used in accord with the dangerous adage of, "giving the patient the benefit of the doubt." In this instance and in many others, the doubt remains without benefitting the patient. A cursory review of the tables will show that they present a number of distinct subdivisions. The first two large groups comprise the serological formulæ which show a cell count of sixty to the cubic millimetre often less, and the second group of serological formulæ where over sixty up to even 4,000 cells per c. mm. may be found. This classification simply divides the lesser from the more active processes of meningeal irritation. From serological formula 1 to serological formula 18 inclusive we have the possibilities obtained with material from general paresis. I still maintain, regardless of opposition from certain sources, that a cell count of over 60 per c. mm. is not to be considered as significant of paresis, although the Wassermann reaction in the serum and fluid show a double plus outcome. I am certain that in such a fluid the deciding tests, i. e., a genuine paretic step ladder curve will not be observed, nor will the frigolability test show the paretic reaction.

Another quite distinct group of serological formula will be found from 37 to 54 inclusive; this is the xanthochromia group, and presents all those conditions where a discoloration is obtainable. The xanthochromia in D-12 serological formula 37 is due most likely to disintegrated red blood corpuscles, while in D-33 the discoloration is a biliary product. This point was emphasized before. In D-24 the xanthochromia is rather a rare phenomenon, but is not uncommon in D-25. In D-33 the cell count is usually within normal limits. In this disease the serum Wassermann may show a genuine strong Wassermann reaction, and still syphilis need not be the cause of the trouble. The author remembers a patient in whom this was obtained and who died of extensive metastases, regardless of expert antiluetic therapy. The very strong serum Wassermann is also a concomitant of scleroderma, but shows no abnormalities in the spinal fluid (serological formula 32). The absence of the Fehling reducing substance is due either to an extensive inflammatory process or to the presence of a neoplastic growth in the nervous system; the latter is usually accompanied by a xanthochromia if the Fehling solution remains unaffected, or become violet and clear instead of brick red with an opacity.

The globulin content ought to receive some mention, as it differs in its intensity with various clinical states. In the tumors of the cord if an excess is obtained it is very massive as a rule, and will give a distinct reaction even when diluted one to ten. Only very exceptionally does one get such an intense reaction with acute inflammatory states or

outspoken general paresis. It is more apt to occur with the latter. In tuberculous meningitis as well as in some tumors of the cord one may occasionally obtain a pellicle formation, which has been mentioned by various authors as being of diagnostic importance in tuberculous meningitis. I obtained the same phenomenon in acute anterior poliomyelitis as well as in acute cerebrospinal syphilis.

Whatever the value of serological formulæ may disclose to the clinician they are absolutely worthless if not collated with physical findings. I would place no value at all on a positive Wassermann test in the serum alone, unless supported by bona fide clinical data suggestive of syphilis. The reputation of the Wassermann reaction suffered mostly from a too ready and willing mind to accept the verdict of the test tube, although the patient presented no other definite anamnestic or physical signs of a specific nature. The danger of antiluetic therapy as formulated in the introductory remarks is proportionate to the intensity of the drugging and the resistance of the patient. If a conclusion is the proper ending of a communication, I have very little to add, and I believe that each physician who will use the table in this article will form his own deductions.

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6 WEST EIGHTY-SIXTH STREET.

TUBERCULIN IN TUBERCULOSIS.

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The discovery of the tubercle bacillus in 1880 caused the medical profession to entertain great hopes. The bacillus discovered and the cause known, the cure and eradication of tuberculosis appeared only a question of time. Behring's discovery of diphtheria antitoxin gave new impetus to those hopeful of finding a cure for tuberculosis, and laboratory men dreamed of freeing humanity of microbic diseases.

All the world looked up to the discoverer of the tubercle bacillus. It seemed only natural that the man who had studied its biological activities and the cultural and staining characteristics should be the one to announce a cure. Professor Koch's discovery of tuberculin in 1890 had been anticipated by the profession. Physicians flocked to Koch to get first hand instruction. Those afflicted with the disease who could afford the trip hurried to Berlin to receive treatment directly from the great discoverer. But many of those hopeful voyagers died, and the medical profession was amazed at the utter failure of the treatment. Professor Virchow's protest against this cure, based on unfavorable post-mortem findings, completed the disappointment. Physicians could not give up hope in tuberculin and many tried to modify or improve it, but their efforts were useless. Tuberculin was doomed because the fundamental principles on which it was based were erroneous.

Let us first consider the original tuberculin and its many modifications, all of which failed so miserably.

Group 1.—Koch's original or old tuberculin, a bouillon filtrate of the grown tubercle bacilli, concentrated by heat. Albumose free tuberculin; a protein free medium, also heated.

Group 2.—Koch bacillen emulsion; the ground bacilli dried, and the resulting powder emulsified in glycerine and water.

Group 3.—New tuberculin (Koch), differing from the others in that it was supposed to contain substances from the bacillary bodies and was not heated. Beranek's tuberculin, another method of extracting substances from the bacillus by the addition of acid.

All these modifications and many more resulted from the failure of old tuberculin to cure. Therefore it may be assumed, first, that the original was lacking in many of the potent portions of the tubercle bacillus, and, second, that attempts were made to remove deleterious substances from the culture media or the bacilli in order to preserve substances beneficial for immunization. The first assumption was based on the principle of immunity recognized in other bacterial diseases and was transferred to tuberculin without due consideration.

Bacteriologists have recognized two poisonous substances which can be obtained from bacteria: exotoxins, which are toxins secreted by the organisms and present in the culture media, and endotoxins, which are toxins bound within the living protoplasm of the bacteria. It is held by bacteriologists that exotoxins are the product of bacterial metabolism, while endotoxins are intimately bound with the protoplasm and are liberated only on disintegration of the bacteria, by either a ferment or lytic substance present within the body and not within the culture media. The growth of the tubercle bacillus is never inhibited in the culture media unless by unfavorable conditions, but it is inhibited in the animal. Growth is inhibited in the body by the elaboration of the leucocytes, living cells, and bacterial substances, the production of which is the response to the stimulation of the bacteria themselves. It was thought that to combat tuberculosis the body must be stimulated artificially to produce bacteriolysins. Since toxins are soluble they must be present in the culture media, and hence broth filtrates were used to make tuberculin. The failure of these was ascribed to the absence of the bacillary bodies, hence the bacillen emulsion and tuberculin residue.

Old tuberculin contained all the soluble substances heated but nothing of the body. Under the supposition that heating might destroy some of the virtues and that the body might also contain some virtues, the second group was devised containing the bacillary body without being heated. The third group represents another supposed improvement in extracting substances from the body of the bacillus.

Koch's old tuberculin was assumed to contain a curative principle from the bacilli which was directly beneficial. Later Wright thought that an increase in opsonins, which were nature's protective substance, was the principle underlying the cure.

*Doctor Staller died March 2, 1919.

Both of these theories have now been discarded and two other extremes have made their appearance. One theory is that the treatment may be beneficial by producing an insusceptibility to tuberculin or a slight focal tuberculin reaction. Since insusceptibility can be produced, those who believe the symptoms of tuberculosis are due to the toxins consider it of great benefit to the patient. Escherich and his school believed that since some patients are spontaneously cured of tuberculosis, this must be due to hypersusceptibility. Therefore in order to bring about a cure we must induce hypersusceptibility, and not insusceptibility, by tuberculin injection.

Symptoms and changes produced by tuberculin are at the site of the injection and at the site of the disease. Constitutional symptoms are malaise, headache, sleeplessness, vague pains, anorexia, nausea, loss of weight and strength. Physical signs at the site of the lesion are increased cough, expectoration, pleuritic pains, and hoarseness. These symptoms characterize the so-called local reaction, which is misnamed and which should be called an acute exacerbation. The reaction at the site of injection consists of more or less extensive redness, edema, and pain. Such symptoms may be disregarded if slight, but if severe, even when the other reactions are slight, tuberculin tolerance is produced. These three characteristic symptoms are pathognomonic of inflammation, rush of blood to parts, hyperemia, edema due to the second stage of inflammation, and extravasation, pains due to distention. What we really have means an inflammation as characteristic as that due to coccic infection. But since tuberculin contains only toxin and no living bacteria, hence come multiple results in earlier subsidence. We may conclude first that the focal reaction results in a breakdown rather than a fortification, and second that the reaction at the sight of injection is a local toxic inflammation which the leucocytes are trying to destroy in order to prevent the toxin from reaching the focal lesion and breaking down nature's fortification.

The sole idea that seems to dominate most of the treatment of tuberculosis is the use of infinitesimal doses until a dose of intolerance is reached. In other words the question is, how much artificially prepared tuberculin toxin can a particular patient bear. Koch states that the ideal aim is to build up in the patient a toxin tolerance, which must be done in gradually increasing doses to avoid reactions. If no intolerance is manifested the treatment is to be continued for three months.

Reason it out for yourself. Take a patient whose disease is nearly arrested and who may still have tubercle bacilli in his sputum. Give him the usual hygienic and dietetic treatment plus tuberculin. In six months the patient may feel better and may still have a positive sputum. How can you prove that tuberculin was responsible and not rest, proper food, and hygienic treatment? It only shows that the patient had so much resistance he improved in spite of tuberculin.

We are told that tuberculosis in chronic cases not complicated by streptococcus, staphylococcus, pneumococcus, or influenza may improve with the use

of tuberculin. But how many cases of chronic tuberculosis can be found that are not complicated with these bacteria? Another school of tuberculin maniacs stresses the tuberculous reaction. First, fever of short duration or long duration; second, local reaction, and finally focal reaction.

One school wants reaction in order to accomplish a cure, while the other wants no reaction in order to accomplish a cure. One starts with small increasing doses until reaction occurs and then stops, reaching a point of intolerance; the other starts with larger doses and stops when reaction appears. The advantage lies with the latter rather than with the former. The latter does not torture the patient for four to six months to find the degree of his intolerance. But the end results are the same in cases where fortification, encapsulation, and calcification are permanent.

Denys and some German authorities assert that even in acute cases good results may occasionally be obtained by a careful course of injection. Trudeau, on the other hand, says that the more chronic the type of disease, the better adjusted it is to tuberculin treatment. Arrested cases of chronic type, whether incipient or of long standing, will derive more or less benefit from tuberculin provided the nutrition is good and no complications set in. The benefit may consist in the temporary improvement of symptoms or the disappearance of bacilli from the sputum. Acute early cases or advanced cases with active symptoms should not be treated with tuberculin, the open air method being advised. Trudeau further gives it as his impression that tuberculin should not be used during the periods of activity, or at least until a partial arrest in the activity of the disease manifests itself. When the physician becomes satisfied that the patient is no longer improving under the open air method and that the case is chronic, tuberculin may offer a prospect of further improvement if the general nutrition is good and there are no complications. He sums up acute cases, fever cases with extensive lesions, badly nourished cases and cases with other complications as unsuitable for tuberculin treatment. He concludes that tuberculin is not the vaunted and long looked for specific it was at first thought to be, but that we have learned the dangers of tuberculin treatment and its limitations. In late years we have learned more of the complex defensive resources of the living organism which tend to the production of immunity. While we are only on the threshold of knowledge concerning immunization, everything points to immunity as the goal toward which our efforts should be directed in infectious diseases.

Are we on the right track with tuberculin as regards immunization? Most emphatically not. Tuberculin neither contains immune bodies nor stimulates antibodies. In acute cases of open tuberculosis all the toxin produced by the tubercle bacilli is thrown into the circulation, and the adding of additional toxins will result disastrously. In chronic cases, the so-called closed tuberculosis, where nature has walled off the lesion and toxins are not thrown into the circulation, minute doses of tuberculin will do no harm. It is plain that the

formation of antibodies by the cellular system requires the presence of dead or living bacilli, and the action of the leucocytes and stationary cells. In closed tuberculosis no dead bacilli can be picked up or devoured by the leucocytes, hence antigen is lacking. Minute doses of tuberculin may assist in the formation of antibodies which flood the circulation but which cannot reach the encapsulated tubercle bacilli to destroy them. If more tuberculin is added, a slow gradual breakdown occurs, the protective capsule is destroyed, and the patient is overwhelmed with tubercular toxin.

What would you think of a surgeon to whom you sent a patient with a walled off appendicitis abscess if he made an incision in the median line, broke off the adhesion, and allowed the pus to enter the peritoneal cavity to see whether the patient's peritoneum is immune to that particular pus? Let me assure you that the use of tuberculin on tuberculous human beings is analogous. If it is true that many patients survive and improve, this is not on account of tuberculin but in spite of it. The leucocytes are far wiser than the physician. The doctor injects tuberculin, and the leucocytes rush to the focus of injection and destroy the toxin in order to prevent its reaching the point of infection. Immune bodies can never be formed in a culture media nor be produced therefrom. Immune bodies or antibodies are the gross products of the entire cellular system of the animal body. This includes the activity of all the ductless glands plus antigen. Therefore the various types of tuberculin whether heated or not, whether containing the bacillary body or not, whether they contain the full strength of the tuberculous protein or not, are of no apparent value.

The assumption that the body is in need of antigen which can be supplied hypodermically is another error. Tuberculin contains a soluble antigen or toxin elaborated during the process of growth and metabolism. Who can say that the tuberculous patient does not obtain the antigen or toxin elaborated in the process of growth and metabolism in his own body? Many tubercle bacilli succumb, so the individual gets not only the soluble substances excreted during the process of growth but also the substances obtained from the body of the bacillus, in larger amounts than he can utilize. Why should we burden the patient with more toxalbumins?

It has been proved beyond doubt that the injection of living or dead bacteria, in small doses and increasing until three or six injections have been given, will immunize an individual to the specific bacteria injected, as typhoid, smallpox, and other infections. But once the disease is established, this injection cannot cure. To expect a cure of tuberculosis by tuberculin is absolutely inconsistent with our present knowledge of tuberculosis as well as bacteriology and immunology. The indication for the use of tuberculin is so meagre that even its greatest exponents desire the use only in selected cases. In view of the experience of myself and others and in the light of the facts stated, I feel that the only legitimate use for tuberculin is to test animals for tuberculosis.

MENTAL MECHANISMS IN THE PSYCHOSES AND NEUROSES.*

By PHILIP R. LEHRMAN, M. D.,

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The patients who are most deteriorated mentally disclose more easily the psychic content of their ideas. Their subconscious has no censor. Their productions and actions are least subdued, although somewhat transformed—symbolized, but not as distorted as in patients with neuroses. The many thousands of patients with dementia præcox have but a limited variety of delusions, and this is not strange, for human instincts are few in number and universally common. A psychosis or a neurosis is a distorted fulfillment of the primary instincts. The "kings" of the men's wards do not differ from the "queens" of the female wards. Those versed in trend have little difficulty in understanding this quite common production: "I alone am the real world. . . . I am the largest doctor, the largest mechanic . . . come, please, mother, and take me home. . . . I am the president of all the worlds."—M. F. Hospital No. 10,296.

Some cases are not so simple. The symptoms need closer study. In the following cases I shall briefly indicate the underlying complex and the mechanism of the change.

CASE I.—F. L., admitted February 18, 1919. Diagnosis: Dementia præcox. Male, aged thirty-two, laborer, single. The most striking abnormality in his conduct was the habit of pulling his hair out. The patient states that about eight years ago he stopped masturbating and lost interest in everything, avoided seeing any one because he had some kind of a disease which caused his hair to become thick and stiff, which pricked him like needles, so he had to pull it out. A week before admission he had some kind of a spell, which he described as follows: "My eyes flashed fire, turned around in my head, my head grew as small as my fist, my guts wound and unwound—I was glad to come to the hospital for I was out of my head." Physically he showed evidence of recent epilation of hair on head and pubic region. On analysis it was found that the fire from his eyes was the poison that comes from him, and his hair felt and smelled like semen—his head shrinking was like a penis after ejaculation. Pulling his hair out was pulling off.

We thus see a psychosis developing in a man who stopped masturbating, but the content of his psychosis is built on a masturbation complex, and is a distorted fulfillment of his previously conscious practice. Previous to the attack he practised masturbation and admitted perversions with men when drunk. His adult consciousness struggled with these infantile tendencies—onanism and homosexuality. It needed an outlet—a psychosis was the result.

CASE II.—J. A. M., admitted May 3, 1919.—Diagnosis: Anxiety neurosis. Male, aged fifty-four, commercial traveler. Patient states that last August he became forgetful. It worried him and he

*Read at the 8-annual meeting of the St. Lawrence County Medical Society, June 3, 1919.

tried to get a doctor at Watertown, but could not on account of the epidemic. Then an inordinate appetite developed, his jaws began to snap, his fingers and toes would flex tightly and he perspired profusely. He went to several physicians in Watertown and also in Kingston. At one time he had syphilis and believed that was the cause of his trouble. Had four intraspinal injections, but his condition did not improve. His wife took him to Doctor M., and upon his advice he came here as a voluntary patient. At the hospital he reiterated the same complaints, that he had syphilis and no sensation of smell or taste; that he felt impelled to swallow his food as soon as it entered his mouth, and showed a ravenous appetite. He was a little agitated, appeared anxious, missed no opportunity to give his complaints in a circumstantial way, and could not be reassured. Physically he showed no sign of cerebral spinal syphilis and his blood Wassermann was doubtful one plus. He left the hospital two weeks later and no satisfactory analysis was made. We obtained some history of his sexual life, which is of interest. He masturbated since he was twelve years old and continued the practice all through his married life, at times preferring masturbation to intercourse. In August, 1918, he suddenly found himself impotent—and simultaneously the above mentioned symptoms developed. He never told a physician about his impotency. When asked the reason said that it did not bother him any and he did not care if he never got an erection. He, however, admitted masturbating twice since last August.

In this case we see a typical anxiety neurosis occurring in a man who finds himself impotent. Although he states that this troubled him least, we see that subconsciously there is great fear and a compensation reaction sets in. Freud says: "Anxiety is the correlative of fear, but while fear is the emotion which corresponds to a danger threatening the organism from without, anxiety corresponds to a danger threatening from within. . . . There are men who show a climacterium like women and merge into an anxiety neurosis at the time when their potency diminishes and their libido increases." This patient belongs in this group. His freefloating anxiety attaches itself to anything tangible; in his case it happens to be syphilis. Fear of losing his manhood converts itself into fear that there is something wrong with his digestive tract for he eats too much. At the same time that calls attention in a negative manner to his ability to eat much. It is a compensation for his impotence. The libido—the psychic sexual desire—is there, but he has no power to execute it. He reverts to an infantile erogenous zone—the mouth, and exaggerates its function. Similarly, his complaint of loss of smell and taste, and a cramped feeling, a loss of power in his hands and feet, is a conversion of his impotency, for on examination nothing wrong was found. Paresthesias are a common occurrence in patients with anxiety.

CASE III.—E. H. S., admitted April 8, 1919. Diagnosis: dementia præcox—hebephrenic. Single, aged twenty years. For the past few years he was moody, unable to apply himself, had nightmares, mimicked movie actors. In analytic interviews his

moodiness and inability to concentrate resolved itself into the following: There were several fancies which recurred frequently, particularly at night. One was that he was being milked; another, a blonde girl stripped; a third, that he was being killed. When associating for "being milked" he recalled his first masturbation experience in a school house where he had been locked in with four girls by a boy of fifteen and taught how, before these girls. "Blonde girl" fancy recalls his sleeping with his aunt when two years old. Later in life he entertained sexual fancies about her when masturbating. Some one "being killed" he associated with his nightmares. He would then call for his mother. It was he himself who was being killed, pounded by the boys, his mother being struck by his stepfather. He remembers assaults on his mother since he was three years old, which made him very depressed. He always felt like protecting her, but it was out of the question as his stepfather was a powerful man. When the boys on the street would strike him he would allow them to do it—as it would put him in his mother's place and he could feel like her and cry. This latter also resolves itself into a masochistic tendency.

In our patient we see his infantile love for his aunt converting itself into fancies, his autoeroticism expressing itself in masturbation—his masochism makes his identification with his mother possible, and he can endure the blows of his playmates. All his infantile traits are antisocial. The best way in which he adjusts himself is by a psychosis. I may add that the condition of this patient has improved under psychoanalytic treatment.

In order to understand our patients fully, it is only necessary to bear in mind that no experience in life, from infancy on, is ever obliterated. It is repressed. From our earliest days we are taught to curb our desires, and the same is true in our love life. The child's love has a very definite direction, and contrary to the usual way of thinking it has certain sexual characteristics. In early infancy the child's sexual feelings have reference to its own body; it is onanistic, next it is transferred to some one like himself and therefore of the same sex (homosexual stage), and finally it begins to transfer his love to the opposite sex—the first one he encounters is his mother or one taking her place—and lastly ends in the true heterosexual stage. In all these stages of its psychosexual development, fixations may occur, and all perversions are but manifestations of these fixations. The psychosexual development of the race corresponds to that of the child, and among the primitive races we see Hellenic homosexuality, pederasty and sadism as institutions, which in the present day and in adult life would be considered antisocial. The tendencies remain, however, and three ways of deflection are possible, first perversions, second sublimation (as in the normal—thus an artist makes use of his exhibitions—*voyeur* complex, or a politician of his homosexual tendency) and finally a psychosis or neurosis where the infantile and primitive cravings are symbolically fulfilled. We see then that it is not far from the truth to say that insanity borders on genius. The same impelling force may cause either,

and we frequently see the two combined. The mediocre man is the one who develops through the stages with but repressed memories but no fixations. He therefore is neither a genius nor a lunatic.

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1 WEST SEVENTIETH STREET.

A SOUVENIR OF MY CAPTIVITY.

The Typhus at Cassel.

By H. POISSON, M. D.,

Paris, France.

During the entire day and night of September 16, 1914, my regiment resisted the enemy's furious attacks and caused him to give up his attempt to take by storm the village of Cuts. A bombardment was begun on the seventeenth while our left was insufficiently defended. At six o'clock in the evening the remainder of my regiment evacuated Cuts, hewing its way through the woods at the point of the bayonet, and an hour later the Germans were occupying the village.

A division ambulance containing seven hundred to eight hundred wounded who could not be moved, a group of stretcher bearers, and the dressing station to which I was attached fell to the enemy. The attitude of the victor after forty-eight hours of fierce fighting can be readily surmised. Orders to stop firing were given as soon as it was seen that we were medical officers, but insults, menaces, and brutal searching were not wanting, and our arms and baggage were taken from us at once. The Germans then asked for two physicians. Doctor Timsitt and myself were designated by our chief physician, and we left our people to follow the enemy stretcher bearers.

With the stretcher bearers we were occupied in collecting our wounded, and the corporal assured us efficient protection during our work. A little later the Germans set fire to part of the village containing a garage in which we had sheltered some forty of our wounded. The garage was soon in flames, but with the aid of the German stretcher bearers and in spite of the intense heat and smoke the wounded were carried to a place of safety. I mention this incident because I am desirous of relating events without partiality. I could say much of my captivity in Germany but I wish to tell particularly of my stay at the prison camp at Cassel, where I remained from May 9th to July 14th working during an epidemic of typhus fever. I had been at the prison camp at Limburg-on-Lahn since February 14, 1915; on May 8th seven of my confreres and myself were informed that we were to leave on the following morning for Cassel. We were ignorant of the reason for this transfer.

Our first sight of the camp from Niedersweren where we alighted produced a disagreeable impression. This town of boards and canvas, constructed without symmetry on the slope of a hill, was far below the standard of the one we had left at Limburg, which was well constructed and excellent from a hygienic point of view. The disagreeable

impression was increased upon our arrival at the camp. An enormous German lieutenant, completely drunk, dirty, his clothing in disorder, and his face excessively congested, received us with a pipe in his mouth and pointed out a cabin where we would find French physicians to pilot us about. But two confrères had already come forward and informed us of the situation. An epidemic of typhus was in full blast and causing fearful ravages. About thirty French and Russian physicians were endeavoring to control the epidemic, and each day more physicians were sent up because some were sick and the others overworked. At the time of my arrival there were 6,000 cases out of a total of 18,000 prisoners at the camp and about one thousand deaths had occurred, the mean rate being about fifty deaths in twenty-four hours.

A walk through the camp soon revealed how an epidemic could develop and become so deadly. The camp at Limburg had been severely regulated, but at Cassel the guard service had been reduced to the strict necessities on account of the disease. Eighteen thousand men wandered about the entire camp at their own discretion, the boundaries being marked only by a triple row of barbed wire fencing. The barracks were put up pell mell and no limits marked off between companies and battalions. Everything was in the utmost confusion and disorder. French and Russians, in inconceivable dress, were mixed together. At every step a heartrending scene was met. Here was a group of patients, hospital billets in hands, shaking with fever and helping each other find a place in one of the barracks which had been transformed into a lazaret. Farther on, packed closely together to profit by sunbeam and wallowing in the dust, a group of Russians were searching themselves for lice. At a gambling table in a corner, with some cards and dice cut out of the boards of the barracks, prisoners were trying to win a few pfennigs from each other, this representing their entire worldly fortune.

In the street was a line of toilets from which issued the most fearful stench, and here was the general meeting place, the market and exchange where tobacco, potato peelings, and herring heads—because everything possessed some value here—were sold. There was a continual coming and going of swill carts drawn by some thirty human beings dressed in rags; in footwear made from the debris of soldiers' caps. From time to time, amidst general indifference, a sad cortege would pass. Enveloped in a sheet on a litter held by four orderlies, a new corpse was being carried to the morgue. The ground was littered with refuse of all sorts—rags, straw, and wood; open gutters carried away stinking water, and the wind blew a blinding dust over the plateau.

Frightened by the proportions assumed by the scourge and fearing that the epidemic would spread to the neighboring agglomerations, the Germans—who had already paid dearly for their errors with serious losses among their men—finally decided to take energetic measures. From Lille, Maubeuge, and the camp of Langensals, where the epidemic had just been extinguished, they brought many

physicians. Within a few days we numbered fifty-three French, thirty-two Russian, and two English—a total of eighty-seven doctors. The German doctors were few. Five or six of them made infrequent and rapid visits.

The important duty of overcoming the epidemic was confided to the captive doctors. Each of us had a double duty to perform: to visit each morning a group of 200 men in order to detect new cases of typhus, and after this to treat seventy or eighty hospital cases in a given barracks. Among the numerous patients treated during the eighty days I passed at Cassel I made many detailed and careful notes which would have lent much scientific value to what I am about to say, but before leaving for France we were searched and our documents and notes confiscated. Therefore my remarks about the disease are entirely from memory. It must also be borne in mind that no means for laboratory investigation were given us and no gross pathology could be studied, so that I can give only a general description of the epidemic of typhus fever at the Cassel Camp.

"How could an Oriental disease, which so cruelly ravaged our army in the Crimea, make its appearance here (Germany)? To whom belongs the responsibility?" This question is put in an anonymous article in the August 21, 1915, issue of *L'illustration* by a physician who had been repatriated from Germany and who after stopping an epidemic of typhus at the camp of Langelsals was, perhaps, among those transferred to Cassel for the same purpose. His reply has seemed to me of such exactitude that I can do no better than to quote it *in extenso*.

"The responsibility is incumbent on the German authorities. Although the most elementary notions of general hygiene commanded the erection of special camps for prisoners coming from the east in order to avoid all possible contamination, always to be feared for those on the western front, the German authorities systematically practised the intimate mixing of prisoners (of different nationalities). Not only was a Russian barracks next to a French barracks; that would probably not have been sufficient (for contagion). They did better still: they placed alternately side by side a Russian and a French prisoner. This is the cause of the epidemic; this is the crime, which for us doctors is not an exaggerated term. German physicians who protested against such measures were told that such a decision had been made in order that the soldiers of the Allies might better appreciate each other. A sinister mockery which will forever dishonor the man who wrote it."

The alcoholic with the rank of general who commanded the camp at Cassel was pleased to brag that he "would wage war according to his own way." It was the Russians, among whom typhus exists in an endemic state, who imported the germs of the epidemic. Overcrowding, misery, filth, privations, and fatigue favored their development. Modern experimental work, particularly that of Nicolle and O'Connor, of the French school at Tunis, seems to show that the louse is the principal agent of transmission of the disease, so that by a

rigid prophylaxis directed against this parasite we were able to extinguish the scourge. But is the louse alone to blame? How can we explain the numerous cases which developed among the doctors, regardless of the efficacious prophylaxis employed? It is probable that an important part is likewise played by direct contact, as Netter maintains, and by drying of the expectoration of the patient and inhalation of the dust thus created, as Chaumesse teaches, but this cannot as yet be demonstrated.

The early symptoms of the disease often escape notice. So many prisoners had died that those touched by the disease were terrified and struggled with all their might before consulting us. Only a minute examination of each man every day enabled us to detect it. Severe headache, chills, backache, high temperature, and rapid pulse are the characteristic symptoms of the early phase. They usually appear suddenly. Two symptoms, however, are of the utmost importance: extreme weakness of the patient, and constipation.

The pathognomonic sign of the affection is the eruption. The description given long ago by Dieulafoy corresponds in every respect with the symptoms I met. He says: "The eruption of typhus appears on the third to the fifth day. It begins on the abdomen and from there spreads over the body excepting the face (in some fatal cases, I noted the eruption on the face); it is characterized by rose colored spots, either flat or papular, usually isolated from each other, rarely confluent, and momentarily disappearing when pressed upon. After two or three days the exanthema changes in nature and many spots are transformed into a small petechia which does not disappear on pressure. A slight desquamation sometimes follows the eruption." All I wish to add is that particular stress should be laid on the petechial character of the spots a few days after the eruption manifests itself. During the phase of full development the patient is usually in a state of deep torpor or stupor, while in less frequent cases he is extremely restless (some patients had to be tied hand and foot to prevent them from harming their neighbors).

Various complications may arise. Those most frequently met with were cardiac in nature, with a usually fatal myocarditis; bronchopulmonary and renal manifestations resulted in some deaths; nervous excitement (delirium, restlessness) was always of serious prognosis. Death may occur during the height of the disease in hyperthermia and is then the result of one of the above mentioned complications; it may also occur during defervescence during the period of hypothermia which marks the beginning of convalescence. Temperatures of 96° to 96.4° F. were often noted at this time and remained present for several days. Patients who recovered were in a state of intense adynamia, tending to collapse. An epidemic of erysipelas which broke out among the convalescent cases should be considered as a complication. The same may be said of the numerous cases of otitis and mastoiditis that we met with.

At the camp at Cassel, where the epidemic had been raging for a month before my arrival, the

attention of everyone was directed to typhus—too much so, I may say. It is certain that with such a flood of patients and the fearful dread of contagion, everything was labeled typhus and men suffering from other diseases were infected only after their entrance to the hospitals. In the camps where the epidemic originated its real nature was unrecognized for some time, so that its ravages were all the greater. Our confrères coming from Langensalsla told us that in this camp the true nature of the disease had at first been denied by a German doctor, who paid with his life for his ignorance, and it was only detected by a Russian physician when the typhus had already made rapid and fearful progress. Sixteen doctors were stricken and six died, three French and three Russian.

A differential diagnosis is to be made between typhus and typhoid, from the constipation, but above all from the eruption. In the eruptive fevers, on account of the petechial character of the spots they never come to the phase of suppuration, as in smallpox. In cerebrospinal meningitis the meningeal symptoms are always contemporary with the exanthema.

A prognostic element is perhaps furnished by our statistics, which are sufficiently exact in spite of the many hindrances we experienced in collecting them. I can say that of the 18,000 men sixty-six per cent. were attacked by the disease, making 12,000 cases. The number of deaths was slightly in excess of 2,000, therefore the mortality was 16.6 per cent. I noted that the mortality rate was higher among the French than among the Russians, in spite of the greater condition of physiological misery among the latter. The explanation may perhaps be that in Russia typhus exists in an endemic state so that those who have contracted and recovered from the affection have transmitted peculiar defensive means to their descendants.

As to treatment, a rigid prophylaxis alone can stamp out the disease. The direction of this prophylaxis was confided to Professor Gartner of Jena, who was summoned to the Cassel camp and who displayed much energy combined with intelligent courage. The clothes louse was considered the transmitting agent and it was toward the destruction of this pest that all efforts were made. Each barracks was first isolated by a barbed wire fence, and the guards, who had been increased in number, were given the strictest instructions to prevent any communication between the companies and were ordered to fire on any recalcitrant man. No German employed at the camp was permitted to come into contact with the civil population, and the officers themselves were ordered to live in buildings constructed especially for them.

This isolation once accomplished, a systematic disinfection of all the occupied areas was carried out, company by company. In this way a barracks was cleaned each day. The occupants were obliged to evacuate it from early morning, leaving no objects of any kind such as food or clothing. The building was coated with whitewash and then after sealing the windows and doors it was fumigated with formol.

During this process the men were stripped and all their clothing passed through a sterilizer, while they were given a shower bath. The method was somewhat brutal in that it forced the prisoners to remain absolutely naked in the midst of the camp for several hours without any shelter. Only in the evening could they return to their barracks. This operation was repeated once every week and after five or six seances the parasites had almost completely disappeared.

Unfortunately, in the wards where the sick had been collected these prophylactic measures were difficult. Special isolated barracks containing three to four hundred beds had been set aside for lazaretta, but the number of patients now amounted to five or six thousand and the ordinary wooden houses of the men had therefore to be turned into hospitals. In these buildings the cots were placed on two superposed poles driven into the wall. This arrangement, defective even for well men, became deplorable for the sick. The bedding, frequently soiled, became utterly insufficient. You have only to imagine immense rooms with six or seven hundred men lying side by side on straw or in the superposed cots along the wall to get an idea of the ease with which the attending physicians could get about among them. With all this went an absolutely inadequate and incapable staff of personnel to procure the necessary care for each case.

To facilitate our work the patients were first sorted out. The upper rows of cots were used for convalescents and the lower ones for cases in full evolution. Portable bathtubs were furnished us so that some cases could be given bath treatment. However, in spite of everything, both linen and bedding were constantly wanting.

As to the disease itself, we confined our efforts to symptomatic treatment. The heart being the first to show evidences of involvement, its action was sustained with digitalis and caffeine. Hypodermics of camphorated oil improved the general condition. Tepid baths also gave good results. The German doctors who preceded us—and who gave up their jobs in a hurry—had made free use of urotropin, just why I do not understand. Its repeated use seemed to me to correspond to the development of nephritis, often of a serious nature.

The gravity of the epidemic had the advantage at least of improving the situation of the medical prisoners. Efficacious means were provided and we were housed in specially erected buildings. Each of these buildings had a room with iron beds and springs for six or seven doctors, also water, heating apparatus and bathroom. We were provided with linen clothing, rubber gloves, antiseptics, and insecticide powder, so that after each visit we could take a shower and change our clothes. An honorarium proportionate to our rank was paid us so that we were able to buy sufficient food at the officers' canteen or "kasino" as it was called. The guard then assumed a respectful and sometimes even a deferential attitude toward us.

In spite of the rigid prophylactic measures, out of eighty-seven physicians at the camp twenty were taken ill with typhus and two died.

On June 30th an official notice was received

stating that after July 12th all French doctors would be relieved from duty and would await their return to France. After careful searching by the authorities we left Cassel July 14th for Constance and from there we reached France.

Abstracts and Reviews.

THE EFFICIENCY OF SURGICAL TREATMENT IN THE BLEEDING TYPE OF GASTRIC AND DUODENAL ULCER.*

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Various complications may develop in direct connection with gastric and duodenal ulcer, such as acute and chronic perforation, obstruction, deformity, malignant degeneration, and hemorrhage, and present added problems to the surgeons; one of the most important of these is hemorrhage. Gastric hemorrhage has been the occasion of more confusion in diagnosis, uncertainty in therapeutic indications, and irrationality in treatment both medical and surgical than perhaps any other gastric condition. Doctor Balfour dealt chiefly with two groups of cases; those in which operation had proved unsatisfactory because of error in attributing the bleeding to a lesion which was not present, and those in which the surgical procedure failed to obviate further hemorrhages though a correct diagnosis had been made.

The first group of cases, namely, those in which no intrinsic lesion is present is very important, and requires careful study as to the cause of the hemorrhage; the hematemeses may be due to such extrinsic causes as the pancreas, appendix, gallbladder, spleen, or liver. In the second group of cases, the records of the Mayo Clinic show that twenty-five per cent. of gastric ulcers and twenty per cent. of duodenal ulcers have been complicated by one or more gross hemorrhages. In the earlier days of gastric surgery the operation of gastroenterostomy proved to be so efficient in a large majority of benign lesions of the stomach and duodenum associated with hemorrhage, that the realization came rather slowly that at least some of the failures to obtain a complete cure, including protection against further hemorrhage, could be attributed to the fact that direct attack on the ulcer was not added to the indirect therapeutic measure of gastroenterostomy. The recognition of the danger of malignant degeneration in gastric ulcer gave the first impetus to the practice of combining gastroenterostomy with the radical excision or destruction of such ulcers. The advisability of such a principle was now well established. This had been shown in a series of 2,875 ulcers of the duodenum operated on between January 1, 1906, and January 1, 1918; twenty per cent. of the patients had gross hemorrhages before operation; sixty-three of these reported hemorrhages at some period following operation; twenty who had not had hemorrhage before operation reported hemorrhages after operation.

The incidence of hemorrhage in duodenal ulcer following operation is definitely higher than the incidence in gastric ulcer, notwithstanding the fact that there is a greater tendency for gastric ulcer than for duodenal ulcer to be complicated by bleeding. A study of the types of operations done in these cases gives a clue to the reason why operation failed to protect a patient against further hemorrhages. In not one of the eighty-three cases in which hemorrhages occurred after operation for duodenal ulcer was the combined operation of excision of the ulcer with gastroenterostomy carried out, and with the exception of eight cases in which various types of pyloroplasties were done, a gastroenterostomy alone was done in every case. This fact is significant, particularly when one compares the results of the established methods of excision and gastroenterostomy in gastric ulcer in which, although the tendency to hemorrhage was greater, a much smaller proportion of bleeding followed operation. The combined procedure of excision and gastroenterostomy was carried out in only one of the seventeen cases of gastric ulcers which bled after operation. These facts can only mean that the methods of direct attack combined with gastroenterostomy which are used in the present treatment of gastric ulcer are a source of protection to the patient against further hemorrhage.

From a study of our own cases it is perfectly evident that in both duodenal and gastric ulcers, gastroenterostomy alone is insufficient to protect the patient against further hemorrhages, and that excision combined with gastroenterostomy has given almost total protection. Cautery is advocated as a very efficient means of carrying out excision in this group of cases, and inasmuch as some ulcers have bled after operation which had not bled before operation, it is reasonable to adopt the practice of destroying all ulcers that are reasonably accessible. This destruction can be accomplished in a very safe and efficient manner by means of the cautery.

General Paralysis and the Spinal Bordet-Wassermann Reaction.—Sicard and Hagenau (*Presse médicale*, April 17, 1919) refer to a case in which an apparently sound clinical diagnosis of general paralysis had been made in 1914, but in which the Bordet-Wassermann reaction of the spinal fluid had passed from positive to negative under intensive treatment. Subsequently, a tendency to improvement was noted, indicating that the case was not one of general paralysis. The authors regard it as an axiom that the spinal Bordet-Wassermann reaction is always positive in general paralysis, even with the earliest clinical manifestations, and that it remains irreducible, regardless of the form or intensity of treatment applied. Hence, a diagnosis of general paralysis is not permissible where the Bordet-Wassermann reaction is negative at the outset or becomes so after a period of positive response. Any doubts that may be entertained concerning interpretation of the Bordet-Wassermann test in relation to the blood do not apply to the cerebrospinal fluid, the pathological proteins of which are much more permanent and stable.

*Abstract of paper read before the Section in Obstetrics, Gynecology and Abdominal Surgery, American Medical Association, Atlantic City, June 12, 1919.

Editorial Notes and Comments

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WAR AND MEDICINE.

Side by side the development of armor has kept pace with the increased power of projectiles. The forces of destruction and protection have grown apace. The evolution of medicine has been spasmodic: progress has been made, however, and always in the same direction. The work has all been done with the purpose of protecting the health and lives of human beings. Other forces have been at work combatting the efforts of physicians. The growth of cities and the consequent centralization of people in small areas; high powered machinery, speeding up the worker, causing accidents and shortening lives; the specialization of industry and the resulting industrial disease; the strain of competition in commerce and industry; war with its new devices for mangling, deforming and destroying—and its accumulation of horrors—all these have grown as the armor making phase of social development. No sooner are the fortifications of nature conquered than new ones appear made by man.

It is this highly complex situation which increases the difficulties of the physician. At the same time it increases his work. In every branch of human endeavor where men are injured we find physicians patching the injury and at the same time working out preventive measures. Food and water are inspected, housing conditions are improved, sanitation is controlled, factories are supervised and shafting and belting covered to prevent accidents, the quantity of lead in paint is reduced, attempts at

education in sex hygiene are made, proper ventilation is provided—all that lives may be prolonged and saved.

What means have been attempted by physicians to lessen the diseases incident to war? Masks were made to protect men against gas; vaccination, sanitation, and other preventive measures were employed, but what radical measure has been taken by medical men to prevent war? Is the doctor justified in entering the political and diplomatic fields in an effort to abolish war on the basis of protecting the health and the lives of men?

Not until after many centuries of warfare were medical men employed in armies. France and England were the first countries to recognize their need. The scope of medical and surgical work gradually progressed until we find it the most important branch of the military service. Through their efforts epidemics were prevented and checked, the men were kept in good health, and the wounded were quickly and skillfully repaired and sent back to battle.

There is a higher recognition of the worth of the medical profession in the revised peace treaty, which provides for an international health board. Will the time come when the peace of the world as well as the health of the world will be placed in the hands of medical men?

TIRED NERVES.

The jargon of daily commercial advertisement continues to sound the slogan of "tired nerves" and thus to keep alive the popular conception of illness and breakdown. It is all too easy to talk of overwork, strain of business, or high pressure. It is all too easy to prescribe the rest of idleness and inactivity and thus to give opportunity for the demons of unrest, dissatisfaction, unconscious autoerotic self-indulgences to seek the mental pathways and in the end drive the individual through the conflict thus occasioned to further torture and despair. Fortunately certain necessities of existence counteract to some extent this false philosophy. Yet even in the midst of work the mind fails to remain at ease because the sources of difficulty are not understood, and free and full activity is hindered.

The ordinary human mind knows little of the therapy of progressive activity and often the doctor seems to know even less. Inactivity or a frittering purposeless occupation are often the panaceas he suggests. Suppose the therapy of thorough progressive activity and interest should

be generally applied to society. Would nerves grow weary and fail to be equal to the tasks involved? The comparatively rare instances of such therapeutic procedure give an emphatically negative answer to the question.

Some time ago the president of Vassar College uttered some forceful words concerning the need of progress as the ideal of thought and action. He made reference to rasped and frazzled nerves whose keen suffering is due to the lack of progressive interest and active progressive participation in the affairs of the world's needs and activities. We cannot settle back indifferent to advance in our own thoughts and our own attitudes and still feed these nerve pathways with the creative activity, the lack of which results in sickness and nervous torture. It is not the overworking of the nervous system which brings the suffering. The nervous system is not so constituted. The things that block and hinder full participation in the affairs of living are the disease spots which should be hunted out and cleared for a fuller nerve action, and not be fostered by nerve inactivity. When Vassar College last year thrust out a strong hand of service to the medical profession through her school for intensive training in nursing she set in motion just such a principle of increased activity. This principle has always made her for all directions a centre of individual and social and national health to an exceptional degree. Health, progress, and opportunity are hers together and a full measure of one can only be obtained through a full measure of all. The tired nerves wait for such things, not for inactivity, not for the prescription of rest. Nerve pathways do need clearing from the blockings of false conceptions and choked misinterpreted affects. After that and with that they need to be filled with the stimulus of activity.

THE CLINICAL MANIFESTATIONS OF PERIGASTRIC ADHESIONS.

The clinical aspects of adhesive perigastritis may be summed up as follows: Aside from the gross deformities having a distinct symptomatology which may be caused by perigastric adhesions, the dominating symptoms are the spontaneous or provoked painful phenomena. The spontaneous pain at its onset occurs in paroxysms which progressively increase in frequency and after several years they become subintractant. The pain is then continuous but its acuity has diminished. The pain is not of the stabbing nature of gastric ulcer, while the paroxysms correspond to the development, extension and organization of the adhesions, the continued pain being related to a fully devel-

oped perigastritis. Ingestion of food at times has some effect on the pain, but this phenomenon has diagnostic value. Usually pain increases after meals, even to an intolerable degree, although the composition of the food cannot account for it.

The pain begins in the epigastric region and may be lancinating in character, but this does not help to locate the site of the adhesions. Generally the pain resists the usual treatment of gastric ulcer and it is the failure of medical treatment that ordinarily leads to operative interference, but it is nevertheless inexact to regard the resistance of the pain to medical treatment as evidence of adhesive perigastritis.

The spontaneous painful phenomena unquestionably arise from a perigastritis and not simply from the subjacent ulcer. Provoked pain may be diffuse or local, the former being met with during the paroxysms and usually corresponds to periods of activity of the perigastritis. The latter is of great diagnostic value from its acuity, its site at the point where the patient localizes the spontaneous pain, as well as its fixity in various positions assumed by the patient. Vomiting is inconstant and irregular and may become so frequent as to be intolerable. It is often absent at the end of the painful paroxysms and follows more or less quickly the ingestion of food. When food ingested the previous day is vomited it shows that the perigastritis is complicated by a pyloric stenosis.

Aside from pain resulting from palpation, no other data can be obtained by this means when the adhesions are seated on the posterior aspect of the stomach, but when they are on the anterior surface an epigastric remittance, tumefaction or even tumor may be detected. Percussion occasionally gives a subdullness over the tumefaction and allows one to map out the stomach. The dimensions are usually normal. Adhesive perigastritis is encountered with equal frequency in both sexes, especially after the age of thirty. In nearly fifty per cent. of the cases the symptoms of ulcer will be found to date back ten years or more. Hematemesis may be wanting. The general health is seriously involved, this being usually due to the restricted diet of the patient or to vomiting. Although rarely mentioned, fever should be included in the symptomatology of adhesive perigastritis, at least at the onset of the process, while analysis of the gastric secretion gives the same results as in ulcer. Blood examination may reveal a hyperleucocytosis related to the inflammatory phenomena of the acute and subacute phases of the process. Icterus does not belong to the symptomatology of perigastritis and when it occurs it is due to an intercurrent affection of the biliary tract.

SATURNINE GENERAL PARALYSIS.

The origin of general paralysis of the insane has been discussed and the subject is far from being agreed upon. Some writers maintain that there is only a syphilitic general paralysis and an alcoholic and saturnine pseudogeneral paralysis, while others not less competent admit that although the majority of cases of general paralysis are due to syphilis, there exist other general paralysees, thus rejecting the single syphilitic origin of general paresis. Devouges and Marcé admit the existence of a saturnine paralysis similar to ordinary general paresis other than for some small differences. The former writer says that if it is admitted that saturnine general paralysis offers some rather important differences, it is far from being demonstrated that it should be given a separate place in the nosological list as an affection characterized by special symptoms and always following an identical evolution. Vallon does not consider that saturnine pseudogeneral paralysis is a distinct morbid entity, but that it is rather a simple phase of the evolution of saturnism towards general paresis. Delasauve is of the opinion that certain forms of saturnine encephalopathy may be so like general paresis that it may simulate this affection, but later on he recognizes that beside this retrogressive paralysis there likewise exists a progressive type, this arising at once or following upon the former. Voisin does not believe that saturnine general paresis exists and that it should be eliminated from modern nosology.

As a conclusion to one of his first papers on the subject, Régis maintains that saturnine general paralysis does not exist, but in a later contribution he states that in some cases saturnine encephalopathy may assume the clinical picture of general paresis, although it should not be confounded with this affection, because the symptoms of general paralysis arising in these cases are usually only the temporary manifestations of lead poisoning. Meyer, who was a pupil of the distinguished professor of Bordeaux, remarks that in saturnism two affections may arise, both of which offer the characters of general paresis; one is a true general paralysis not due to lead poisoning, the other is a pseudogeneral paralysis resulting from saturnine intoxication. Blache points out that too few autopsies have been made so that the lesions of saturnine general paralysis can be described with any degree of certainty, while Ball states that those dying from the saturnine form of the process show marked meningeal and cortical lesions. According to Marandon de Montyel, lead produces two distinct types of general paralysis, the one progressive, the other retrogressive; the former develops at once, the latter

follows upon the former. Consequently, a patient with saturnism who offers a typical clinical picture of general paresis may be a true instance of this process and therefore incurable, or a pseudoparalytic who will recover physically and psychically.

The studies of Mosny and Malloizel on the reaction of the cerebrospinal fluid in lead poisoning have shown that both toxic processes—syphilis and lead—produce identical pathological reactions of the meninges during parallel periods of their evolution. These reactions, which form a bond of likeness between syphilis and saturnism and logically permit attributing to one what is recognized in the other, often complicate the etiological problem. When it is to be ascertained to what extent either one of these intoxications enters into the pathology of the process, when the subject is both syphilitic and saturnine, Wassermann's reaction can unfortunately only settle this difficulty imperfectly; alone, the positive results obtained may, with certain restrictions, possess some diagnostic value, but no data can be drawn from negative results.

DANGERS OF MERCURIAL TREATMENT.

"I sit here wrung by pain, in the antechamber of death, because mankind has suffered me to suffer. . . . All this could have been avoided." In such words in the mouth of his latest hero H. G. Wells calls upon "The Undying Fire" in man to press forward into clearer knowledge and fairer use of scientific facts in medicine and elsewhere. Medicine, like any other human agency, demands continual selfexamination and inspection and reform of its knowledge and practice in order to make actual progress toward the goal of alleviation and lessening of suffering.

A very definite contribution toward one seriously important question in practice is made by Karl Petré in regard to the disputed question whether the mercurial treatment of syphilis is responsible for a subsequent polyneuritis, which may, as in the case reported, prove fatal. [*Sur la Question de la Polynévrite Syphilitique ou Mercurielle. Observation d'un Cas Mortel.* Lund and Leipzig, 1918.] Petré gives at length the clinical history of the patient under consideration as it appeared after he entered the medical clinic of Upsala, where the writer of this report was then professor. The patient presented himself because of great pain in the legs and with a history of a syphilitic eruption which had appeared three months earlier. He had received at first at least six injections of mercury, one dose a week, in what form could not be ascertained. Later he had received four or five more injections, the last

having been administered two weeks before his entrance into the clinic. The pain had been felt a month after the beginning of treatment. Since this pain was the dominating symptom and there were no other signs of mercurial poisoning the physicians then in charge of the clinic resumed the injections of mercury and reduced the interval between the second and third series of injections to two weeks but the treatment was stopped when it was found that the patient's condition was becoming worse.

Polynuritic symptoms gradually developed until the patient died at the end of two months. Among these were cachexia and a nephritis moderate in degree but of a character found elsewhere in mercurial poisoning. The chief symptoms were those pertaining to the peripheral nerves and there was a marked trembling of the limbs also characteristic of mercurial poisoning. Stomatitis also became evident and the presence of mercury in the urine added its testimony to the diagnosis of polynuritis due to mercurial poisoning. The question which arises as to whether death was due in this case to polynuritis caused by the syphilis or by the effect of the mercury is fully discussed in the light of other experience in the writer's practice as well as of the literature upon the subject. He feels convinced that the case under consideration owed its fatal outcome to the latter cause. The danger in the administration of mercury he conceives lies in the too brief intervals existing between the injections of mercury particularly if it is given in insoluble form. He emphasizes the importance of the danger since so often today mercury is given in a doubtful case either to produce a cure should the case prove one of syphilis or in order to establish the differential diagnosis.

PROGRESS.

In *The Journal of Industrial Hygiene* for July, 1919, Moorhead in an analysis of war surgery as applicable to civil surgery says: "Very little that is absolutely new has come out of war experience, inasmuch as the principles of surgery are well standardized; the wider application of these principles under diverse and adverse conditions has, however, focused our attention on many problems that are met with in civil traumatic surgery. . . . Many modern ideas revert to the time of Hippocrates."

All this is true enough. It is not that new ideas have been brought forth but they have been applied for the first time on a large scale. We have been able to study and standardize and to establish new values if not new ideas. The same holds in the field of industrial hygiene. The value of protective measures for workers was accentuated during the

war. When the safety of the country depended upon the number of able bodied men at the front and in the shops the various governments had a more vital interest in the health of the men. They enforced methods which had been devised previously and made a careful study of the way the problem was handled in other countries.

The work which has been done under the stress of war conditions must not be undervalued but should be carried over into civil and industrial life.

News Items.

Doctors Adopt Eight Hour Day.—The Vanderburg County Medical Association (Indiana) has adopted an eight hour day, as far as possible, for its members.

New Hospital in Siberia.—The American Red Cross has opened one of its biggest hospitals at Cheliabinsk, Siberia. Dr. Henry W. Newman has been sent to Cheliabinsk.

Pennsylvania Health Department Training Camp.—The health department of Pennsylvania has established a summer camp at Mount Alto for intensive training of its 6,000 employees.

British Ministry of Health.—The appointment of the Right Hon. Christopher Addison, M. D., M. P., to be the first minister of health for England and Wales has been approved by King George.

North Shore Medical Association.—The following officers have been elected by this society: President, Dr. G. Herbert Carter, of Huntington, N. Y.; vice-president, Dr. Irving F. Barnes, of Oyster Bay; secretary-treasurer, Dr. James H. Shawe, of Huntington.

New England Federation of Examining and Licensing Boards.—Dr. R. Morton Smith, of River Point, R. I., was elected president and Dr. Samuel H. Colwell, of Boston, secretary-treasurer of this organization at its twentieth annual meeting, June 27th, at Providence, R. I.

New Clinics in Chicago.—Two clinics organized and financed by the National Catholic War Council have been opened at Mercy Hospital and at the Hospital of St. Mary of Nazareth, Chicago, and a third clinic will be opened at St. Joseph's Hospital about August 1st. Eleven specialties are covered.

Correct Physical Defects of Children.—The Maryland Health Department has sent cards to the parents of 8,000 school children pointing out physical defects in the children and urging that these be corrected before the children return to school in the autumn. Most of the children are said to be suffering from eyestrain.

37,000 Patients at Debarkation Hospital No. 3.—More than thirty-seven thousand patients passed through Debarkation Hospital No. 3, New York, since its establishment last November. The medical staff numbered 900 men, and nearly one hundred and fifty Red Cross workers handled the reception of visitors and the entertainment of the men. It has been estimated that it cost \$6 a minute to run the hospital, which was in charge of Lieutenant Colonel William J. Monaghan. The institution is now being evacuated.

War on Rats.—A society for the destruction of agricultural pests was founded in London on June 25th. For the present its chief activities will be directed against the rat as a destroyer of cereals and a carrier of disease.

Aid for Tuberculous Men Rejected by Draft.—The state tuberculosis committee of the State Charities Aid Association is making efforts to assure treatment and care for the 2,411 men rejected by the army draft boards on account of tuberculosis.

Vital Statistics.—New York City Health Department statistics for the week ending Saturday, July 12th, show the following figures: deaths, 1,267; death rate, 11 in 1,000 of population; births, 2,833; stillbirths, 125; deaths under one year of age, 210.

Public Health Nursing Bureau for Health Department.—It is reported that Senator Owen, of Oklahoma, will amend his bill creating a department of public health, with a secretary in the cabinet, so as to include a bureau of public health nursing. A public health nurse is to be named as the head of the bureau if the bill is passed. Assurances have also been received from Congressman McDuffie, of Alabama, regarding a similar bill introduced by him in the House.

Prevention of Industrial Disease.—Dr. Wade Wright, of Boston, who has been medical chief for the Red Cross in Poland, has been appointed by the Massachusetts Board of Labor and Industries to take charge of health conditions in industry throughout the State. His work will cover seventeen districts in the State. There are now twelve inspectors who will work under his direction, but it is probable that the number of inspectors will be increased. Doctor Wright is expected to leave Poland about the first of August.

Women's Overseas Hospital Members Return.—Dr. Mary Lee Edwards, of the Women's Overseas Hospital Staff, returned from France the middle of July with reports that the work of the women's hospitals was practically at an end. Dr. Caroline Finley, head of the surgical unit which saw service in the front lines of the French army last spring, is now taking a vacation in Algiers and will soon return to this country. The nurses and doctors attached to the Hospital of the American Fund for French Relief in Rheims, the last of the Overseas Hospital personnel, will remain until September 1st.

Air Service Medical Association.—Medical officers of the air service, United States Army, held a meeting during the congress of the American Medical Association at Atlantic City and organized the Air Service Medical Association of the United States. Officers elected were: President, Colonel John O. McReynolds, Dallas; vice-presidents, Colonel Theodore C. Lyster, New York; Colonel Eugene R. Lewis, Dubuque, Iowa; Colonel Isaac H. Jones, Philadelphia; Colonel William H. Wilmer, Washington, D. C.; Colonel Albert E. Truby, Washington, D. C.; secretary, Major John P. Gallagher, Philadelphia; treasurer, Major Robert S. McCombs, Philadelphia; historian, Major E. C. Schneider, Mineola, N. Y.

School Children Defective.—Of 5,000 school children examined by a county nurse in Renville County, Minnesota, 4,095 revealed some defects. One child was blind in one eye and the child's mother did not know it.

Doctor Garvin Decorated.—Major Albert H. Garvin, chief of the Bureau of Tuberculosis of the American Red Cross, has been decorated by the French Government with the *Medaille d'Honneur de Vermeil*. Major Garvin, who was superintendent of the New York State Hospital for Incipient Tuberculosis, at Raybrook, went to France in 1917.

Doctor Gonzales Visits U. S.—Dr. Justo F. Gonzales, of Uruguay, has been commissioned by his Government to study the etiology and serotherapy of influenza in this country and to purchase apparatus for the disinfection of water and ships. He will visit New York, Washington, Boston, Philadelphia, and Rochester, Minn. Mrs. Gonzales, who accompanies him, is president of the National Public Health Association of Uruguay.

Doctor Jacobi's Will.—The will of Dr. Abraham Jacobi, who died July 10th, contains a few bequests to medical and other institutions. His medical and scientific instruments are left to Dr. A. L. Goodman, and such of his medical books as they may desire for keepsakes to Doctor Goodman, Dr. Franz Boas, Dr. J. B. Bryant, Dr. Frederick Jordan, Dr. Tobias Radich, and Dr. Willy Meyer. The Academy of Medicine will receive \$5,000.

Health Advisory Committee in Illinois.—Extra governmental health and social agencies in Illinois have delegated representatives to a coordinating and advisory committee on health conservation. In addition to the executives of health organizations, such State wide associations as the State Press Association, the Manufacturers' Association, the Parent Teachers' Association, the State Federation of Women's Clubs, the State Federation of Labor, and other similar organizations have taken a definite part.

Suicide Among Negroes.—Statistics gathered by the Metropolitan Life Insurance Company show the death rate from suicide among negro males to be a little over one half that among white males. In 1916 the rate was 8.2 in 100,000 insured against 15.3 in 100,000 among white males. Negro females show the lowest rates of any of the groups studied. The rate was 3.4 in 100,000 in 1916, against 6.3 deaths in 100,000 among white females, the total number of suicides being only 22 among 650,000 insured colored women.

Antivenereal Campaign in Spain.—A permanent board to control venereal diseases is reported to have been recently organized in Spain by a royal decree. The board will study all measures proposed by the Spanish Antivenereal League and report to the Government in regard to the necessary means to combat these diseases. According to a statement made by Dr. Martin Salazar, director general of public health, it is planned to follow the English procedure and create institutions for the prompt diagnosis and treatment of venereal disease. The personnel of the board includes some of the most prominent physicians in Spain as well as persons representing all social classes.

Christian Science Defeated.—Governor E. L. Philipp of Wisconsin vetoed a bill which would have legalized Christian Science treatment for injuries subject to compensation under the workmen's compensation act.

Scabies in Greece.—Greek refugees from Trieste and Albania are afflicted with scabies in hundreds of cases, according to Red Cross bulletins. They have every disease which poverty and exposure induce, but scabies is the most prevalent. Many children have died from it. Three American Red Cross nurses maintain a dispensary at Aigion, Greece, and treat a great many scabies cases daily.

Typhus Train in Siberia.—A specially equipped "typhus train" financed by funds supplied by the Interallied Sanitary Commission and managed by the Red Cross has traveled from Vladivostok to the Ural Mountains and at present is operating among the Kolchak soldiers on the Perm front. The staff of doctors and nurses ministers to persons afflicted with typhus and instructs the people in preventive measures.

Birth Registration in New York State.—A new law passed by the last legislature provides that every registrar must send to the parents of a newborn child, within ten days after its birth is reported by a physician or other person, a notice certifying that its birth certificate has been filed. Printed forms are being prepared which will show the name of the child, date and place of its birth, names of its parents, and the signature of the registrar who recorded the certificate.

New Appointments by Rockefeller Institute.—The board of scientific directors of the Rockefeller Institute for Medical Research announces the following promotions and appointments:

Dr. Harold L. Amoss, hitherto an associate in pathology and bacteriology, has been made an associate member. Dr. Oswald T. Avery, hitherto an associate in medicine has been made an associate member. Miss Clara J. Lynch and Dr. Waro Nakahara have been made assistants in pathology and bacteriology.

The following new appointments are announced: Dr. Homer F. Swift, associate member in medicine; Dr. Francis G. Blake, associate in medicine; Dr. Raymond G. Hussey, associate in pathology and bacteriology; Dr. J. Harold Austin, assistant in medicine and assistant resident physician; Dr. Albert H. Ebeling, assistant in experimental surgery; Dr. Ferdinand H. Haessler, assistant in pathology and bacteriology; Dr. Thorsten Ingvaldsen, assistant in chemistry; Dr. Charles W. Barrier, fellow in pathology and bacteriology; Dr. J. Jay Keegan, fellow in pathology and bacteriology; Dr. Philip D. McMaster, fellow in pathology and bacteriology.

Dr. Alphonse R. Dochez, hitherto an associate member in medicine, has accepted an appointment as associate professor of medicine in the medical department of Johns Hopkins University. Dr. Arthur L. Meyer, hitherto an associate in physiology and pharmacology, has accepted an appointment as associate in physiology in the school of hygiene and public health, Johns Hopkins University.

Red Cross League Combats Typhus.—The League of Red Cross Societies, although only a month or so old, is ready to participate in a campaign to fight the spread of typhus, now epidemic in eastern and southeastern Europe, which threatens to sweep the continent unless checked before next winter. Cholera as well as typhus is included in the menace. The Economic Council, representing the Allied governments, will contribute the surplus medical and hospital supplies belonging to the British and American armies. The league will supply and maintain personnel for the administration of necessary measures to prevent the spread of the epidemic and will employ the best medical service and advice obtainable.

Venereal Disease Progress.—The Division of Venereal Diseases in the United States Public Health Service has begun a campaign with professional schools, hospitals, medical, dental, and pharmaceutical societies. A campaign with the dental profession is just being launched, and a campaign with the nursing profession and the training schools for nurses is under way. Measures were begun by an appeal to the advertising media of the country, and ninety-nine per cent. of the newspapers and magazines of the country have ceased carrying obnoxious advertising. The next step was with the druggists, and sixty per cent. responded of 48,500 appealed to.

Personal.—Major Paul F. Martin, of Indianapolis, has been appointed consulting surgeon to the Red Cross hospitals in Russia.

Dr. Hugh Hampton Young, of Baltimore, is going abroad to study with the British and French army authorities problems met with during the war as director of urology for the American Expeditionary Forces. He will also attend an international health conference to be held in Brussels the latter part of this month.

Dr. William S. Thayer, of Baltimore, will go abroad to do some work for the National Research Council.

Dr. Howard A. Streeter, of Pittsfield, Mass., State health officer for the Berkshire district, has been appointed chief of the subdivision of venereal disease of the State Department of Health.

Dr. William E. Studdiford has resigned the professorship of gynecology and obstetrics at the University and Bellevue Hospital Medical College in order to succeed Dr. Edwin Bradford Cragin, deceased, as head of the Sloan Hospital for Women. Dr. Frederic C. Holden, of Brooklyn, will succeed Doctor Studdiford at Bellevue.

Dr. Ezra H. Adams, of Toronto, has been appointed medical health officer to the American Border District recently created by special act of the Ontario Legislature.

Dr. de Paolo Sousa, professor of hygiene and public health of the University of Brazil, Sao Paulo, arrived in Norfolk, Va., June 22d, to study the methods of health departments in cities of the United States.

Dr. George L. Wurtzel has returned from ten months' service with the Seventy-eighth Division in France and resumed practice at 221 East Eighty-sixth Street, New York.

Depletion of Navy Hospital Personnel.—The Navy Hospital Corps faces a serious shortage in the Hospital Corps personnel if men eligible for release are discharged from the Hospital Corps, and Rear Admiral W. C. Braisted, Surgeon General of the Navy, has directed the attention of the secretary to existing conditions. From statistical reports to the department it is learned that 9,263 patients are under treatment in naval hospitals in this country, to say nothing of the number of sick in foreign hospitals or on ships. Since January 1, 1919, 4,809 Hospital Corps men have been discharged, and if all eligible for discharge should now be released this corps would have but 1,439 men available. Of these 1,101 were enlisted since January 1, 1919, and are only partially trained to care for patients.

National Department of Health.—Two bills providing for a national department of health have been introduced in Congress. Bill No. S.814 provides for a secretary of health and an assistant known as the commissioner of health, both to be appointed by the President. The following bureaus are provided: Sanitary research, child hygiene, vital statistics, food and drugs, quarantine, sanitary engineering, Government hospitals, personnel and accounts. An advisory board of seven expert consultants and an official conference of State and territorial health authorities are also authorized. The existing Public Health Service, Bureau of Chemistry, and Division of Vital Statistics would be transferred from their respective departments. Bill H. R. 5,724 is similar in provisions with the exception that it appropriates ten million dollars annually, one million for cooperation with the States in establishing a homogeneous system of health administration, two million for cooperation with the States in sanitation, five million for cooperation with the States in control of communicable diseases, and two million for scientific research.

Health Standards.—The Federal Children's Bureau has been the moving spirit in a series of conferences in some of the larger cities to consider the question of standards for the American child. These standards are that sixteen is the youngest age at which any child should go to work, except in vacation, when children between fourteen and sixteen may be employed for farm or domestic work. Children between seven and eighteen should have nine months of school, either full or part time, each year. A child must have finished the eighth grade in school as well as have reached the sixteenth birthday before being employed. Minors should not work longer than eight hours a day, and for children between sixteen and eighteen the working day should be shorter than that for adults. Minors should be paid at a rate which, for full time employment, would yield at least "the necessary cost of proper living," and they should not be employed at night or in hazardous occupations. Prenatal care, trained attendance at childbirth, and adequate nursing should be available for every mother. More health centres should be established and a public health nurse secured for every two thousand population.

Decorations for Women Doctors.—A number of American women physicians from the American Women's Hospital, New York, who are now in the service of the American Red Cross in Serbia, Montenegro, and Albania, have been cited for conspicuous service. They are Dr. Marjorie Burnham, Dr. Mary H. Elliot, Dr. Harriet M. Gervais, Dr. Alberta M. Greene, Dr. Lulu Peters, Dr. Marion C. Stevens, Dr. Regina F. Keyes, Dr. Mabel Flood, and Dr. Catherine M. Cook. A second relief unit under the auspices of the American Women's Hospitals is expected to sail for Serbia early in July. Dr. Mary M. Crawford, of New York, will be in charge of this unit.

Conference of Women Physicians.—Women physicians will gather in New York beginning September 15th for a six weeks' international conference under the auspices of the Social Morality Committee, War Work Council, of the National Board of the Young Women's Christian Association. Social problems affecting women throughout the world will be studied, and representative non-medical women will be invited to join the group. The conference will be divided into three divisions: Health, the psychological aspects of the sex question, and legislative measures as they reflect the present status of sex morality. To date thirty prominent women physicians from all parts of the world are reported to have accepted invitations to be present.

New York City Refuses Rockefeller Gift.—The Board of Estimate and Apportionment at its meeting July 18th voted against accepting from the Rockefeller Foundation the gift of a hospital plant valued at \$350,000. Dr. Royal S. Copeland, who had solicited the gift, wished to have the plant transferred to Warwick Farms, in Orange County, and used as a hospital for drug addicts. Various reasons, chiefly political, were given for refusing the gift. The mayor stated frankly that he did not wish to accept anything from this source. The commissioner of corrections questioned the right of the health department under the charter to conduct any hospital except for communicable diseases.

The plant consisted of the Rockefeller Foundation's war demonstration hospital at Avenue A and East Sixty-fourth Street, New York, which had been used to show the most modern surgical developments of the war. There are said to be five units fitted with every appliance, including a laundry and kitchen plant worth \$50,000. Officials of the Rockefeller Foundation were willing to give the hospital to the city and to transfer it to any site that the city might name. Commissioner Copeland conceived the idea of having it set up at Warwick Farms, bought by the city for the treatment of inebriates and now faced with a shortage of inmates owing to prohibition, which he wished to have transferred from the jurisdiction of the department of correction to the health department. Doctor Copeland is reported as saying that if the gift had been accepted between 600 and 700 habitual drug users could have been cared for at Warwick Farms. The portable buildings of the war hospital would have provided room for 400 convalescent patients and the city's inebriety hospital could have been used for the care of the others.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

RECENT GLEANINGS RELATIVE TO THE PROPHYLAXIS AND TREATMENT OF INFLUENZA.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,

(Concluded from page 120.)

The proper time to administer vaccines in an attempt to protect influenza patients from complicating pneumonia is at the onset of the primary disease. Successful results from vaccine treatment begun only upon the appearance of actual signs of pneumonia constitute a distinct possibility, but the better plan is to begin early, with prophylactic purposes in view; incidentally, the primary influenza may occasionally, according to some observers, itself be shortened or aborted.

In the prophylactic immunization applied at Camp Upton, as reported by Synnot and Clark, 1919, a lipovaccine consisting of 10,000 millions each of Types I, II, and III of the pneumococcus, administered in one dose, was employed. The results obtained indicated not only a successful immunization against pneumococci of the three types mentioned, but also distinct protection against streptococcal pneumonia, the incidence of which among the vaccinated cases was very low. Eyre and Lowe, 1919, report favorable results from wholesale vaccination among New Zealand military contingents with a mixed preparation containing the pneumococcus, streptococcus, influenza bacillus, *Staphylococcus aureus*, *Micrococcus catarrhalis*, pneumobacillus, and *Bacillus septus*. The mortality among the inoculated and uninoculated men was, respectively, eight and twenty-three per cent. S. Solis-Cohen, 1918, is convinced that mixed bacterins, given early, reduce the incidence of influenza and pneumonia and render the attacks milder where they occur, while W. Egbert Robertson, 1918, reports gratifying results from early intravenous administration of sensitized bacterins. Houda, 1918, believes he prevented a number of cases of influenza, with active disease after the fourth or fifth day, from passing into severe types of pneumonia by injecting a sensitized pneumostreptococcus vaccine, with a total content of 20,000 millions of each organism, every night and morning until defervescence occurred. In England, Whittingham and Sims, 1918, used a mixed vaccine with apparent success in preventing the onset of pulmonary symptoms. W. H. Wynn, 1919, presents rather striking temperature charts illustrating the action of a vaccine made from pneumococci, streptococci, and influenza bacilli—thirty to 100 millions of each—in causing a rapid descent in the temperature; he thinks it possible sometimes to abort influenza with the vaccine, and in this way give no chance for lung complications to develop. In France, Philippon, 1918, apparently obtained pronounced results with a mixed vaccine of pneumococci and streptococci, attenuated by exposure to iodine.

The most notable results, he states, were obtained in cases already yielding a positive pneumococcal blood culture. Eagleton and Butcher, 1919, conclude that while the mixed vaccine they used conferred no immunity to serious complications, the course of the disease was modified by it, so that a lower mortality resulted in the severe cases. In spite of the favorable results reported by the observers just referred to, it must be admitted that others are less confident of the value of vaccines. G. W. McCoy, 1919, for example, thinks there is no substantial justification for their use. An important feature in this connection is the probability that it is mainly in relation to the pneumococci that antibacterial vaccination is efficient, while against other organisms which may be present active immunity is less easily established.

Antipneumococcic serum has been systematically used for pneumonia prophylaxis by Defressine and Violle, 1918. Each patient was given a preliminary antianaphylactic injection of one mil of the serum, and four hours later, 20 mils of serum injected in each thigh. A definite action in averting pneumococcic pulmonary complications is claimed for this procedure. In regions where streptococcic infection prevails, substitution of antistreptococcic serum, or the use of both serums, is advised.

Passing now to the last topic to be taken up briefly in this series of articles, viz., the treatment of established pneumonia, it may be said that, in a general way, this complication should be treated in most respects like the pneumonias occurring under other conditions. Most of the measures to be used are symptomatic. Fresh air treatment is beneficial in that it renders the patient more comfortable, promotes sleep, and assists the respiratory function. The patient should be kept absolutely at rest and a light diet prescribed in order to reduce the likelihood of tympanites; a daily enema is likewise indicated. Water should be given freely. According to Goldstein, 1919, counterirritation by means of a paste of mustard, flour, vinegar, and white of egg, or by hot turpentine stupes applied to the chest both anteriorly and posteriorly, is of distinct service in early pulmonary congestion.

Many physicians have utilized in early cases, with asserted good results, what might be termed an old fashioned type of treatment consisting, e. g., in giving small doses of tincture of aconite and tincture of veratrum viride at short intervals for a few hours, together with two or two and one half grains of calomel in one quarter grain doses, followed in six or eight hours by magnesium sulphate. According to B. S. Maloy, 1919, such treatment will cut short pneumonia in many instances. The use of opiates is inadvisable for various reasons, though small amounts of codeine may be given for cough. Digitalis is highly recommended by some, though others saw no benefit from its use. According to Stone and Swift, 1919, reporting their

observations of the disease at Fort Riley, tincture of digitalis, standardized to definite dose and administered to full estimated requirement during the first twenty-four to thirty hours in pneumonia, lessened the deaths that might be attributed to circulatory failure. Bastedo, 1918, thinks it wise, because of the cardiac weakness and frequent development of auricular fibrillation in these cases, to give all patients digitalis in large doses for the first two or three days. Friedlander, McCord, Sladen, and Wheeler, 1918, state that at Camp Sherman, all cases of secondary acute bronchopneumonia were digitalized. These observers placed reliance on caffeine for quick stimulation and found strychnine in large doses hypodermically of distinct value in asthenia. Lanz, 1918, states that a combination of digitalis, sodium salicylate, and antipyrine salicylate seems to check the spread of pneumonia, through intense sweating and toning up of the heart. Bassoni, 1919, in lung complications which did not clear up rapidly, observed benefit from the injection twice daily of two mls of a ten per cent. solution of camphor in oil, with addition of .1 gram of guaiacol. Chest counter-irritation, protoclisis, and digitalis were also used. Although Lanz saw no improvement from arsphenamine, Alexander, 1918, asserts that he witnessed almost immediate cessation of pneumonia extension, as well as subjective improvement and relief from dyspnea, upon administration of neoarsphenamine and calcium. Bemelmans, 1919, deems the use of arsphenamine, in proper doses, justifiable and advisable, in view of the proved value of the drug in curing contagious pleuropneumonia in horses. Several observers have had what seemed to be favorable results from the use of creosote, by mouth or rectum, in pneumonia.

Vaccine treatment in established pneumonia has been used by some, but reports are as yet too few to warrant any favorable conclusion concerning this measure. The most encouraging records, perhaps, are those of W. H. Wynn, 1919, who upon injection of a mixed vaccine of streptococci, pneumococci, and influenza bacilli in severe, but not fulminating cases of secondary bronchopneumonia, frequently observed a critical fall of temperature, followed by recovery. The vaccine seemed to him often to have the same good effect when given in cases in which bronchopneumonia was present from the first as in cases in which the vaccine was injected early in the disease. The resulting temperature curve was such as to suggest that the vaccine caused a definite immunizing response. Whittingham and Sims, 1918, attribute a fall of temperature by lysis to the mixed vaccine they used in small doses in a few cases of influenza with lung involvement. Herbert Fox, 1918, at Camp Zachary Taylor, observed acceleration of improvement as compared to untreated cases in a few patients to whom he administered a serobacteria prepared with different strains of influenza bacilli, pneumococci, and streptococci and with the serum of patients recovered from simple influenza or influenza complicated by pneumonia.

Various forms of serum treatment of complicating pneumonia have been attempted, with results, on the whole, more promising than those obtained

from curative vaccine therapy. In France, Violle, 1918, used antipneumococcic serum in cases in which sputum smears showed pneumococci and witnessed recovery of patients previously despaired of. Where streptococci were found, antistreptococcic serum was used, with or without the antipneumococcic serum. Rénon and Mignot, 1918, also used antipneumococcic serum in a few cases, and report uniform improvement after the second injection. In this country special stress has been laid on the use of antipneumococcic serum, Type I, in cases in which this type of pneumococcus is found. At Camp Dix, the serum was given intravenously, after desensitization, in doses of from sixty to 100 mls at twelve hour intervals until the temperature remained below 101° F. Stone and Swift, 1919, refer to the desirability of obtaining a potent antiserum for pneumococci of types other than Type I, and especially for the various strains of hemolytic streptococcus. Violle, 1918, asserts that he has obtained conclusive results from autoserotherapy, twenty mls of blood being withdrawn from a vein of the patient's arm and reinjected subcutaneously in the thigh; this procedure was repeated daily. Finally, an interesting method is that reported on by McGuire and Redden, 1918, who, in 151 cases, used pooled serum from convalescent influenzal bronchopneumonia patients. The mortality among the cases treated was greatly lowered and the disease shortened. The maximal amount of serum administered intravenously at a dose was 250 mls. Liebmman, 1918, saw benefit from convalescent serum in a number of cases. Hartmann, 1919, reports a mortality reduction from 25.2 to 6.5 per cent. by this measure, and urges early diagnosis and immediate treatment, to obtain good results. Morichau-Beauchant, 1919, records a case in which transfusion of 100 mls of citrated blood from a convalescent from influenza and bronchopneumonia gave no result; this patient, however, was treated late and received but the one injection.

In conclusion, it seems advisable to emphasize the fact that influenza, with its lung complications, constitutes, as Whittingham and Sims put it, a "compound" disease. The number and type of harmful microorganisms present in different cases being subject—at least as regards the complications—to marked variations, uniform results from attempts at specific therapy with the means now available cannot be reasonably expected. Early bacteriological diagnosis and effective serums now appear to constitute the chief desiderata from which improved therapeutic results may accrue.

Specificity of Natural Hemolysins.—Etienne May (*Presse médicale*, April 7, 1919) states that experiments on fixation of the hemolysins in normal serums against erythrocytes from different animal species show that these hemolysins are not specific. The substance present in all cases seems to be the same hemolytic body, to which the erythrocytes from the different species are unequally sensitive. The most fragile of the red cells are also those which are capable of fixing the largest amount of hemolysin.

The Treatment of Burns.—Fauntleroy and Hoagland (*Annals of Surgery*, June, 1919) set forth the comparative values of the known methods of treating burns. Burns of apparently the same degree, received under the same conditions and treated by the same staff of attendants, were treated by antiseptics, wet and dry dressings, non-interference, open and closed method, sunlight and electric light, protectants such as paraffin and ointments, tissue stimulants such as balsam of Peru, and surgical assistance as grafting. The observations were made on a group of men who had been burned by a coal dust explosion while coaling a ship. The men's faces were burned and all surfaces were heavily coated with coal dust. The men were immediately and carefully transferred directly to beds and measures taken to minimize shock. The patients suffered from considerable pain, complained of being chilled, and showed signs of incipient shock.

The treatment consisted of heat and body protection accompanied by injections of morphine sulphate. Continuous proctoclysis of normal salt with sodium bicarbonate was given to the more severely injured. Boric acid ointment was applied to the faces of all. The eyes were gently opened and liquid petrolatum instilled. A wet dressing of a one per cent. aqueous picric acid solution was applied to areas where the dressings had been removed. Five of the men who had been seriously injured died within twelve hours. Thirty-six hours later there were four more deaths from secondary depression with suppression of urine, coma, and death.

1. Morphine was given morning and evening—one eighth of a grain—for a period of two weeks.

2. Normal salt solution, sodium bicarbonate and four to eight per cent. glucose by rectum were used continuously.

3. Large quantities of liquids were given by mouth every two hours—milk, egg-nogs, soup, water, and from two to three egg-nogs with the addition of a small amount of whiskey.

4. Later during the fourth and fifth weeks, when the element of exhaustion and the weakening effects of the daily dressings commenced to play an important rôle, tonics were added.

5. Crust formations covering large masses of pus did better when the crusts were not removed than when they were constantly removed and reformed. If left alone they cleared up spontaneously, especially on the face and head.

Two general procedures were followed in treatment. The first was noninterference, with the daily application of some wet antiseptic, the loose pieces of skin being picked up and no effort made to clean the surface; traumatism of the part was avoided. The second method consisted of moderate interference in which open punctured blebs were picked up, the skin carefully snipped away, and an effort made to clean up the area. There was a marked variance of applications in different types of lesions. The treatment after the initial relief of pain was divided into two stages: the cleaning up stage, with the use of antiseptics for the great amount of infection present, and the

protection stage in which the area was carefully protected with the minimum amount of interference. After the initial antiseptic treatment the wounds were exposed to the open air. This was followed by protection and the area quickly healed. Changing the protective material after its usefulness had been accomplished proved beneficial.

In a few cases the combined methods failed. It was found that continuous paraffin protection resulted in a tremendous discharge and granulating edges. Silver nitrate applications decreased these and assisted in the proliferation of the epithelial cells, thus avoiding skin grafting.

The Polyvalent Serum of Leclainche and Vallée in the Treatment of Wounds.—Paul Bouchet (*Bulletin de l'Académie de médecine*, April 29, 1919), requested to try out this serum in the prevention of gas gangrene, found it valuable not only for this purpose, but also effectual in improving the general condition of the patient and reducing wound infection in general. In a series of 420 cases, compared with others in which the serum had not been used, a pronounced effect on traumatic shock was noted, the shock passing off in a few hours after subcutaneous injection of ten mils of the serum, instead of frequently terminating in death after twelve to fifteen hours. Operative procedures could be carried out promptly. Instead of rapidly becoming infiltrated and purulent, the wounds showed a healthy red tint by the next morning and thereafter quickly healed. Necrosis of tissues due to trauma or heat was not influenced by the serum, but extending necrosis due to infection was prevented, the process being thus limited to the margins of the wound. When administered within six hours after injury, the serum nearly always prevented gas gangrene. Where it was given after six hours, or where gangrene had already set in, there seemed to be benefit, although exact appreciation of the latter was interfered with by the surgical measures simultaneously carried out. In seventeen a distinct influence on hemophilia was noted. In view of the results obtained in relation to wound infections, the serum was also tried, with marked success, in chronic lymphangitis with repeated acute exacerbations, phlebitis, chronic and recurring erysipelas, dermatitis and pyodermitis, sinuses from unhealed or imperfectly healed wounds, carbuncles, cellulitis, whitlow, inflamed varicose ulcers, and actinomycosis. The serum proved available in subacute and chronic processes as well as in the acute. The procedure followed consisted merely in injecting ten mils of the serum subcutaneously on the outer aspect of the thigh, at its upper third. In severe or multiple wounds, the dose was twenty or thirty mils, and in some instances the injections were repeated daily or every two or three days, with excellent and prompt results. In large open wounds, five mils of serum were sometimes applied directly to the wound. The customary surgical procedures were always carried out in addition. In civil practice, the serum should find an extensive field in the treatment of traumatic shock, gangrenous infections, septicemia or septicopyemia, and infections following a wound or occupational accident.

Kerosene in the Treatment of Scabies.—Fernand Lévy (*Presse médicale*, April 17, 1919) refers to the inconvenience of the customary rubbing, bathing, and sulphur ointment treatment of scabies where simultaneous treatment of large numbers of patients under war conditions was required. In seeking a simpler procedure, one of the older treatments, viz., that with kerosene, was tried out again, with satisfactory results. Where pyogenic dermatitis or cellulitis complicated the scabies, the former conditions were, of course, approximately treated before kerosene was used. In simple scabies the patient was merely rubbed over the whole body, except the head, with a cloth glove impregnated with coal oil. Care was taken to reach all skin folds, especially the interdigital spaces of the feet, as well as the soles of the feet. After an interval of twenty minutes, in order to obviate irritation by the impure kerosene used, a zinc oxide paste was applied:

Zinci oxidi,	20 grams
Talcī pulveris, }	ana 10 grams
Amyli pulveris, }	
Adipis lane hydrosi, }	ana 30 grams
Petrolati,	
Misce et fac unguentum.	

The patient's underclothing was changed and the procedure repeated on the second and third days. Where possible, a daily shower bath was ordered, or at least one bath at the termination of the treatment. In some instances only two oil rubbings were given. Recurrence occurred only exceptionally. The treatment is easily and rapidly carried out and is wholly painless.

Operative Treatment of Tuberculosis of the Larynx—Thomas Rüedi (*British Medical Journal*, June 21, 1919) bases his observations on an experience of more than 1,500 operations upon 575 cases of laryngeal tuberculosis. He believes that tuberculosis of the larynx is curable, his results showing complete cure in about fifty per cent. of those in the first stage, that is simple and circumscribed involvement; in twenty-five per cent. of cases of medium gravity, and in thirteen per cent. of grave and rapidly progressing cases. Spontaneous cure may occur under proper conditions of altitude and heliotherapy, but improvement in the pulmonary condition cannot be shown to have any favorable effect on the laryngeal tuberculosis. Operative treatment should be undertaken only in cases without fever, in which the pulmonary condition is stationary, with the exception of when operative measures are urgently required for mere temporary symptomatic relief. The operative method which gives the best results is that of electrocauterization, using the Mermod-Siebenmann technic. In many cases the operative treatment of the laryngeal tuberculosis exercises a very favorable influence upon the pulmonary and general condition. The author calls especial attention to the fact that high altitudes are not contra-indicated in cases of tuberculosis of the larynx, but when the high altitude influences the pulmonary lesions favorably without affecting those of the larynx the latter should be treated by electrocautery.

Leukemia Treated by Radium.—F. Arnold Clarkson (*Canadian Practitioner and Review*, May, 1919) adds the records of three of his own cases to those already published to show the very striking beneficial effects of radiation of the spleen with very large doses of radium. In all three of his cases the exposure to radium produced marked amelioration in the patient's general symptoms, some decrease in the size of the spleen, fall in the numbers of myelocytes, and gain in red cells and hemoglobin. In each case, however, these effects were not permanent, lasting at most for several months. They were again secured by another exposure to radium and their influence prolonged the lives of the patients for more than two years in each case, although in one case the treatment was not instituted for the first time until the patient was in extremis.

Treatment of Bilious Hemoglobinuric Fever.—H. Darré (*Presse médicale*, April 17, 1919) states that this affection is distinctly of malarial origin and yields only to quinine. Quinine may, however, itself bring on an acute hemoglobinuric attack, and certain important modifications in the customary quinine treatment must therefore be made. The drug should be given neither during the attack, nor at its onset, nor on the preceding days, but at the time when proliferation of the parasites is at its lowest ebb, viz., on the second or the third day following the termination of the attack. The minimal dose should be two grams, or two separate one gram doses, every two days, to be kept up for eight to ten weeks. After this course the basic quinine treatment is instituted, one gram of the drug being given three times a week for months. Iron and bone marrow should also be administered to promote restoration of the blood.

Carrel-Dakin Treatment in Empyema.—John M. Henderson (*Northwest Medicine*, June, 1919) reports his experiences with the treatment of empyema by the application of the method of Carrel, using freshly prepared and titrated Dakin's solution. He finds that this treatment can be applied in cases in which there is free opening into the empyema cavity and in which the lining of the cavity is not too thin. There must also be no bronchial fistula. Every precaution must be observed and the treatment must be carried out exactly as laid down by its authors for use in other infected wounds. From four to eight tubes should be used and the solution renewed at short intervals. The first effects are the removal of the odor from the pus and the reduction in the amount of discharge, together with marked reduction in the evidences of toxic absorption. The progress must be followed by means of bacterial count and when this is reduced sufficiently the opening should be closed by suture or by adhesive plaster, or the cavity may be allowed to granulate up. In old cases with one or more pus pockets an attempt may be made to open these and irrigate them frequently with Dakin's solution, or the sinus and accessible cavities may be partially sterilized by irrigations with Dakin's fluid and may then be packed with Beck's bismuth paste and allowed to granulate up.

Miscellany from Home and Foreign Journals

Health Conditions Among School Children in the Occupied Portion of France.—J. Genevriér and G. Heuyer (*Bulletin de l'Académie de médecine*, April 29, 1919) report the results of an examination of school children in the portion of France occupied by the Germans during the war. At all points investigated the situation was practically the same. Insufficiency of food was the chief harmful factor, the daily ration having been reduced to 1,500 calories. The only meat product allowed had been 500 grams of salted lard a month. Impaired sanitary conditions in the houses are still at the present time exerting harmful effects. The German soldier, in departing, left behind him filth and parasites which have favored the introduction and dissemination of contagious diseases. Diphtheria still prevails in persistent epidemic foci at several points in the Ardennes. Since the German occupation, scabies and phthiriasis have continued to infect school children and many adults. Lack of warm clothing and of heating facilities resulted in many pulmonary cases; requisition of woolen blankets and mattresses left the people in a distressing situation. Forced labor among children from ten years up produced sad results; at Roubaix, of a group of fifty-eight adolescents arrested and subjected to forced labor, only twenty-eight returned, the remainder having died. Many school children wandered from village to village, often separated from their parents, attending school irregularly, and being subjected to shelling and repeated psychic stress. Over 700 children were examined. The worst conditions were found in Lille, the inhabitants of which had not been allowed to leave the city for over four years. All children under six years of age were subnormal in weight, while of children of twelve or thirteen years, eighty per cent. were deficient in both height and weight. All had narrow chests and sixty-five to eighty-five per cent. multiple glandular enlargements. Twenty per cent. of the children of kindergarten age and sixty to seventy-five per cent. of children of eight to thirteen years showed tracheobronchial adenopathy, manifested in exaggerated expiratory murmur, bronchophony, d'Espine's sign, and dullness at the hilum. Of the young children, thirty per cent. had rickets. The systolic blood pressure was low in all children examined. Signs of hypothyroidism were noted in five to twenty per cent., and delayed puberty in both sexes was strikingly frequent. Sixty-five per cent. of girls between sixteen and eighteen years in families of the working classes had not yet menstruated. In addition to an educational retardation of at least two years, due to lack of school attendance, many children showed evidences of mental as well as physical debility. Laziness, poor discipline, and alcoholism among adolescents, as well as prostitution among girls of minor age, were favored by the general lack of employment and of opportunities for industrial or other forms of training. At Roubaix, fifty per cent. of the children had signs of tracheobronchial adenopathy; at Tourcoing, thirty per cent.; at

Maubeuge, fifty-five per cent.; at Charleville, sixty per cent., and at Mohon, sixty-five per cent. In the Charleville-Mézières district, a tendency to goitre with more or less distinct Basedow manifestations, of climatic and regional origin, was observed. In some instances this condition appeared to have been accentuated by dietary deficiencies and emotional stresses. The measures suggested for correction of the conditions met with comprise school canteens; open air teaching; careful medical school inspection, and nursing with detailed individual records; proper cleansing and reconstruction of schools; shower baths; respiratory gymnastics; manual instruction and physical training; special instruction and correction for the mentally backward and delinquent.

Early Pathogenetic Diagnosis of Gas Gangrene.—E. Sacquépée and V. de la Vergne (*Bulletin de l'Académie de médecine*, April 22, 1919) describe two methods of early differentiation of the three types of gas gangrene, viz., those due to the septic vibrio, the *Bacillus belloneus*, and the *Bacillus perfringens*. This early differentiation is of extreme practical importance, permitting of administration of the corresponding protective serum while there is still time for it to save life. The first method is based merely on clinical observation. All the edematous forms of gangrene, of which the so-called "white erysipelas" constitutes the type, are regularly due to the *Bacillus belloneus*. This includes the edematogaseous cases, in which the condition is a pure edema at first, with secondary gas infiltration later. These two types comprise about fifteen per cent. of all cases. The antibelloneus serum must be given in large doses, the process being highly toxic. The second method, applied where the mode of differentiation is unavailable, consists in injecting some of the gangrenous tissue into a series of four guineapigs, three of which are protected, respectively, by simultaneous injection of one of the antigangrene serums. Thus, the first test tube receives one mil each of macerated gangrenous tissue and of antiperfringens serum; another, gangrenous tissue plus antibelloneus serum, etc. After incubation for half an hour, the guineapigs are injected. The fourth, or control, animal, receiving gangrenous tissue without serum, always dies. Of the other three, usually two show a marked reaction and succumb, while the third shows a slight or no reaction. The serum used in the latter is therefore the one which the patient should receive. In nine out of twenty-four instances, however, but one of the animals receiving serum died; the other two showed a more or less marked reaction without succumbing. This implies a mixed infection by two of the organisms, neither highly virulent, but with summation of toxic effects; an additional animal receiving two serums corresponding to the two types of organisms suspected will now fail to react. By this method the type of organism or organisms responsible can be ascertained, usually within eight to twelve hours.

Osteoplastic Closure of Cavities in Bone.—C. Jennings Marshall (*British Medical Journal*, June 21, 1919) summarizes his observations on the treatment of old bone cavities by saying that bipp filling is in every case a successful method of treatment provided that the preparation of the cavity is thorough. Two kinds of cavities can be recognized; the one in which there is a sufficient thickness of soft tissues to close the opening, the other in which the bone opening lies close to the skin where there are no soft tissues to close it. In cases of the first class it is sufficient to cleanse thoroughly the bone cavity and sinus and keep them packed with bipp. In cavities of the second class the opening must be closed by some other means, of which the best has proved to be the use of a bone flap. The cavity should be prepared by excision and thorough curettement, followed by a period of treatment with flavine and hypochlorite until it has been rendered practically sterile. Then it is again curetted and a plastic operation performed by which a flap of skin, subcutaneous tissue, periosteum and the outer layer of bone is freed in the neighborhood of the cavity and slid across to cover the opening of the cavity. Where a very vascular flap is desired it should be taken so as to include part of a muscular attachment. This method restores the anatomical condition of the bone as none other does and it yields a good cosmetic result. The use of the skin bone flap is combined with filling of the bone cavity with bipp, and the wound is sutured completely.

Encephalitis Lethargica in Ireland.—J. O'Carroll and G. Nesbitt (*Dublin Journal of Medical Science*, May, 1919) from a study of four cases and a review of the literature decide that MacNalty's summary of diagnostic features is correct. In the prodromal period an initial catarrhal affection, particularly conjunctivitis, may be suggestive. A change in the patient's mental attitude, taking the form of emotional changes, apathy or extreme restlessness, progressive lethargy, and drowsiness indicate the possibility of the disease. If these symptoms are accompanied by headache, vertigo, asthenia, diplopia, and diminished visual activity, the possibility is further strengthened. In the acute illness there are initial pyrexia, the characteristic attitude and masklike face, a profound stupor from which the patient can usually be aroused; its alternation in the early stages with delirium; asthenia, rigidity, emotional characteristics, speech changes, retention of urine, tremors, vomiting, and obstinate constipation. The transient nature of cranial nerve paralysis when present is almost conclusive: the frequency of ptosis, paralysis of the ocular muscles, diplopia, facial paralysis, and ocular incoordination are of value. The rarity of bilateral facial paralysis in other forms of nervous diseases and its frequent occurrence in encephalitis is an additional point in diagnosis. A negative sign of value is the absence of optic neuritis. The prognosis is better than might be expected, as there were only thirty-seven deaths in 160 cases in England. Until the virus is isolated and specific methods obtained, the treatment is mainly symptomatic, and hexamine in large doses is inadvisable on account of its liability to cause hematuria.

Prevention of Venereal Disease.—W. E. Fothergill (*International Journal of Surgery*, June, 1919) asserts that while there has been a great deal of discussion in regard to venereal diseases nothing had been done to check the spread of these diseases. The more frequent occurrence of syphilis to prewar times could not be proved as the modern methods of diagnosis had not been used long enough to make a comparison. There had been an increase in the quantity of cases of gonorrhea and a change in the type of cases seen which indicated that the patients were more ready to seek treatment than formerly. Cases of gonorrheal origin are put into five classes, as follows: 1, Acute vulvitis and vulvovaginitis where gonococci can be demonstrated; 2, persistent vulvitis and vulvovaginitis in which no gonococci could be found, the original infecting organism having been replaced by various septic organisms; 3, acute gonorrhea of the uterus, tubes, ovaries, and pelvic peritoneum, in which the gonococci are demonstrable; 4, old permanent results of gonorrheal infection, such as sterile pustules and tubovarian masses, adhesions and pseudocysts, and; 5, acute recurrent pelvic inflammation following the reinfection of cases in Class 4 by various organisms other than gonococci, carried into the blood stream or transmitted from the appendix or other adherent portions of the intestine. The conclusions are that free treatment of venereal diseases at the public expense is good for the individual but will increase venereal disease rather than diminish it. Compulsory notification would do harm by driving patients to quacks and frightening him away from the doctor. The offense against the community of infecting persons with venereal disease could be kept down like other crime, by making it a punishable offense.

Vaccination in Munition Factories in the Paris District.—E. Marchoux and Klotz (*Bulletin de l'Académie de médecine*, April 22, 1919) report the results recorded in the vaccination of the entire personnel in nearly 4,000 war factories in the departments of Seine and Seine-et-Oise between January 17, 1917, and December 31, 1918. The number of vaccinations conducted was 306,587; of these cases 224,168 were subsequently examined. Among the mobilized workers, the percentage of "takes" was forty-nine; among the male civilian workers, fifty-one; among the women, sixty-two, and among the native (African, etc.) workers, already for the most part vaccinated upon debarkation in France, nineteen. The male civilian workers, who had been vaccinated less recently than the mobilized men, showed a higher percentages of "takes," which percentage increased in accordance with their age. The women, less frequently revaccinated than males, showed a notably high percentage of "takes." In persons working with their arms bare and exposed to all sorts of dirt inflammatory reactions and even lymphangitis sometimes occurred after the old procedure of scarification, in spite of preliminary local cleansing. Later, the procedure in vaccination was reduced to three slight punctures; after this, "takes" were even more frequent, and inflammatory reactions no longer occurred.

Nervous and Mental Disturbances Following Influenza.—H. Claude (*Bulletin de l'Académie de médecine*, April 22, 1919), supervising the treatment of influenza cases at the Saint-Antoine Hospital, Paris, for the most part young or middle aged women, observed, during the febrile period, headache, neuralgias, asthenic symptoms, and delirium not unlike those witnessed in acute infections in general. During convalescence, however, the facial, cervical, and sciatic neuralgias encountered were often very persistent, resisting treatment for several weeks. In a few subjects the asthenia became so marked as to suggest bulbospinal myasthenia. The tendon reflexes were greatly attenuated. In one patient, a man of fifty years, there developed acute myelitis. One month after the onset he had incontinence of urine, flaccid paralysis with loss of reflexes, and slight sensory disturbances. Bedsores rapidly formed on the sacrum and heels, and the patient died after six weeks. Wassermann was negative. Postmortem study showed acute hemorrhagic myelitis in the gray substance of the mid-dorsal and lumbar regions, without any meningeal or vascular changes suggestive of syphilis. Mental disturbances were much more frequent, being met with in seven patients, and always developing in eight to fifteen days after defervescence, when the subjects were up and apparently well. Two cases terminated fatally, and presented practically identical features, viz., melancholic tendencies, fear of death, fear of being poisoned, later violent delirium with verberation, shouting, refusal of food, and finally depression and mutism with short periods of excitement, erotic in one case and anxious in the other. The autopsy, conducted in one case, showed marked hyperemia of the cortex and disseminated areas of edema. In another case, occurring in a woman of thirty-two years, mysticoerotic delirium appeared suddenly ten days after convalescence and had not yet passed off after three months' residence in an asylum. In a fourth patient there developed typical maniacal excitement with delusions of persecution, which largely disappeared in one month. The fifth case showed mental depression, sadness, mutism, and negativism, and the sixth, aboulia, indifference, and slight mental confusion, which passed off only after three months. The seventh case, in a boy of thirteen, exhibited anxiety, hallucinations, and manifestations of abject terror, which disappeared gradually in the course of three weeks.

Amebic Abscess of the Brain.—F. L. Armistage (*Journal of Tropical Medicine and Hygiene*, April 15, 1919) reports a case of this uncommon condition, with the results of postmortem pathological examination, and gives a brief summary of the forty-five cases previously recorded in literature. In forty-three of this series, the complication accompanied or followed hepatic abscess. The ameba, conveyed by the blood, reach the pia mater, where they obliterate the arterioles and form a necrotic infarct, the latter constituting the start of the amebic abscess. There are no distinctive clinical signs of the condition, the manifestations depending upon the localization and the susceptibility of the host. The cephalalgia, coma, and other symp-

toms are noncharacteristic, and all diagnostic signs may be absent if the abscess develops in the so-called silent area of the brain. The course is rapid and fatal, the duration from the appearance of the headache being usually from six to eight days, with fifteen days as the maximum. Surgical treatment has been employed in three cases, all of which, however, ended fatally, though in one of Jacob's patients torpor and epileptoid movements disappeared after trephining and drainage of the abscess cavity. Medical treatment is apparently hopeless. The author's case was characterized by marked listlessness and somnolence, cough, incontinence of urine and feces, hiccough, and absence of headache until the day preceding death. The temperature during the last fortnight was usually about 101° F. There were no rigors and no ocular or localizing symptoms. This patient, a New Zealander recently arrived in England, had never been in any country in which amebic dysentery is known to be endemic. The bowel showed no macroscopic dysentery lesions, though cysts of the pathogenic ameba were found in the stools. Treatment with emetine hydrochloride and later with emetine bismuth iodide had no apparent effect on the amebae of the liver abscess; nor did they prevent the extension of the infection to the brain. Cysts were no longer found in the feces, however, after the treatment with the double iodide. The amebae of the liver abscess disappeared after irrigation of the abscess cavity with quinine sulphate.

The Differentiation of Early Tuberculosis and Hyperthyroidism.—Norman Clive Nicholson and Emil Goetsch (*Canadian Medical Association Journal*, June, 1919) contend that hyperthyroidism is responsible for the general symptoms usually attributed to tuberculosis in most of the cases where the presence of clinical tuberculosis is questionable, and also where the tuberculous lesion is thought to be insufficiently active to account for the severity of the symptoms. They divide patients hypothetically into three classes; those with frank tuberculosis, those with hyperthyroidism complicating tuberculosis, and hyperthyroidism only. Symptoms common to all three are fatigue, asthenia, loss of weight and strength, increased or normal pulse rate, nervousness, and possibly slight elevation of temperature. They make the differentiation by means of the adrenalin test, the technic of which must be read in the original, as the observance of its minute details is essential to success and it is consequently not suitable for abstract. The results obtained in forty cases are: In eighteen cases of questionable clinical tuberculosis the adrenalin test gave ten positive results and eight negative; in seventeen cases of inactive clinical tuberculosis there were nine positive and eight negative results; six cases of active clinical tuberculosis responded negatively to the test. Some of the positive responses were mild, others moderate, others marked. The constitutional hypersensitiveness to adrenalin is an indicator of excessive thyroid function and conclusions as to the degree of overfunction, which have a bearing on the treatment, can be drawn from the degree of the response.

Internal Derangements of Knee Joints.—Charles F. Painter (*Journal of Orthopedic Surgery*, July, 1919) gives two periods in young manhood when there seem to be an unusual number of injuries which are classed as internal derangements. The first is when they enter athletics and the second between the ages of twenty and twenty-six. The most common injuries are semilunar cartilage displacements, injuries to the bursa beneath the biceps femoris tendon just above its insertion into the fibula, and hypertrophies of the alar ligament. The failure to discriminate between these lesions and simple traumatic ruptures of the lateral ligaments of the knee joints or synovitis of the knee are often attended by serious consequences. There are two types of cases described: The first the ligamentous connection between the tibia and the face of the semilunar cartilage is torn away and the mobile cartilage permits a catching in the joint; the second involves the internal meniscus, the anterior ligament is torn away and the cartilage is fractured.

Tonsillectomy—Indications and Contraindications.—Thomas A. Cheatham, Jr. (*Southern Medical Journal*, May, 1919) believes the complete removal of the tonsils to be a major operation, and that in deciding the advisability of tonsillectomy all points for and against the operation should be considered without prejudice. He considers that the indications and contraindications may be classified under a few heads as follows:

Indications for the operation are: 1, Chronically hypertrophied tonsils; 2, repeated attacks of acute tonsillitis; 3, persistent glandular involvement following tonsillitis; 4, chronic caseous degeneration; 5, recurring peritonsillar abscesses; 6, chronic inflammation of adjacent tissues; 7, tuberculosis; 8, tumors; 9, focal infection; 10, subnormal children. Contraindications are: 1, Innocent tonsils; 2, hemophilia; 3, epidemics; 4, anemia; 5, acute purulent processes of the mouth, throat, nares, and accessory sinuses; 6, acute pulmonary tuberculosis; 7, acute febrile diseases; 8, acute surgical conditions; 9, infancy and old age; 10, syphilis.

Solid Metal Drains in Bone Sinuses.—Charters J. Symonds (*Lancet*, June 7, 1919) strongly recommends the insertion of smooth rods of metal—preferably aluminum—for the purpose of providing drainage in cases with bone sinuses. Glass rods may be substituted for the metal if desired with equally good results. The rod prevents closure of the orifice, which is not accomplished by either a rubber tube or by gauze; it rapidly reduces the septic changes; and by preventing the retention of pus, with its consequent decomposition and development of infective osteitis, permits the formation of new tissues and the closure of the cavity. Both rubber and gauze cause irritation and the latter tends to increase the septic changes by causing bleeding when it is renewed. The rod is smooth, has round ends, and can be replaced without any damage. When a rod is substituted for gauze there is prompt disappearance of the surrounding dermatitis and marginal granulations; pain subsides rapidly; the orifice of the wound soon begins to retract; and the discharge decreases very rapidly.

Is Lactalbumin a Complete Protein for Growth?—A. D. Emmett and G. O. Luross (*The Journal of Biological Chemistry*, May, 1919) undertook the present investigation in an effort to settle the difference of opinion as to the growth promoting value of lactalbumin. It was used to supplement a deficient growth promoting protein (corn gluten), and when it is the sole protein in a diet containing lactose, if present to the extent of only ten per cent., it will produce a normal rate of growth in young rats. The conclusion is reached that it is a complete protein, in the sense that it is not deficient in any of the nitrogenous cleavage products necessary for growth.

Some Aspects of Ovarian Pregnancy.—A. W. Meyer and H. M. N. Wynne (*Bulletin of the Johns Hopkins Hospital*, April, 1919) analyze at considerable length much of the literature dealing with ovarian pregnancy, to which they add a very complete report of a case occurring in the Johns Hopkins Hospital. The patient was an Italian woman thirty-seven years old, who, two years after the ovarian pregnancy, was well and had given birth to a full term child.

Action of Local Anesthetics on Striated Muscle.—Seiko Kubota and David I. Macht (*Journal of Pharmacology and Experimental Therapeutics*, April, 1919) studied the action of a large number of local anesthetics on excised skeletal muscles of the frog and rat. All depressed muscular excitability and contractility, and caused a quicker onset of fatigue. No primary stimulating effect was noted after even very small percentages of cocaine or other local anesthetics. Of the decomposition products of cocaine, ecgonin was found to be a powerful depressant, benzoyl ecgonin slightly depressant and sodium benzoate and methyl alcohol practically inactive. The stimulating effect of cocaine on muscular work cannot be due to its peripheral action on the muscles themselves, but must be ascribed to a central action.

Pseudoparatyphoid Fever.—Richard Paton (*Lancet*, June 21, 1919) encountered a small epidemic of enteric fever near Cairo, in which there were thirteen cases of typhoid, one case of paratyphoid A., three of paratyphoid B., and four of pseudoparatyphoid infection. The pseudoparatyphoid cases showed a fever curve of about two weeks' duration, marked by a stepladder rise to about 104° to 105° F., followed by a slow fall; the symptoms were mild; there was no enlargement of the spleen, and a rash was absent. Blood cultures gave a growth of a coliform organism in three cases, and the same organism was isolated from the stools of the fourth. This organism behaved exactly like typical paratyphoid in all cultural tests, but it was differentiated sharply by its total failure to agglutinate with any known sera of paratyphoid or typhoid. It was also not agglutinated by serum of *Bacillus enteritidis* of Gaertner. Further the sera of the patients infected with this organism did not agglutinate any standard strains of typhoid or paratyphoid. This same organism was also isolated from the stools of a kitchen worker who did not give any history of enterica or dysentery.

Proceedings of National and Local Societies

AMERICAN SURGICAL ASSOCIATION.

Fortieth Annual Meeting, Held in the Hotel Traymore, Atlantic City, N. J., June 16, 17, 18, 1919.

The President, Dr. LEWIS S. PILCHER, of Brooklyn, in the Chair.

(Continued from page 130.)

The Treatment of Gunshot Wounds of the Chest.—Dr. ELLSWORTH ELIOT, JR., of New York, stated that the treatment of gunshot wounds of the chest was either conservative or radical, that the former was almost always the rule in civil practice, and that the latter was occasionally justifiable for overcoming infection, especially in the chest wall. He emphasized the fact that this dreaded complication became less frequent as the lung was approached and was uncommon in wounds of the viscus, even in the presence of hematoma or hemothorax. Whether this was due to the removal of foreign and infectious material from the surface of the projectile in its passage through the chest wall or to the greater resistance of the lung to certain forms of pyogenic infection was not yet known. Only cases associated with hemothorax, because of the increased susceptibility to infection, were reported. In all cases early aspiration was done. Several times the measure had been repeated, and in two cases of failure a thoracotomy was done under local anesthesia, with extremely satisfactory result. One fatality had occurred in a case in which infection of the entire pleural cavity had developed prior to admission, and a second fatal result had been due to a serious associated complication. While the number of cases was not large, the result was regarded as much better than that obtained by the immediate removal of the projectile. The result of secondary operation should infection develop was believed to be much more favorable, because of the improved general condition of the patient and the fact that formation of adhesions limited infection to a segment of the pleural cavity, thereby greatly diminishing the operative risk.

Dr. HOWARD LILIENTHAL, of New York, said that a developing pneumonia of the opposite lung had been the cause of bad statistics in the treatment of gunshot wounds of the chest. Such a pneumonia would appear whether or not operation was performed. He had seen fatal pneumonia in these cases in which no other cause of death could be found. In performing aspiration he uses, instead of a needle, a fine trocar and cannula to which a rubber bag is attached so that the fluid will siphon out. To prevent the formation of a pneumothorax he explained that it was only necessary to have the patient by an expiration force the lung into contact with the pleura, while the operator has the end of the tube still under. At the cessation of the expiration the cannula should be removed. An x ray would show the lung in absolute contact with the chest wall. Doctor Eliot said that their results by the conservative method had been so good that the radical procedure was not regarded as necessary.

Thoracic Fistula and Chronic Empyema.—Dr. HOWARD LILIENTHAL, of New York, stated that thoracoplastic collapsing operations for the cure of sinuses and pneumothorax following empyema were as a rule unjustifiable and unsurgical. Not only was there permanent thoracic asymmetry, but the affected lung was permanently deprived of much of its function. The method described by Doctor Lilienthal restored the lung quite or almost to its normal capacity while its danger was far less than that of the Schede, Estlander and Delorme operations. The operation consisted in the approach through a long seventh interspace incision beginning behind the costal angle and extending almost or quite to the cartilage. From one to four ribs were divided upward or sometimes downward at the posterior angle of the wound or very rarely upward at its anterior end in order to expose every recess of the cavity. A powerful automatic rin retractor was an absolute necessity in this operation. The lung which would be found bound down by adhesions was now liberated by incision through the confining membrane which might be removed if there was an easily found line of cleavage and which otherwise might be loosened by numerous intersecting incisions (Ransohoff). By intrapharyngeal insufflation the lung was then expanded and it should reach the chest walls. Fine bubbling on the surface was of no consequence, but whistling meant that a bronchus had been entered, an accident which should be avoided if possible. Drainage was secured through the original sinus enlarged for the purpose, the new surgical wound being closed by interrupted sutures of chromic catgut through the muscles but without pericostal sutures. The skin wound was approximated by silk or silkworm gut. The aftertreatment consisted in suitable dressings, Carrel-Dakin irrigations and strenuous blowing exercises. A simple bronchopleural fistula might be closed by means of bismuth paste injected through the external wound. Beck's paste or ten to twenty per cent. bismuth and vaseline might be used, the smaller percentages of bismuth being employed in cavities of larger size. Differential pressure of some sort in recent wounds with uninfected thorax where the mediastinum was not held rigid by exudate was a necessity.

The Delayed or Late Extraction of Intrathoracic Projectiles by the Method of Petit de la Villeon.—Dr. ROBERT G. LECONTE, of Philadelphia, in presenting this method said it depended upon the localization of the projectile with regard to its anatomical surroundings in contradistinction to its mathematical situation from surface markings. The projectile was removed by sight with forceps through a small buttonhole opening, with the employment of the x rays and a fluoroscopic screen. The anatomical localization was discussed in seven different regions with regard to the dangerous and nondangerous areas of the lung. The technic of the operation was described and the method of correlating the shadows of the tip of the forceps and the projectile by rotation of the operating table on its

long axis. Three essentials for the successful practice of the method were the acquiring of the radio-scopic eye, the intuitive correlation of the two shadows made by the foreign body and the point of the forceps, and gentleness and dexterity of the hand. The underlying principle of success was dependent upon the fact that a closed forceps could be made to traverse a healthy lung without injuring vessels or bronchi. Danger from hemorrhage would come during extraction, when the blades of the forceps did not protect the surrounding tissues from cutting edges on the projectile. Hemoptysis, pneumothorax, hemothorax, etc., were discussed and the aftercare of the patient given, with indication of danger zones from which projectiles should not be removed by this method, also a discussion of the removal of foreign bodies from the hilum of the lung. The statistics of 422 extractions gave a mortality of a little less than one per cent. The statistics of Doctor Robin's ninety-two extractions were discussed and the indications for operation given.

Dr. JOHN H. GIBBON, of Philadelphia, suggested that the discussion of the foregoing papers be opened by Dr. Antoine Depage since to a number of American surgeons working in France Doctor Tuffier had shown some very remarkable results following the treatment of old sinuses of the chest which results Doctor Tuffier had attributed to the operation of Doctor Depage.

Dr. ANTOINE DEPAGE, of La Panne, Belgium, through Dr. Joseph Van de Velde, of La Panne, as interpreter, said that in a very bad case of empyema which did not do well he had instituted the Carrel method, making a bacteriological count as described by him, when the wound promptly became sterile. It was then closed and the result was perfect. Subsequent cases had been treated in the same way and all gave very good results. Before suturing in such cases Doctor Depage emphasized that the bacteriological count should be satisfactory and that there should be no secretion in the wound. Before suturing, the edges of the wound should be freshened also. In a large cavity the fluid would do no harm since it gradually was absorbed. It was the opinion of Doctor Depage that the method would take the place of the operations of Schede, Estlander and Delorme.

Dr. ALEXIS V. MOSCHOWITZ, of New York, regarded the essential elements in the treatment of empyema as the sterilization of the cavity and the work which nature would do subsequent to this. Out of the war he asserted had come two big things—the fact of the winning of the war, and the Carrel-Dakin treatment.

Dr. WILLY MEYER, of New York, in connection with the aid given by nature in the healing of empyema, recalled the case of a child ten months of age in whom, because the use of the Carrel-Dakin was impracticable, formalin glycerine injections had been used. The sinus had unexpectedly closed, a pneumothorax was shown by the x ray, but at the end of two weeks the child was entirely well. In a case of bismuth poisoning in which the bismuth oil had been injected into an old empyema to determine the extent of the cavity Doctor Meyer had been called upon to remove if possible the re-

mainder of the oil. Reopening of the original resection of the rib being followed by a continuance of an irregular temperature the Carrel-Dakin had been instituted with the result that in forty-eight hours the man said he had never felt better in his life. The sinus had since become almost closed. Doctor Meyer felt that the old chronic cases of empyema offered a good field for the use of differential pressure.

Dr. ALBERT J. OCHSNER, of Chicago, referred to his report at the Philadelphia meeting of the association of a series of cases such as those described by Doctor Lilienthal in which he had used the mixed bismuth paste following exactly the directions given by Beck. He had continued the use of the method and, without the figures at hand, was confident that many more than half the patients had permanently recovered. The bismuth paste, however, he cautioned, must be administered in strict accordance with the directions given.

Dr. CHARLES A. POWERS, of Denver, referred to the work he had seen in France in the removal of foreign bodies from the thorax as described by Dr. Howard Lilienthal and Dr. George A. Crile and regarded it as an illustration of marvelous surgical technic.

Dr. JOSEPH RANSOHOFF, of Cincinnati, referred to eighty cases of empyema under his care in the recent epidemic, in three of which the empyema had been double. Recovery had occurred in the whole number. In the treatment of empyema Doctor Ransohoff believed there was nothing so important as not to have a chronic empyema. He believed that abscess of the lung occurred in about six per cent. of the acute empyemas. This draining in both directions created a connection between the pleural cavity, which was infected, and the base of the lung. In his cases this was not discovered until beginning the use of the Carrel-Dakin treatment, when some of the solution had been coughed up with rather unpleasant complications. He believed that while empyema cases might be closed with fluid present and remain closed for two or three years, yet so long as fluid was in the pleural cavity there was the possibility of the lighting up of the infection. He agreed fully with the statement that in some of the chronic cases the mere sterilization was not sufficient treatment; there was necessary a resection to free the lung and to allow it to expand.

Dr. JOSEPH A. BLAKE, of New York, believed with Doctor Ransohoff that the best treatment of chronic sinuses following empyema was their prevention. He was also of the opinion that in too many cases too much drainage was used at the primary operation, and that the drainage tubes and the treatment were responsible for the formation of sinuses. He regarded it as absolutely wrong to use the Carrel-Dakin treatment in the early stages of the case, instancing this by saying that in peritonitis or in suppuration of the knee joint the use of the solution with the tubes and constant irrigation was unthinkable. It had been his unfortunate experience to see in France quite a large number of patients in whom the Carrel tube had been left for a long time, with a resultant sinus. The oper-

ation he observed must be done with judgment; in some cases much material was to be removed. The drainage tube should be left in for thirty-six hours. It was of importance that efficient drainage be instituted.

Doctor LILIENTHAL, of New York, said that the operation in properly selected cases was the operation of choice for reasons already given. If the empyema patient could be cured without operation, so much the better. The operation was a purely surgical one in which it was possible to see that the cavity was cleansed and to know that the chances for recovery were good. Nothing was easier than to close a thoracotomy wound, and those patients able to take care of what was left inside, even of a germ or two, would get well.

Doctor LECONTE in closing said that in the irrigation of empyema he had been timid about using any considerable amount of fluid in the pleural cavity immediately after it had been opened, particularly in cases in which there was a bronchial fistula. His practice had been rather to sterilize the cavity with small and gradually increasing amounts of dichloramine five per cent. solution, according to the tolerance of the pleura in the individual case. This he said sterilized as rapidly as the Carrel-Dakin solution and the action of the diaphragm would pretty well coat the inside of the pleural cavity with the fluid. From these small amounts of dichloramine applied once or twice daily he had had as rapid healing, with less danger, as from bathing the surface with large amounts of solution.

Fractures of the Lower Third of the Femur.—Dr. JOSEPH VAN DE VELDE, of La Panne, Belgium, said that the compounding of these fractures during the war had considerably complicated the treatment. Open fractures by missiles were divided into fractures: 1, With no comminution; 2, with slight comminution; 3, with much comminution. For each of those types, at La Panne, were used the following three methods of treatment: 1, Wiring; 2, traction on the femoral condyles by ice tongs, Steinmann pins or Willems screws; 3, Depage's vertical suspension of lower fragment combined with horizontal traction on the leg. The first type of fracture was the ideal one for wiring. If after débridement it was planned to make a primary suture of the wound, Doctor Depage's wiring method was used because the metallic tube which sustained the wire came out of the wound and afforded good drainage. For a secondary suture a Parham or bronze wire was used which was removed after a month before suturing the wound. In transverse fractures the ice tong or vertical suspension was used and in a few cases Lane's plates, with good result. The use of screws in open contaminated fractures was not recommended. In the second type of fracture primary suture was dangerous and therefore a delayed primary or a secondary suture was made, and here the Steinmann pin offered the best method. It was placed just above the condyle. When this was not possible it was to be passed through the anterior part of the condyle under the control of a fluoroscopic screen as was recommended by Fessom. The pin should not be left in place more than six weeks. For the third type of fracture in which

was used the vertical suspension, combined with a horizontal traction on the leg, the vertical suspension was accomplished by passing a bronze wire through all the tissues of the anterior part of the thigh with a Reverdin needle. A finger introduced into the wound caught the wire and fixed it securely around the end of the lower fragment. Traction was made by a weight hanging above the bed of the patient. Shortening of the femur was prevented by traction with a Chutro stirrup. Some of the author's fractured femurs were kept for three months with this apparatus without pain or complication. The method had been used with excellent result also in cases of the lower third badly united and carrying a streptococci fistula. Here were recommended the subperiosteal resection of the osteitic callus and a vertical suspension of the lower fragment, and patients so treated had done wonderfully well.

Bone Transplants from the Tibia to the Lower Jaw.—Dr. CHARLES A. POWERS, of Denver, had done eleven of these operations at the American Hospital at Neuilly in France. Of these eleven cases, eight, or seventy-three per cent., were fully successful, three or twenty-seven per cent. complete failures, while one case, nine per cent., was undetermined, but a probable success. However, dividing these eleven cases into classes by years, it was found that of the five cases done in 1916 two cases, forty per cent., were successful and three cases, sixty per cent., unsuccessful; while of the six patients operated upon in 1917 (after wider experience) five cases, or eighty-three per cent., were full successes (solid bony union, good mastication, excellent approximation of the dental arcades) and one case, seventeen per cent., undetermined but probably successful. The results were, therefore, but moderately successful in 1916 but were fully successful in 1917 (no operations were done by the author in 1918 owing to the changed conditions, the Militarized American Hospital No. 1 becoming an evacuation hospital for the American wounded). The author gave in detail his operative technic (with dentist's cooperation), which he had worked out.

Doctor Powers stated that transplants to the lower jaw, in these battle casualties, had not found favor among the French surgeons and but moderate employment by British surgeons. He felt that while this series of eleven cases was not large, yet with the experience of the first year of work as a guide, the results in the second year had been most successful and satisfactory. Useless jaws had been returned to usefulness. Complete control over a very long period of time was absolutely necessary, and this obtained in the military service. Doctor Powers stated that the operation is a difficult one, through the proximity of the field to the mouth and nose, that it requires the best of detail and best of assistance in every way. The slightest infection is practically always fatal to success. (The author's failures were due to infection.) He stated that the operation as worked out by him was not necessarily the best possible, but that in view of his 1917 successes (five complete successes in six cases, the other a probable success), it was the best of which he knew at that time.

Cranioplasty.—Dr. A. PRIMROSE, of Toronto, presented the results obtained in forty-two operations performed on thirty-eight patients in whom the majority of the defects had been in the frontal and parietal regions of the skull. In some of the cases a double gap had been present. Cartilage and bone grafts had been employed, all the former being autogenous, also the bone grafts except in one case in which a large graft was transferred from the human cadaver. There was no operative mortality; infection of the wound occurred in five cases, two of which healed with a successful graft. In the following results only those cases are considered in which a firm closure was effected: Cases completely relieved of distressing symptoms, 19; cases rendered worse by operation, 2; cases improved but not wholly relieved, 8; cases with no change in the symptoms, 5; giving a total of 34.

The author gave the following conclusions: That it was possible to successfully close a gap in the skull by a graft of bone or cartilage; that the operation was attended by little danger to life; that the relief of symptoms directly dependent upon the existence of the gap was as a rule immediate and complete, such symptoms being headache, dizziness, the fear of injury, sense of insecurity, mental depression because of the presence of an ugly deformity. The value of the operation in Jacksonian epilepsy was less evident in the author's opinion, except in an amelioration of the attacks by removing cortical irritation.

Treatment of Fractures.—Mr. W. HEY GROVES, of Bristol, England, while in accord with Dr. Van de Velde's principles of treatment, believed that the number of fractures with no comminution which required wiring was small, and that the operation should be limited to cases in which the widely separated fragments showed real danger of intervention to the soft parts. Even in those cases the efficient extension apparatus available lessened the need of operation. In the treatment of the second type in Dr. Van de Velde's classification Mr. Groves believed that a pin directly through the lower end of the thigh would inevitably act as a seton, and that in a small definite proportion of cases, in his own experience three per cent., sepsis would occur. This danger would be entirely eliminated by tibial transfixion. Since the six weeks, beyond which Dr. Van de Velde said the icetongs or Steinmann pins ought not to remain in place, would not see the case through, a measure of the greatest possible value in Mr. Groves's opinion was the transfixion of the tibia and the adjustment of a weight extension.

Dr. JOHN B. WALKER, of New York, said that only by the end results in fracture cases would the best means of treatment be determined. In this connection he expressed the hope that a certain amount of public opinion might be conveyed to the Office of the Surgeon General urging that the records of war injuries might be rendered accessible for study.

Dr. JOSEPH A. BLAKE, of New York, regarded tibial traction comparatively safe from the viewpoint of infection because in war injury the wounds extend farther down toward the knee, often

interfering with a pin in the femur. In tibial traction, however, there was lost much control of the lower fragments which was the important factor in the treatment of fractures. In every case where practicable to have the traction upon the femur it should be done.

Sir ARBUTHNOT LANE referred to the great development in the treatment of fractures of the lower jaw and laid stress upon the lessened danger of sepsis in such fractures compared with that obtaining in fractures of the extremities.

Salvage of the Hand by Early Plastic Reconstruction.—Dr. JOHN B. ROBERTS, of Philadelphia, presented this paper which was a plea for better personnel in the accident ward service of general hospitals in order that hands might not be unnecessarily mutilated by young graduates. These young doctors were very apt to sacrifice unnecessarily portions of fingers and hand which might be saved by skin grafting, applying pedicle graft from the abdomen or thigh, or removing only portions of crushed bone. Doctor Roberts also called attention to the necessity for early treatment in Volkmann's contracture from anemic myositis and nerve pressure and for immediate tenosuture and nerve suture in accidental division of tendons and nerves. It also gave some information as to the way even portions of the forearm and arm might be used by the careful adaptation of artificial hands, or substitute for hands in the shape of hooks and springs.

Reconstruction of Peripheral Nerve Injuries.—Dr. CHARLES H. FRAZIER, of Philadelphia, after outlining the program of the Surgeon General's Office for the care and treatment of peripheral nerve injuries and the function of the Peripheral Nerve Commission, reviewed his experiences in the treatment of 550 cases under his direction at General Hospital No. 11. The proportion of cases in which operation was justifiable he placed at thirty per cent., although in some foreign clinics it had been only sixteen per cent. As to the time of operation, he observed the three month rule (not to operate until three months after the wound had healed) and was influenced by the fact that spontaneous recovery does not make itself manifest in the majority of cases until five, to seven months after injury. Observing these two factors, he found that in many instances six months would elapse before the operation was undertaken. He laid down certain general principles in operative technic and then gave the indications for a neurolysis, which he had employed in only thirty per cent. of his cases. If one operated indiscriminately, the proportion of neurolysis might be increased to fifty per cent. or higher. The great problem of peripheral nerve surgery was the bridging of defects after resection. Discarding as unworthy of consideration the flap method, tubulization, lateral anastomosis and *suture à distance*, he discussed the application of other methods to which the surgeon must turn, notably nerve stretching, nerve transposition, the position of the limb, the nerve transplant, and an operation for which he had coined the word *implantation suture*. The latter was applicable in the arm, where a healthy nerve might

lie in juxtaposition to the injured, and differed from lateral anastomosis in that a portion of the healthy nerve was sacrificed. The essential factors to a successful suture were, 1, the absence of undue tension, and, 2, healthy fasciculi free from the inclusion of scar tissue in peripheral and central segments. With these, regeneration would occur in spite of a clumsy suture. Tendon transplantation it was said should be held in reserve for certain residual palsies, notably those of the fingers in musculospiral palsies and those of the feet in external popliteal palsies (foot drop). Any discussion as to the superiority of method Doctor Frazier said must at this time be regarded as only of academic interest. The writing of the final chapter of the surgery of peripheral nerves in this country must be deferred until at least two years had elapsed since the operation. The Peripheral Nerve Commission, as a part of its function, would follow up all cases and upon its findings would render the final judgment as to the relative value of the different operative procedures.

Dr. RICHARD H. HARTE, of Philadelphia, felt that much was due Doctor Frazier for the time and care he had given to this rather nonspectacular type of surgery. Doctor Harte had occasion to refer to his care cases of nerve injury returned from the other side. Doctor Frazier had emphasized the importance of allowing the elapse of a considerable time before operating upon nerve injuries and had very properly increased that period. There would be scattered throughout the country many persons with peripheral injuries who would demand operation, and Doctor Harte believed it of the utmost importance that such work be done only by men of large experience in this particular department of surgery.

The Operation of an Evacuation Hospital.—Dr. DEAN LEWIS and Dr. THOMAS J. LEARY, lieutenant colonels, Medical Corps, U. S. A., said that an evacuation hospital should be an actively mobile unit and therefore under tentage. All the organization should centre about the operating department. A five hundred bed hospital could take care of the wounded of a division. A hospital of this character should carry 425 cots and seventy-five iron beds for the fracture cases. There should be in each hospital two x ray machines and at least three, preferably four, x ray operators. Time should be conserved by having so many men rayed and waiting for operation that no operating tables would be empty. A surgeon, after finishing one operation, should be able to proceed immediately with the next. Perfect cooperation between the x ray and operating department was necessary. Enough litter bearers should be detailed to see that all tables were kept full. A linear setup of the tents of the operating department was the best, as it enabled the staff to keep track of the patients, and reduced the work of the personnel. The tents should be so arranged that the littering which was necessary was reduced to a minimum. The shock tent should be in close proximity to the receiving tent. The tents for nonevacuable and fracture cases should be near the operating tent and the evacuating platform.

Dr. J. M. T. FINNEY, of Baltimore, said that Doctor Lewis had set a standard which would be pretty difficult to follow, and that his organization was a particularly efficient one. One had to deal in these instances with the personal equation, with the particular location assigned, with the transportation facilities, and last of all, but not least, with the enemy. All such factors must be taken into consideration and the efficient commanding officer would have an efficient organization. It should be borne in mind that from the beginning of the war until the armistice was signed the medical department had at no time more than fifty per cent.—hardly that—of the medical personnel that it should have had. This meant that everybody was working at high tension, that most of the surgeons were doing the work of two or three men. This was true also of the nurses and of the enlisted personnel. That the medical work of the war was so well done was due to the splendid spirit of selfdenial, to team work on the part of the entire medical department, nurses and enlisted men. He especially emphasized the value of the help of the latter.

Traumatic Facial Diplegia.—Dr. JOSEPH RANSOHOFF, of Cincinnati, presented the history of a case of complete bilateral facial paralysis following a street car accident. The x ray showed a fracture through the left temporal bone. The paralysis of the right side followed two days after that of the left. No other cranial nerves were involved. The taste function of the anterior two thirds of the tongue was completely lost. Return of muscular power was first noticed on the right side. Both sides were completely restored. The lesion was doubtless in the part of the nerve between the geniculate ganglion and the point where the chorda tympani leaves the nerve trunk. The speedy recovery indicated a hemorrhage as causative agent. The author believed that only four other cases of traumatic facial diplegia had been recorded, since at least two of the earlier cases (Gama and Romberg) were not double paralysis of the facial, but paralysis of the facial and acoustic of the same side.

(To be concluded.)

Letters to the Editors.

CERVICAL RIB.

NEW YORK, July 16, 1910.

To the Editors:

I would call the attention of your readers to statements of Dr. A. Church in the abstract of his paper on Cervical Rib, June 14, 1919. He says: "No English textbook makes any mention of cervical rib." This is not so. If Doctor Church will turn to the second edition of Jelliffe and White, *Diseases of the Nervous System*, 1917, he will find not only a discussion of the subject but an excellent x ray picture (p. 366) with the caption, "Double cervical rib causing mixed type of brachial palsy." In several places the relation of cervical rib to brachial plexus disorders is given in detailed and specific fashion.

He further states that cervical ribs "have never been observed in the first, second or third ribs." In this textbook just alluded to would be found in the section on cervical rib (p. 378) "Thomas Murphy has recorded a case in which the symptoms were due to the pressure of the first rib. A similar case is reported by Sherren."

SMITH ELY JELLIFFE.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Peritoneum. By ARTHUR E. HERTZLER, M. D., F. A. C. S., Surgeon to the Halstead Hospital, Halstead, Kan.; Associate Professor of Surgery, University of Kansas; Formerly Professor of Pathology, Experimental Surgery, and Gynecology, University Medical College, Kansas City, Mo. A Contribution from the Laboratory of the Halstead Hospital, and from the Department of Anatomy of the University of Illinois. In Two Volumes. Volume I: Structure and Function in Relation to the Principles of Abdominal Surgery. Volume II: Diseases and Their Treatment. Illustrated. St. Louis: C. V. Mosby Company, 1919. Pp. xvi-380-870.

It may seem that two extensive volumes would remove a work from the realm of the practical and place it in the class of reference books, but this does not hold in the case of Doctor Hertzler's treatise. The first volume is devoted to the more theoretical phases and the second to practical problems. The work is unusual and presents new light on what has been considered an old and settled subject.

The author commences with a description of the physiology of the peritoneum, leaving the histology to be taken up in the second chapter. This method is a bit unusual, but the result is satisfactory. Abstract questions are constantly presented with a view to practical application, and the entire work possesses balance and continuity. Following the histological description, the development of the peritoneum and the gross anatomy are described. The remainder of the first volume is devoted to various changes taking place in the process of wound healing, the value of which can not be overestimated. An understanding of the basic principles of wound repair, as shown in this book, is of great assistance in solving surgical problems as they arise.

Doctor Hertzler begins his second volume with an extensive review of peritonitis, and various chapters deal with the etiology, pathogenesis, symptomatology, diagnosis, and prognosis. The appendix then comes in for a long and careful exposition. One of the best chapters is that on tuberculosis of the peritoneum. The concluding chapter is devoted to tumors. There are no lists of cumbersome references given merely because they happen to have been written on the subject; only those which have a direct, vital bearing on the matter in question have been cited. This book does not contain new or startling information but is rather a careful, logical, complete piece of work, and far more effort than is generally used has been expended in arriving at the essentials which are of value.

The Erotic Motive in Literature. By ALBERT C. MORDELL. New York: Boni & Liveright, 1919.

The application of psychoanalysis to literature offers a most fruitful field. Whether the possibilities were too dazzling or his knowledge of the subject not sufficient to cope with the tremendous task, the author has brought back a scant and withered crop from the invaded orchard. The attempt was a noble one, worthy of research and careful study, and should not have been hurried into a best seller at the expense of neglecting to face the seriousness of the task. The attempt to analyze the subconscious workings of an author's mind or to interpret properly the symbols in an unsupported figure of speech is unfair to the science of psychoanalysis and will tend more than any other factor to bring it into disrepute. Much harm has been done by people who in similar fashion gathered a few fundamentals of psychoanalysis and passed snap judgments on dreams presented to them for interpretation. It is well enough to seize upon evidence no matter how insignificant it may appear and use it to fathom hidden recesses, but one should not be content to build a structure on a superficial foundation as has been attempted here. We may as well assume that all poetry on account of its rhythm has a sexual significance as to try and prove that certain rhythms which bring to mind the thought of galloping horses have a special sexual significance. Undoubtedly many more books on the same subject will follow, and it is to be hoped that the valuable instrument of psychoanalysis will be more scientifically used in its application to the field of literature. The effort is a good one and in spite of its limitations the book is worthy of examination.

Births, Marriages and Deaths.

Died.

- BOUNELL.—In Lebanon, Ind., on Tuesday, July 8th, Dr. Thomas A. Bounell, aged seventy-one years.
BROOKS.—In Providence, R. I., on Saturday, July 12th, Dr. John Peck Brooks, aged seventy-five years.
BROWN.—In Springfield, Mass., on Tuesday, July 8th, Dr. Daniel J. Brown, aged fifty-eight years.
CROFUT.—In Chicago, Ill., on Friday, July 4th, Dr. Martha M. Crofut, aged sixty years.
EICHORN.—In New York, N. Y., on Sunday, July 13th, Dr. Herman Eichhorn, aged thirty-eight years.
HOUSER.—In Lincoln, Ill., on Tuesday, June 24th, Dr. W. W. Houser, aged eighty-two years.
MACLAY.—In Delavan, Ill., on Tuesday, July 1st, Dr. Archibald I. MacLay, aged sixty-eight years.
MANSFIELD.—In Needham, Mass., on Sunday, July 6th, Dr. Henry T. Needham, aged eighty-one years.
MAYO.—In Macon, Ga., on Sunday, July 13th, Dr. T. Franklin Mayo, aged forty-one years.
MC CARTHY.—In Geneva, N. Y., on Tuesday, July 8th, Dr. Charles D. McCarthy, aged fifty-eight years.
MISH.—In Steelton, Pa., on Sunday, July 13th, Dr. George F. Mish, aged ninety-two years.
MITCHELL.—In Paris, Ky., on Tuesday, July 8th, Dr. S. E. Mitchell, aged eighty-five years.
MORAN.—In Boston, Mass., on Saturday, July 12th, Dr. John B. Moran, aged eighty-one years.
NOBLE.—In Indianapolis, Ind., on Wednesday, July 9th, Dr. Charles T. Noble, aged forty-five years.
RYAN.—In Ogdensburg, N. Y., on Wednesday, July 9th, Dr. James E. Ryan, aged sixty years.

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Original Communications

WAR NEUROSES AS OBSERVED IN ARMY NEUROLOGICAL HOSPITALS AT THE FRONT.

By JOHN H. W. RHEIN, M. D.,
Philadelphia,

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Time Consultant in Neuropsychiatry for the A. E. F.

War neuroses have been discussed in literature extensively by the French and English, and to a certain extent by American observers who have had experience with the conditions in the English Army. So far very little has been added by American medical officers, who by reason of their experience in the American Expeditionary Forces are best qualified to treat this subject from actual experience with the cases in the field.

The war neuroses seen among the American forces present some features differing to a certain extent from those seen in the armies of England and France which are deserving of mention. More particularly of interest are the observations made upon men who were sent into neurological hospitals situated at the front, where they were observed within a few hours of the occurrence of the experiences which determined their being sent to the hospital. These cases come labelled shell shock, concussion, exhaustion, and psychoneurosis for the most part, the diagnosis having been made on the field by regimental medical officers or noncommissioned officers of the medical corps or by the division neuropsychiatrist. Comment upon the condition of these soldiers on admission will be interesting as showing the early symptoms of nervous states, which, if not properly handled at the beginning, develop into fixed neuroses of various sorts.

The patients coming into the army neurological hospital, may be divided for the most part, into: 1, Those in whom there have already developed hysterical phenomena, such as aphonia, deafness, blindness, palsies of the limbs, amnesias, and confusional mental states; 2, those who have well defined anxiety states; 3, neurasthenias; 4, psychasthenias; and 5, those who are best described as examples of hyperemotivity. Beside these there are a small number of soldiers suffering from actual psychoses, a few cases of organic nervous diseases, epilepsy, mental deficiency, and finally a number of cases showing transient symptoms

which have the coloring of psychoses from which the patients speedily recover and follow a similar course to the war neuroses generally.

The experiences which these men have to relate who come from the zone of the advance, and in the majority of instances from scenes of combat, are in the main identical, and consist of a history of having been under shell fire for a short time in some instances, more often for a more protracted period. Investigation brings out the fact that these follow in the wake of experiences which are exhausting physically and emotionally.

There are many instances in which a man had been under shell fire on several occasions and had been able to carry on successfully until finally an unusually severe experience intervened in which, after hours or days of continuous shelling a comrade is killed or wounded, and he stops to dress him or carry him to a first aid station, after which he returns to a dugout, trembling and incapacitated until picked up and sent to a hospital. Or a man may have been in several offensives, becomes used to the explosion of big guns, obliged to work long hours with little rest, developing a state spoken of as "dopey" and then still carrying on, he at last becomes nervous, confused, tremulous, "hardly knows what he is doing," is "jumpy" at unexpected explosions, and finally has to be sent back to a hospital.

Many assert that a shell bursting near them has caused unconsciousness after recovery from which they are tremulous and nervous and unable to walk to the first station. This climax follows after exposure to several days of bombardment during which the soldiers suffer from a feeling of weakness, subjective nervousness and trembling which culminates after the final explosion in a state of unconsciousness or amnesia.

Often before going into battle it is customary for troops to take long hikes. After a long march mainly by night, covering thirty or forty kilometres, the soldiers are thrown into a push without an opportunity to rest. At once they are subjected to bombardment which means that sleep and rest are out of the question. The physical hardships at once increase. The terrain is broken, muddy and often hilly; in combat little food is taken, and often the soldier is without food for three or four days. Added to these hardships are the emotional upsets, to which he is now subjected, such as the death of his companions or officers, and the depressive

sights of the mutilated and decomposing dead. To one who perhaps has been a farmer or clerk all his life, the instability of the nervous system which is thus developed gives rise to a mental and nervous state which renders the individual tremendously susceptible to suggestion. He is afraid; afraid he will be killed, and fight the thought as he will, it is ever present. He is usually conscious of this fear and recognizes it, but in some instances the fear is suppressed and is present subconsciously only. This state of mind permits the occurrence of a certain specific reaction to the experience of being blown over by the wind of a shell or by the flying earth of an exploding shell. The soldier believes his end has come. He becomes unconscious, not from concussion but from a sudden profound effect on his heart action which causes cerebral anemia; or he may become amnesic, confused, delirious, or dazed. On the other hand he may be mentally incapacitated from the physiological response to fear, namely, mental confusion, muscular weakness, tremor, rapid heart, enfeebled circulation, and rapid breathing.

The states described by the soldier as periods of unconsciousness, I view as hysterical phenomena, pure and simple. They consisted of faints, confused states, or amnesias. Concussion as we know it surgically, that is, stupor, pallor, slow pulse, cold skin, disturbed respiration, involuntary passages, altered pupils, and subnormal temperature, is a rare finding in the men evacuated to army neurological hospitals. I look upon actual concussion as we recognize it in civil life, the unconscious state due to a blow on the head, as out of the field of the neuroses and as having nothing to do with what we term war neuroses. Only occasionally are men brought in unconscious. This is true even in the experience of the medical officers in the field hospitals to which the cases under discussion are first brought.

The story is sometimes merely one of unnerving reaction to shell fire. Or simply an emotional shock may be described, such as seeing an officer, friend or brother blown to pieces—an event which itself is sufficient to produce any of the symptoms which follow the effect of a bursting shell, including unconsciousness and amnesias. The cases which present upon admission hysterical phenomena, are actually already examples of definite neuroses, and the same may be true of those in which anxiety states are already established and of the neurasthenics and psychasthenics.

There are a group of cases, however, which show practically no symptoms after a few days' rest, except a mental attitude toward front line work and a history of a definite unnerving reaction to shelling. These were looked upon as instances of what I have called hyperemotivity. Soldiers coming under this class react to shelling in a similar manner. They are unable to carry on when under shell fire, they feel weak, are dizzy, tremble, cry, and are afraid. They seek places of safety, desire to run and hide, or stand still and shake, lose their heads, fall down from weakness at the sound of nearby exploding shells, express themselves as afraid of shells, and sleep poorly. These symptoms

incapacitate the soldier and render him unfit for duty, and he is sent to the hospital where, upon his arrival, he presents few or no symptoms outside of fatigue signs, some trembling, and an apprehensiveness that he will be sent back to the fighting lines.

There is no frank neurosis, though, because of a state of mind which produces incapacitating symptoms such as, trembling, muscular weakness, rapid heart, cold extremities, an inability to face any longer the front line experiences, and this in spite of all the influences brought to bear upon the soldier to carry on, he is unable to perform the duties of a soldier.

It appeared to be an abnormal or excessive reaction to fear—an exaggeration of the physiological response to this emotion—but going beyond the physiological, because, in spite of the inhibiting influences, such as crowd psychology, desire to appear correct before his comrades, patriotism, pride, honor, and all those things which help a man to maintain his position with his comrades, he is unable to suppress the symptoms to a point which permits him to carry on. This state of mind, I believe represents a potential neurosis, a potential anxiety state which would surely become fixed if he should be exposed to further front line experiences, or if he continued to entertain prospects of returning to the front.

Over sixty per cent. of the patients coming into the neurological hospital were restored within an average of ten to fourteen days to a state of apparent nervous stability, to a condition in which they acknowledged that they felt well, in which they expressed themselves as willing and anxious to return to their organizations, and to all appearances they seemed to be perfectly well.

The method employed to bring about these results briefly consisted of the following plan: The officer of the day admitted all patients, and it was his duty to explain to the soldier in the receiving ward before he was actually admitted, the exact nature of his condition, and to reassure him as to the prognosis. Almost immediately there was a relaxation of the tension from which practically all the patients suffered, and the soldier experienced an enormous relief from the anxiety of the situation in which he found himself. He was then bathed, fed, and put to bed, whereupon he usually fell into a profound slumber which lasted thirty-six to forty-eight hours. Then, after a careful examination by the ward neuropsychiatrist, it was the duty of the latter to talk to the soldier, explaining the mechanism of his condition and treating by suggestion the mental states, tics, and other phenomena which may have been present. The next step in the therapeutic procedure was the interview by the commanding officer who took the patient into a room by himself, went over the history carefully with him, and explained the nature of his symptoms in a way that robbed them of the horror and mystery which surrounded them, for the habitual attitude toward the symptoms was more or less one of hopelessness, and finally made reassuring suggestions. After a brief rest period under these conditions, usually for three or five

days all the patients were put on a schedule consisting of rest periods, graduated exercises and hikes, periods of recreation, games and group singing which occupied the entire day. In twelve to fourteen days from sixty to seventy per cent. were fit for front line duty.

Sometimes it was not possible to evacuate them at once upon their recovery to this point, due to the difficulty in obtaining transportation, inability to locate the headquarters of their organization, or other reasons, and as a result of this delay, in a certain small number of them vague hypochondriacal phenomena developed which became more fixed the longer they remained in the hospital.

One of the most interesting features of the whole question is, what happens to the men who are not returned to their organizations, but who are evacuated to the base hospitals in the rear. As they leave the hospitals at the front to go to the rear, few present any of the major manifestations of hysteria, such as palsies, mutism, gross tics, deafness or blindness, though slight tics do persist in a small number of the cases. The common symptom which the patients going to the rear present is a fear that they will not be able to go back to the shells. They express themselves as feeling fairly well outside of this complaint. Some have persistent dreams, which can be looked upon as a step further toward a fixed anxiety state.

In base hospitals, however, one finds a different picture. Hysterical manifestations are observed, stammering spreads throughout a ward, mutism appears, some paralyzes, and more rarely gait disturbances, and amnesias are seen. The most frequent form which the war neuroses take, however, is the anxiety state which characterizes the greater number of the cases.

What is it that happens? It seems to me it can be explained in this way. First, contagion plays an important part; secondly, there is a greater opportunity for introspection in a hospital situated in a perfectly safe place, far removed from the scene of warfare, which by contrast emphasizes the horrors of the front and gives rise to a greater reaction, a reaction which manifests itself in the creation of symptoms which incapacitate the soldier for service at the front. This reaction is less likely to take place in a hospital situated at the front where a general belief existed that the soldiers admitted there would not be sent to the rear but back to their organizations.

Added to this as a result of a specific method employed to suggest cure and to explain the mechanism of the condition to which they had arrived, a general impression prevailed that the symptoms which the soldiers presented were curable, that the wind of an exploding shell which blew them over caused no serious organic damage, that fear played the main rôle, that when the cause of the condition was understood they could protect themselves against future attacks and, moreover, could explain this to the men at the front and help them to avoid the development of the same train of symptoms.

It illustrated, it seemed to me, that these men had acquired a state of suggestibility which per-

mitted a return to a fairly normal state rapidly when properly treated, and, on the contrary, if allowed to be exposed to contagion and pernicious suggestion, for which there were many opportunities on the way back to the base hospitals through evacuation and camp hospitals, would favor the development of hysterical phenomena and anxiety states and a fixation of these symptoms. In other words, the cases seen in the hospitals at the front are in many instances examples of potential neuroses, the evolution of which may be averted by suggestion, and which also, on the other hand, rendered the soldiers equally susceptible to the development of fixed neuroses by the suggestion and contagion to which they were exposed en route to the rear.

Even if the men are allowed to remain in the neurological hospital at the front, after they have been tagged for duty when all symptoms are absent, hypochondriacal states develop, the results of the opportunity for introspection and observation of symptoms in others who are marked for evacuation to the rear. It was very important that these men should be promptly sent back to their organizations before contagion and pernicious suggestion had a chance to operate.

In the anxiety states it was rare to find that there was a history of unconsciousness. The state of unconsciousness seemed to give a sense of relief which prevented the development of anxiety states. Exhaustion with or without shelling was in many instances looked upon as a determining factor in bringing the men to the army neurological hospital. In the histories of these cases in not more than ten per cent. could be found a complaint of unconscious states caused by a bursting shell. Neurasthenia was not found to develop after unconscious states. It was observed in men in whom there was no immediate connection with a specific shell, in at least a third of the cases.

In one hundred cases in which shelling experiences determined the evacuation of the soldier, there was a history of unconscious states or amnesia in fifty to sixty per cent. of the cases, while five to ten per cent. showed confusion and ten per cent. more or less excitement. A diagnosis of hysteria I believe should be made in the cases in which loss of consciousness occurred.

The hysterical manifestations outside of the amnesias, unconscious states, delirium and states of excitement, consisted of tics and tremors with occasional aphonia, deafness, and transient monoplegias. Perhaps the most striking observation to be made in the hospitals at the front is the absence of gross hysterical phenomena. Emotional trauma was present in almost all of the cases, such as the painful death of a "buddy," the mutilation of a brother, repeated sight of carnage, splattering with bloody flesh and the like. These experiences were noted in those showing hyperemotivity.

While I believe it goes without saying that a man with a previous history of unstable nervous system is more susceptible to the experiences of battle, there are many who present symptoms in whom there is no such history. They acquire in a short time a state of instability which in civil life

would take months or years to develop. In 320 histories, 174 were negative as to previous nervous manifestation. In 146 there was a history of nervousness, nervous breakdown, nervous temperament, phobias, traumatic neurasthenia, chorea, fear of the sight of blood, frontal headaches, epilepsy, bed wetting, sunstroke, delinquency, dizzy and fainting spells, hysteria, and drug addiction.

Previous occupation plays some part perhaps in rendering a person susceptible to the influences causing neuroses. In 327 case histories there were forty-six farmers, thirty-eight clerks, thirty laborers, eighty-five skilled laborers of various types, and four physicians. Family predisposition was observed in a certain number of cases. It was negative in 195 cases, and positive in 137 as to insanity, cancer, tuberculosis, or nervous manifestations in father, mother, sister or brother.

Brief reference should be made to another reaction which a small group of soldiers make to the front line experiences, namely, what may be termed the psychotic reaction. A small number of cases impart a coloring to their symptoms resembling dementia præcox. These soldiers are negativistic, paranoid or hallucinatory. They assume attitudes and show no interest in their surroundings. From this condition in a few days they recover and are apparently well.

The coloring may be manic depressive. Soldiers showing this reaction are excited, show flight of ideas, some incoherence, and great restlessness, or they may be depressed, silent, the brows wrinkled, the thoughts dwelling on the horrors of the front, the death of a brother or a buddy.

The reason that we find a variety of reactions to similar experiences offers an interesting field for study and speculation. It depends I believe upon the make up of the individual, something in his psyche, his character, plus his physical resistance in part, which permits in one case the development of hysteria, in another neurasthenic phenomena, in still another a psychotic coloring, and so on. This reaction is seen in civil experience as well as in warfare, except that the latter are much more intense and strenuous and bring about reactions which might never have occurred in the individual's life if he had been permitted to live under peace conditions.

It is to be noted that these symptoms occur among those whose histories indicate no previous instability of the nervous system, as well as among those who are predisposed to breakdowns; in other words, a family or previous history of mental or nervous disease is not essential. It is a reaction to intense emotional shocks, the coloring being due to the soil or make up of the individual.

1732 PINE STREET.

Prognosis in Trench Nephritis.—Dyke (*Lancet*) reports a series of cases with a mortality of two per cent. In forty per cent. renal function was not completely reestablished, with resulting disabilities being albuminuria, chronic nephritis, interstitial or parenchymatous arteriosclerosis, anemia, and edema. Fifty per cent. of those whose health was permanently impaired showed arteriosclerosis.

NOTES ON THE TREATMENT OF A CASE OF LYMPHATIC LEUCEMIA WITH BENZYL BENZOATE.*

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The following notes represent some observations made in connection with the use of benzyl benzoate in the treatment of a case of lymphatic leucemia at the Baguio Hospital in Mountain Province, Philippine Islands. The authors are fully conscious of the fact that their account is little more than a narrative and is sadly lacking in details that should prove useful to those who may care to experiment along similar lines; but the results so far gained have been so striking as, in their opinion, to justify the presentation of these meagre notes in order that others may follow up the work under more advantageous surroundings and conditions.

The hospital in which the treatment is being carried out is small and located in the Benguet Hills. It is sufficiently equipped for ordinary work, but the equipment and conditions are not such as would make possible a detailed technical study of the action of the drug in such a case.

CASE I.—The patient in question is an American woman, sixty-five years of age, a widow, who was sent to Baguio from Manila, by her family for recuperation in the cooler and more stimulating atmosphere. The place is between five and six thousand feet above sea level; it is thickly grown with pine trees and during the months of December and January a light frost occasionally forms.

A growing decline in general health, failing strength and increasing signs of nervous disturbance led to the patient's removal to the hill country. The trip was hard and trying and to this was added the shock of rough treatment at the hands of an employe of the local transportation company, the result being that the sick woman arrived in Baguio in a state of nervous and physical exhaustion and she was forced to take to her bed where she remained for several weeks. She complained of marked abdominal distress, excessive nervousness, ringing in the ears, violent action of the heart, and general prostration. There was a definite apex beat and the action of the heart was so violent that the entire chest pulsated synchronously with it. There was a murmur that could be heard all over the chest. Compensation, however, was fairly good. There was no definite enlargement of the heart. The temperature at this time averaged slightly above 38° C. Under symptomatic treatment and rest she improved to the extent that the symptoms partly cleared up, but she made little if any gain in strength.

When the patient was examined toward the latter part of December, she was too ill and weak to do more than move from her room to the dining room which was on the same floor. She com-

*Read before the Manila Medical Society, April 7, 1919.

plained constantly of distressing abdominal symptoms and weakness.

At that time the spleen and liver were found to be enlarged. The spleen was about one cm., from the median line and almost touched the crest of the ilium. Definite pulsation could be felt at various points in the organ. The liver was about twelve cm., below the twelfth rib. The cervical and inguinal glands were enlarged to the size of peas. The legs and thighs showed ecchymotic patches. These findings were confirmed by Dr. W. A. McVean, of Manila, who was called in consultation. Blood films showed a high leucocytosis (estimated at about one hundred thousand) made up principally of lymphocytes with a few myelocytes and polymorphonuclear neutrophils. No malarial parasites were found and the blood picture gave no evidence of either active or latent malaria. A diagnosis of lymphatic leucemia was made.

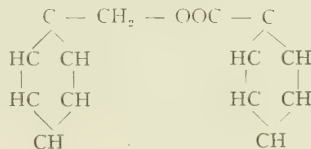
Past history.—The patient stated that between thirty-five and forty years ago, while playing with her young son, she had received a severe blow over the spleen when the child playfully jumped upon her. At the time and for some time afterward, she suffered much pain and tenderness in the region of the spleen. In fact, she stated that she had never since been entirely free from discomfort in that region. During the early eighties, while living in Italy, she had a severe attack of undulant fever, and an attack of puerperal fever and, about twenty years later in the United States, had suffered from malaria—probably of the benign tertian type. She was cured of the latter disease under active quinine medication and has since given no evidence of malarial infection.

Soon after the diagnosis was made the patient was removed to the Baguio Hospital and treatment was started with Fowler's solution. No improvement was noted. The spleen remained stationary in size and there was no diminution of the weakness or troublesome abdominal symptoms. There was edema of the lower extremities which was most marked on the left side. Because of the extremely irritable condition of the patient's digestive tract it was deemed unwise to administer benzol. Recourse to radium or the röntgen rays would have involved a hard and tiresome journey to the lowlands which certainly could not have been borne by the patient. At this time hypodermic administration of sodium cacodylate was started and continued up to the point where the limit of the patient's tolerance for the drug had been reached and it was discontinued. At that time, the patient's condition had shown no real improvement; there was no reduction in the size of either the spleen, liver or lymphatics and the abdominal distress was increasing.

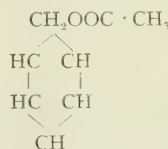
On February 13th, the patient was complaining of pain over the entire body—extending even into the lower extremities which also showed considerable edema. There was, in addition, nervous irritability and excessive weakness. Examination of the urine showed the presence of no abnormal constituents; the condition of the heart was better. The blood pressure was: systolic, 122 mm.; diastolic, sixty-

two mm. The total erythrocyte count was 4,200,000; the total leucocyte count was 41,000. The differential blood count on February 18th, was as follows: Small lymphocytes seventy per cent.; large lymphocytes 17.5 per cent.; polymorphonuclears eleven per cent.; large mononuclears one per cent., and eosinophiles .5 per cent. No myelocytes were found at this count and none have been found up to the present time.

From this time on the patient's condition became steadily worse. Her inability to tolerate arsenic had already caused the abandonment of that drug. It was realized that some other form of treatment would have to be instituted, for the indications were that a fatal outcome was impending. Shortly before this we had received from Baltimore, through the courtesy of Dr. David I. Macht, of Johns Hopkins University, a quantity of benzyl benzoate that had been put up in miscible twenty per cent. alcoholic solution. This was being tried out in a series of dysentery cases in the Philippine General Hospital with gratifying results. It was felt that it offered possibilities in the leucemia case on two grounds: First, the sedative action on the smooth musculature of the intestine as described by Macht (1) in his experimental work and as borne out in the Manila dysentery cases, suggested that relief from the abdominal pain and distention might be obtained in the leucemia case. Secondly, the nonirritant nature of the drug to the alimentary and urinary tracts had been shown and it was believed that with this drug a more benign effect might be obtained with the combined benzol radical without impairment of its action on the leucocytes, either directly or through the splitting off in the patient's body of the benzol radical or radicals. The structural formula of benzyl benzoate is as follows:



That some such action might be looked for was to be suspected from the study by Macht of the comparative results in the pharmacological action of this drug and that of benzyl acetate which has the formula:



In his studies Macht has shown that the pharmacological action of both drugs is practically identical which would give certain ground for belief that their action is governed, in part, at least, by the splitting off of their common group—the benzol group. This, added to the fact that the benzyl esters are easily metabolized by the body

and are comparatively nontoxic furnished justification for the experiment.

That the irritable condition of the patient's gastrointestinal tract was a factor that deserved serious consideration had been apparent to us for some time. The kidneys, however, were apparently in good condition and it was considered wise to conserve them with the utmost care. A review of some of the literature had shown us that the disturbing effects of benzol on the gastrointestinal tract and urinary system were to be dreaded. Martin (2) has called attention to this danger in the following paragraph:

"Pappenheim looks with less favor on the benzol treatment and regards the doses as too small to be effectual in depressing marrow cell formation. The leucopenia, he says, is only apparent, the polymorphonuclear cells being stored up in the internal vessels. Sohn came to the same conclusion after a study of the metabolism of benzol administration. Large doses were found to be dangerous, leading to diminished oxidation processes, acidosis and toxic necroses in the liver and kidneys. Muhlmann's experience confirms these observations, for a fatal result in a case of lymphatic leucemia followed the administration of 175 grams of benzol in six months. Excessive necroses were found in the liver. Pappenheim tried benzene and found it to be equal in power to benzol and less injurious, though both were regarded as inferior to radioactive substances, and the results showed that they were neither so elective, nor radical, nor constant in their effects on the bone marrow and the hemopoietic apparatus."

Our experience in the administration of benzyl benzoate not only in this case of leucemia, but in cases of dysentery has so far thoroughly borne out the statement made in a personal communication from Doctor Macht that "administration of benzyl benzoate by mouth has never been followed by any untoward or disagreeable symptoms, so you may safely give it even to patients in poor health."

On February 23d, the administration of the drug was started. The dose was fixed at ten drops of the twenty per cent. alcoholic solution in water three times a day after meals. On that day the condition of the patient was as follows:

Blood pressure, systolic, 122 mm.; diastolic, sixty-two mm.; the total erythrocyte count 4,000,000; total leucocyte count 40,000. The patient was clearly in a critical condition. The abdomen was greatly distended, the bowels tympanitic with constant griping pains, the stools slightly loose. The temperature was subnormal (36.4° C.). There was marked anorexia. The weakness was so extreme that the patient was scarcely capable of movement. She had become profoundly asthenic. The abdominal symptoms were particularly distressing. The distention due to the tympanites and enlarged spleen and liver was extreme. The patient complained of a feeling of emptiness inside the abdomen with severe dragging down pains. Action of the diaphragm seemed to be hindered, possibly through adhesion of the spleen, and there was great difficulty in breathing. The cheeks,

neck, hands, arms, and legs of the patient bore numerous dark ecchymotic patches.

Marked improvement was apparent within forty-eight hours, and on March 2d, one week after the benzyl benzoate was first administered, the patient's condition was as follows:

Blood pressure—practically unchanged. Erythrocytes not counted; total leucocyte count 19,600. The differential blood count was made with difficulty because of the clumping of the cells on the slide and the numerous leucocytes in various stages of disintegration. The best count that could be made was as follows: Small lymphocytes fifty-five per cent.; large lymphocytes forty per cent, and polymorphonuclears five per cent.

The most striking thing, however, was the improvement in the general condition of the patient. The abdominal cavity was no longer distended; the bowels were normal, the stools being well formed. The griping pains and tympanites had completely disappeared, as had the feeling of emptiness and the dragging down pains. Breathing was more normal. The temperature became normal varying between 37° and 37.2° C. The weakness was much diminished and the appetite showed a distinct improvement. Most important of all, however, was the effect on the spleen and liver, both of which showed a marked reduction in size.

Because of the marked relative diminution in number of the polymorphonuclear neutrophils and because of the lack of information as to the real action of the drug on the hemopoietic system, we decided to suspend the drug temporarily. We feared that, as in the case of benzol, the action of the drug might be continued for a period of time after its withdrawal and we deemed it unwise to allow the total leucocyte count to approach the normal too closely. Accordingly, the benzyl benzoate was stopped on March 5th. The following day the blood pressure was as follows: systolic, 118 mm.; diastolic, seventy mm. Total erythrocyte count 5,500,000; total leucocyte count, 90,000. The differential count was: Small lymphocytes sixty-eight per cent.; large lymphocytes twenty-eight per cent. and polymorphonuclears 1.3 per cent.

During the period when the drug was withheld there was very little change in the general condition of the patient. There was a very slow, but, nevertheless, a steady gain in strength; but after a few days the patient began once more to complain of slight abdominal discomfort. There were no cramps, but merely a slight feeling of tension. The spleen apparently continued to reduce in size to a slight extent.

On March 10th, the total leucocyte count suddenly shot up to 149,000 and the following day the benzyl benzoate treatment was resumed. This time, however, the dose was reduced to half that previously given—that is to say, five drops of the twenty per cent., alcoholic solution was given three times a day instead of ten drops. Thirty-six hours after the drug was resumed, the total leucocyte count had fallen to 131,000. The slight gain in strength continued. The appetite showed steady improvement. Abdominal pain and discomfort were completely absent and the stools were practically

normal. The patient was sleeping well. The liver and spleen showed no further reduction. However, the inguinal and cervical glands began to show a tendency toward enlargement and later gave some trouble to the patient, especially those in the left inguinal region.

The dose of five drops three times a day was continued, but on March 19th, the total leucocyte count had risen to 180,000. This, nevertheless, was accompanied by a steady improvement in the condition of the patient who was now able, with assistance, to walk about a bit. There was no pain or discomfort. The patient, however, complained of heavy perspiration about the face and neck, but it should be noted that during this period the day temperature in Baguio was excessively high for that location. It was then decided to resume the old dose of ten drops three times a day.

Following this, the total white cell count on March 24th, had fallen to 150,800 with an erythrocyte count of 3,820,000. The patient, however, was beginning to show a substantial gain in strength and spirits every day. There was no further change in the condition of the spleen, liver, and lymphatics.

The condition of the patient at the time of writing this paper (April 5th) was as follows:

The heart.—There is a definite apex beat at the fifth intercostal space inside the mammary line; a systolic murmur heard best at the apex. The beat is regular and not forcible and there is very good compensation.

The spleen and liver.—Since starting the benzyl benzoate the spleen has diminished in size about six centimetres. The liver has diminished in size about two centimetres. Both organs have a harder consistency, and because of their diminution in size, the right and left lower ribs which were before invisible to inspection are now visible.

The lymphatics.—These have shown a tendency to enlarge and in the cervical and inguinal regions are now about the size of a pigeon's egg.

The total blood count shows 4,100,000 erythrocytes and 200,000 leucocytes. It has not been possible to make a differential count. There are still ecchymotic patches on the body, but they seem to be progressively disappearing for they are decidedly smaller than they were before the treatment was started. Edema exists only on the left side where there is a painfully enlarged lymphatic gland. It extends to the upper third of the leg and has been practically stationary since the patient entered the hospital. Her temperature is usually slightly subnormal and has never risen above 37.3°C , since she entered the hospital.

General condition.—Good. There is a considerable gain in strength so that the patient is able to walk short distances without assistance. Her appetite is good, she sleeps well, and is free from discomfort or pain of any kind.

SUMMARY.

Beyond question this case of leucemia was of long standing when it came under our observation. The history given by the patient after the condition was recognized by us made it quite apparent that she had suffered from the disease for at least two

or three years. She was markedly asthenic when she first entered the hospital and at no time have we entertained any hope of her ultimate recovery.

The full story of the case is yet to be told. We cannot predict that it will run a course other than that taken by the general run of cases of lymphatic leucemia. In view of the limitations that circumstances have placed about us, we do not feel justified in even attempting to interpret the action of this drug in leucemia, or the results we have witnessed accompanying its administration.

We do believe, however, that these observations, especially in view of the apparent harmlessness of the drug, warrant the repetition of our experiment under conditions where the clinical phenomena, the metabolism of the patient and the blood picture, as well as the pharmacological action of the drug, can be systematically studied by competent workers under circumstances more favorable than it has been our fortune to enjoy. The direct effects of the drug on the blood elements is not shown, but so far we can see no evidence of any destructive action on the erythrocytes. It may be that the fall in the leucocyte count we have observed has simply been the frequently observed fluctuation occurring in the leucemias; but we must reckon with the marked reduction in the size of the spleen and liver as well as the growing sense of general well being expressed by the patient herself. Especially striking has been the alleviation of the nervous manifestations.

It may be that the action we have observed is no more marked than can be obtained with simple benzol, or with benzene as used by Pappenheim; but there is at least this which can be said in favor of benzyl benzoate—that it is evidently free from the evil tendencies shown by the other two compounds and can be administered indefinitely, and with a degree of effectiveness, to a patient in an advanced stage of the disease, without deranging the alimentary tract or kidneys. What results might be obtained in the treatment of a case in an earlier stage of the disease, or through the employment of heavier doses of the drug, we cannot at present state. We are merely reporting the case in order that the subject may be opened to other workers and in the hope that we may possibly have hit upon something that will at least mitigate the ravages of this dreadful malady.

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1. MACHT, DAVID I.: A Pharmacological and Therapeutic Study of Some Benzyl Esters, *Journal of Pharmacy and Experimental Therapeutics*, ii, 419, 1918.
2. MARTIN, C. F.: Forchheimer's *Therapeutics of Internal Diseases*. New York, D. Appleton & Co., iii, 864, 1917.

Modern Treatment of Wounds.—J. de Seixas Palma (*Correspondenz-Blatt für Schweizer Aerzte*, May 3, 1919) speaks under this title of the film treatment of wounds by means of a solution of tannin and gelatine in borax that has great viscosity and inhibits the growth of bacteria even in a ten per cent. mixture with bouillon or agar. He admits that the results *in vitro* when mixed with blood are not equally as good, but offsets this by asserting that the combination promotes local leucocytosis and phagocytosis while acting as a protective film.

INFLUENZA AND BRONCHOPNEUMONIA AT CAMP LEWIS.*

*With a Study of One Hundred and Fifty-Two
Necropsies.*

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(Concluded from page 140.)

F. COMPLICATIONS.

Tonsillitis, pharyngitis, laryngitis, and tracheitis occurred as complications in bronchopneumonia in the same proportion as in straight influenza. Aphonia, however, has been a more frequent finding during or after the acute stage of pneumonia than was experienced in simple influenza. This aphonia was due to ulceration, inflammation, and edema of the vocal cords. Otitis media occurred in bronchopneumonia in occasional instances. It has been previously discussed in its relation to the epidemic and will not be repeated here. Sinusitis occasionally occurred in bronchopneumonia, but was never severe and never required surgical procedures. Other complications, however, occurred which were experienced only in cases of bronchopneumonia.

1. *Pericarditis* occurred as a complication in a number of instances. Clinical recognition of fluid in the pericardium was found rather difficult, and suspected cases were always fluoroscoped or radiographed for confirmation. As stated above, a few cases, unsuspected clinically, were found on routine roentgenological examination. Purulent pericarditis was encountered clinically in but one instance. Repeated pericardial aspirations greatly relieved the patient's distress, but did not prevent a fatal issue. It is believed that an open operation should be performed when pus has been demonstrated in the pericardium. Further discussion of the cases of pericarditis and pericardial effusions will be given under pathology, to be discussed later.

2. *Empyema*.—Empyema, considering the number of cases of bronchopneumonia, was rather uncommon. At all times during this epidemic careful attention was paid to the development of fluid or pus in the chest cavity. Free use was made of the exploratory needle, and with great advantage. Even what clinically appeared to be a very small amount of fluid was often found, by exploratory thoracentesis to be thick pus requiring surgical treatment. Conversely large amounts of fluid on thoracentesis were proven in many instances to be simple pleural effusions, sterile on culture. We wish to emphasize here that so-called pleural pains are frequently the first signs of a beginning empyema, and that in cases where morphine or chest strappings are used to allay this pain an empyema

often develops, only to be revealed by the pathologist. This point should receive the careful attention of all physicians treating patients with pneumonia.

3. *Lung abscesses*.—Lung abscess occurred as a complication in but two of our cases. This condition was very difficult of recognition clinically owing to the presence of so many additional pathological conditions in the lungs. These two cases will illustrate the value of the roentgenograph inasmuch as in both instances they were first detected in this manner. Surgical treatment in each case resulted in cure.

4. *Emphysema and pneumothorax*.—Subcutaneous emphysema, pneumothorax, and interstitial emphysema were unusual complications encountered in some of our cases of bronchopneumonia. These conditions have been the subject of a separate report (6).

5. *Arthritis*.—An infrequent but very troublesome complication of a few of the cases was an acute polyarthritis. These patients all recovered on the usual treatment with salicylates.

6. *Epistaxis and pulmonary hemorrhage*.—These complications have been previously discussed under influenza.

7. *Loss of hair*.—An unusual feature of the cases of bronchopneumonia occurred among the nurses, namely the loss of the hair. In some cases this loss was so extensive as to require the hair to be clipped. No such complication was noted among the men, but it is thought that probably it may have occurred after they passed from under our observation. It usually occurred from six to ten weeks after recovery from pneumonia.

8. *Myocarditis and endocarditis*.—Myocarditis was a very frequent complication, evidenced by a weak or an irregular pulse, or by dilatation of the right heart. Right heart dilatation was extremely frequent as will be pointed out under the discussion of the pathology. It was possible to note this dilatation both by physical examination and by roentgenograms. A reproduction of a roentgenograph in one of these cases is given in Fig. 5. Endocarditis was very infrequent, being noted in but one case where fresh valvular vegetations were discovered at necropsy.

9. *Psychosis*.—Delirium, both mild and severe, was very common in the cases of bronchopneumonia. For the most part delirium occurred only in the severe cases, although occasionally it was present in the mild infections. In those cases not going to a fatal issue, the mental condition rapidly cleared as the temperature returned to normal.

10. *Uterine hemorrhage*.—Prolonged uterine hemorrhage occurred so constantly among the female patients that it required special mention. In this regard we are in accord with the opinion of Brem, Bolling and Casper (4), that this condition was a part of a general blood dyscrasia which was evidenced by: a, leucopenia, b, epistaxis, c, hemoptysis, and d, uterine hemorrhage.

G.—BACTERIOLOGY.

1. *Sputum*.—A general summary of all the bacteriological work on the sputa from influenza and bronchopneumonia patients has been given.

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In Table V we have summarized the bacteriological findings in all fatal cases. This table should be compared with Table II. From this table, as well as from Table II, it is plainly evident that Pfeiffer's bacillus played no important part in the bacteriology of the epidemic. The nonhemolytic streptococcus and the pneumococcus Type IV were the organisms most frequently found. We feel that it is not amiss to say here that the sputum examinations only grossly correspond with the findings at necropsy, and that laboratory findings in sputum examinations, as in all other instances, should not be considered absolutely but relatively accurate.

TABLE V.

Organism.	Sputum cultures.	Autopsy smears.	Necropsy cultures.
Pneumococcus—			
Type I.....	3	0	2
Subgroup II.....	0	0	2
Type IV.....	0	10	53
Type undetermined.....	0	0	4
Streptococcus—			
Nonhemolytic.....	44	4	44
Hemolytic.....	1	0	0
Viridans.....	4	3	18
Mucosus.....	0	0	1
Bacillus influenza.....	15	1	9
Bacillus tuberculosis.....	5	0	1
Pneumococcus diplococcus.....	0	1	22
Diplococcus (type undetermined).....	0	0	2
Micrococcus tetragenus.....	1	0	2
Micrococcus catarrhalis.....	1	0	4
No growth.....	0	0	5
Unsatisfactory.....	5	0	0
Examination not made.....	54	123	4

2. *Blood cultures.*—During the epidemic 1,196 blood cultures were taken of which 1,170 were negative and twenty-six positive (2.25 per cent.). The organisms found in the positive cases are given in Table VI.

TABLE VI.

Organisms.	Cases.
Pneumococcus —	
Type undetermined.....	19
Type IV.....	1
Streptococcus—	
Type undetermined.....	3
Nonhemolytic.....	1
Hemolytic.....	1
Viridans.....	1

II.—GENERAL LABORATORY FINDINGS.

1. *Uranalysis.*—The urinary findings in the fatal cases have been summarized in Table VII.

TABLE VII.

Specimens examined.....	48
Casts present.....	2
Albumin present.....	7
Casts and albumin present.....	13

From this table it would seem that some renal changes have occurred in approximately thirty-three per cent. of the cases. The changes and their relative frequency found will be discussed under pathology.

2. *Precipitin test in the urine.*—The precipitin test in urine for the grouping of pneumococcal infections was used in a large number of cases. The accuracy of this test can be judged only when checked up by necropsy cultures. This has been done in thirty-two of our fatal cases with entirely negative results. While this is a relatively small series, it indicates that the test is of no practical

value in recognizing the type of pneumococcal infection present in a given case.

3. *Precipitin test in the blood.*—The same may be said of this test as applied to the blood. In the four instances when it was made in fatal cases, the results were entirely negative.

GROSS PATHOLOGY.

The pathological features of the fatal cases of influenzal bronchopneumonia have been no less unusual or interesting than the clinical features. Of these unusual features the following are the most important and the most interesting.

1. *Generalized and interstitial emphysema.*—In the 152 cases coming to necropsy, emphysematous areas in the lung tissue were found in forty-seven. These areas varied in size from that of a markedly distended alveolus to a large emphysematous excavation formed by the rupture of numerous adjacent alveoli. Frequently, leading off from these emphysematous excavations, there were air streaks appearing as shiny, glasslike tubes. In their course they definitely followed the bloodvessels running to the hilus.

In five of these patients generalized emphysema developed. The relation between these two conditions has been previously reported (6). They were not peculiar to the epidemic as it affected the camp, and have been noted by other authors (5 and 7).

2. *Rupture of the rectus muscles.*—The rectus muscles were found ruptured on one or both sides in five cases. This rupture, when present, was associated with surrounding extravasation of blood and was always below the umbilicus. Several additional cases showed definite hemorrhage into the rectus muscles without rupture. In most instances it seemed that coughing was intimately associated with the rupture of the muscles. Owing to the fact, however, that the muscle tissue in each instance was pale and extremely friable, it is evident that the cough was but a secondary contributing factor, and that the primary factor was a degenerative process in the muscle tissue itself. This condition has also been noted by other observers (5).

3. *Pulmonary pathology.*—The pathological picture of the lungs, in the cases of bronchopneumonia, has been briefly mentioned. In most instances the anatomical picture was well marked and characteristic for bronchopneumonia. Scattered areas of involvement were usually encountered in several lobes. They appeared, on cut section, as irregular, raised, firm areas of varying color, corresponding to the stage of the process. Usually several stages of infection were found in each case. In many instances several lobular areas of consolidation had become coalescent, forming a large area, not markedly dissimilar to lobar pneumonia. Careful palpation usually revealed variations in density, and dissection showed marked variations in specific gravity. In this way it was possible to definitely show that all but six of the cases were bronchopneumonia. Three specimens, on section, showed a definite greenish tinge over the areas of consolidation, and culture revealed the presence of the *Streptococcus viridans* in each of these instances. The lungs were de-

scribed as edematous or congested in 105 cases. An excess of bloody, purulent and frothy fluid came away with the knife, on scraping. The lung tissue was described as friable in but five instances. Hemorrhagic areas resembling infarcts were noted in thirteen cases. Small abscesses or pus pockets were described in fifteen cases, being under the sternum in one case, interlobar in one case, in the lung tissue in eight cases, and multiple in five cases.

The peribronchial lymph nodes were definitely enlarged in 104 cases, being noted more frequently on the right side. They were described as softer than normal in fifteen cases. The bronchi contained an exudate in fifty-four instances, described as frothy in eleven cases, purulent in twenty-two, bloody in two, and taking the form of mucous or fibrinous casts in nineteen. The outer surface of the lungs, usually at the bases, showed exudate in thirty-one cases, described as purulent in five cases and fibrinous in twenty-six. The pleural cavity contained abnormal fluid in ninety-nine cases. In sixty-four the fluid was serous, serofibrinous, flocculent or bloody, and in thirty-five cases was described as seropurulent, fibrinopurulent, or purulent. The abnormal fluid was usually small in amount. The pathological picture of the lungs in our series resembles closely the pneumococcal type of pneumonia described by McCallum (10) and LeCount (11). In several cases the area of lung involvement seemed too slight to be considered the cause of death.

4. *Cardiac pathology.*—Pathological changes in cardiac muscle were extremely frequent. The most common evidence of muscular changes was the presence of dilatation of the right heart. Dilated right heart (thin, pale, and flabby walls, and enlargement of the tricuspid ring) was found at necropsy in 100 cases, 66.4 per cent. Dilatation of the left heart was much less frequent, being found in but twelve instances. Definite myocarditis was recognized anatomically in six cases. Pericarditis, although recognized clinically in but two cases, was encountered at necropsy in ten instances. Usually the pericarditis seemed due to direct extension from an adjacent septic pleurisy. Hemorrhages into the pericardium were encountered four times. Acute endocarditis was a very rare complication, being found but three times.

5. *Pathology of the liver.*—The most frequent changes encountered in the liver were enlargement, forty-three cases, and congestion, sixty-seven. Fatty degeneration was present in fifteen instances, cloudy swelling in eighteen, infarct in one, and acute hepatitis in two instances. An abscess was found in the liver in one instance. Jaundice was noted in twelve fatal cases.

6. *Pathology of the spleen.*—The spleen was enlarged in ninety cases, being markedly enlarged in twenty-six. In sixty-two cases it was described as soft or friable, and was classified as acute splenitis in thirty-five cases. Hemorrhagic areas were noted in five cases, and definite infarcts were found in two.

7. *Renal pathology.*—The kidneys presented the

usual features associated with acute infections. A large majority presented cloudy swelling, enlargement and congestion. Four cases showed hemorrhage into the kidney substance. Thirteen cases were classified as acute and four as chronic nephritis.

8. *Adrenal pathology.*—The adrenals were classified as normal in practically all cases. Three cases showed enlargement, and in two cases the adrenals were hemorrhagic.

J.—MICROSCOPIC PATHOLOGY.

Abundant material has been preserved and sectioned from all cases for microscopical study. The results of these findings are to be reported later by the laboratory service.

SUMMARY.

The work of the pneumonia unit of the United States Army Base Hospital, Camp Lewis, Washington, has been reviewed. The clinical findings in 407 cases of influenza, and the clinical and pathological findings in 152 fatal cases of influenzal bronchopneumonia have been presented.

The incidence of bronchopneumonia following influenza was higher at this hospital than at most of the other cantonment hospitals. The mortality from bronchopneumonia was low. The factors contributing to these statistics, we believe, were the efficiency of the pneumonia unit in the early diagnosis of suspected pneumonia with the early and frequent use of the x ray as an aid to diagnosis.

The clinical features noted at this camp were not unlike those seen elsewhere. Marked depression, general pains, and headache predominated in the influenza cases. Cough became the predominating symptom when bronchitis appeared. The pneumonia cases, on admission, presented a dry unproductive cough, associated with the usual symptoms of influenza, and on physical examination showed certain physical signs which we have found to be characteristic for bronchopneumonia encountered during this epidemic. These signs varied greatly, depending on the situation of the penumonic process in the lung substance and such factors as interstitial emphysema, fluid and pneumothorax.

The bacteriological findings encountered were not constant. The nonhemolytic type of streptococcus and Type IV pneumococcus were commonly found, either alone or combined, in sputum examinations. Pfeiffer's bacillus was found in only 17.2 per cent. of cases, and then always in association with the Type IV pneumococcus. Blood cultures were positive in but 2.25 per cent. of cases, the pneumococcus being found in twenty cases and the streptococcus in six cases. Animal inoculation from sputum specimens in the fatal cases showed Type IV pneumococcus and the nonhemolytic streptococcus as the predominating organisms. Likewise necropsy cultures showed a great preponderance of Type IV pneumococcus and the nonhemolytic type of streptococcus.

The pathological picture was very striking with widely disseminating bronchopneumonia, usually of both lower lobes, and frequently involving all lobes. The pneumonic process showed a marked tendency to coalescence simulating lobar involvement. The lungs were edematous and voluminous.

and showed interstitial emphysema in a large number of cases. Purulent and hemorrhagic exudate in the bronchi were frequent. Pleural exudates, simple effusions, and pericardial effusions were frequently encountered. Dilatation of the right heart was a common observation. Empyema and abscess formation were noted but were relatively rare. The lymph nodes showed enlargement in a majority of cases. There was a marked tendency to hemorrhage as noted in the recti muscles, in the lungs, spleen, kidneys, liver, lymph nodes, adrenals, and evidenced clinically by epistaxis and hemoptysis. Certain degenerative changes occurred in the muscles, particularly noted in the recti muscles where rupture frequently occurred. This degenerative process was also active in the lungs, weakening the supporting structures and readily permitting the extravasation of air from the alveoli into the interstitial tissues and to the mediastinum, thence to the subcutaneous tissue of the neck. The accessory sinuses were occasionally involved. The other changes noted pathologically were essentially those of an acute infection. A striking point often noted in fatal cases was a seemingly insufficient amount of pathological changes in the lung to account for the death.

CONCLUSIONS.

1. The epidemic of influenza and bronchopneumonia encountered at Camp Lewis was similar to that noted at other camps.
2. The clinical picture of the disease was characteristic and presented certain striking features.
3. The bacteriological finding varied greatly, with the Type IV pneumococcus and nonhemolytic type of streptococcus as the predominating organisms. Pfeiffer's bacillus and the hemolytic type of streptococcus were rarely found, and when present were always in association with these organisms.
4. The pathological picture was striking, and was unlike any type of pneumonia ordinarily seen in this country.
5. The etiology is obscure, although it would seem likely that a disease which presents such definite characteristics should have a definite causative agent. The rôle played by the organisms isolated is probably that of secondary invaders which by virtue of a lowered body resistance are capable of producing the peculiar pathological conditions.
6. The use of the x ray as an aid to the diagnosis of bronchopneumonia has been of great value, and should be more extensively used. Its value in the detecting of complications in the chest is emphasized.

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THE MEDICAL TREATMENT OF GALLBLADDER AFFECTIONS.

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Among the therapeutic problems confronting us, few are more trying than the proper management of certain pathological conditions affecting the gallbladder and ducts. Some surgeons seem to consider all disturbances in this location as confined to their domain and hold out no encouragement except through operative procedure. We must take into consideration, however, those sufferers who are not eligible for surgical relief; those with cardiorenal insufficiency, those with intercurrent affections which render them poor surgical risks, and those who for various reasons will not consent to the use of the knife. These patients surely have a claim on our attention.

Doctor Darrington, before the section in surgery of the Southern Medical Association, presented statistics showing that in cholecystotomy fifty per cent. of the patients were cured, forty per cent. were improved, and ten per cent. were not improved. Those who were improved were really far from well.

Symptoms.—Moynihan, Mayo, and many other careful observers are of the opinion that gallstones do not exist without producing symptoms. Parks asserts that the statement "may not cause symptoms" is an admission of inability to recognize incipient symptoms. Gallstones produce symptoms by irritation, migration, and obstruction. Pain and tenderness are the most important and constant symptoms of cholelithiasis. They are usually limited to the region of the gallbladder but sometimes radiate to the epigastrium, subscapular region, neck, shoulders, and arms. The most characteristic sign of gallbladder hypersensitiveness is inability of the patient to take a full inspiration when the physician's fingers are hooked deep beneath the right costal arch below the hepatic region. There is an impression even among medical men that when there is no jaundice there can be no gallstone disease. As long as a calculus remains in the gallbladder or the cystic duct, jaundice is not likely to appear.

Diagnosis.—The typical attack of hepatic colic is ushered in by symptoms sufficiently characteristic to render diagnosis easy. This is not so in cases of ill defined or attenuated cholelithiasis, concerning which it may be well to say a few words as these cases are often overlooked. Mignot refers to certain symptoms which, though usually regarded as gastralgia or dyspeptic accidents, are neither more nor less than signs of ill defined hepatic colic. The persistence of such disturbances and their resistance to ordinary measures of gastric therapeutics are manifestations of gallstones.

The subjects in question complain of frequent attacks of indigestion with distention of the stomach about three quarters of an hour after meals, flatulence, and intolerance for certain articles of food, such as apples, strong cheese, puddings, and pastry. Even eggs are badly borne by victims of cholelithiasis, probably because they raise the cholesterol content of the blood and increase the tendency to the production of concretions. This tendency should be warded off, Navarro explains, by keeping low the intake of fats and other substances likely to augment the cholesterolemia. Chaffard has reported the case of a woman with mild tuberculosis who was put on a diet of eleven eggs a day; in three months an attack of gallstone colic with jaundice developed. These facts should be borne in mind in cases of chronic kidney and gallstone disease, in gout, and in pregnancy.

We also find attacks of mild vomiting and eructations which relieve the patient, a feeling of weight and pain in the right flank and in the hepatic region, and attacks of slight shivering or gooseflesh. Another important symptom is the inability to breathe deeply because on contracting the diaphragm there is pain over the liver, consequent upon a painful sensation traveling down the phrenic nerve, which arrests respiration. These constitute premonitory manifestations of cholelithiasis. In other cases we find symptoms of biliary origin simulating gastropathies, from which they can be differentiated only by their resistance to the usual dyspepsia treatment.

In the presence of these various disturbances the practitioner may be puzzled because, while they may lead him to suspect gallstones, their significance is not well enough defined to enable him to conclude that such is the case or to advise proper treatment. In the least troublesome cases the hesitation is not of long duration. Gastralgia or epigastralgia soon makes its appearance. The patient has attacks of painful cramps from three to five hours after meals. The pain has been ascribed to gastric spasm but no conclusive evidence of this is forthcoming. Such attacks should direct our attention to the gallbladder. The gastralgia is soon followed by frank hepatic colic, then by cholecystitis, pericholecystitis, etc., which may culminate in cancerous degeneration.

It is not as easy as might be supposed to make out the tender spots in hepatic colic. The value of a painful spot depends greatly on the systematic, methodical manner in which it is searched for. According to G. A. Friedman (1), the presence of

tender spots on pressure points to the right of the spinal column posteriorly on a small area between the seventh and eleventh ribs, the patient reacting with pain to deep pressure, should not be confused with pain resulting from superficial pressure due to hyperesthesia of the skin. The tenderness elicited in such a manner should be compared with the corresponding areas on the left side. If the findings are constant upon repeated examination they possess diagnostic value. One must not, however, expect to find the pressure spots localized at all points within the described area. There may be one spot in the continuation of the scapula line, or the axillary line, or the posterior median line. According to Boas, who was the first to describe them, and according to Friedman, these pressure points are pathognomonic of pericholecystic adhesions with or without cholelithiasis.

The pain in hepatic colic is manifested in different ways, such as cramp, violent thoracic constriction, and painful distention. At the same time it must be borne in mind that two important symptoms are practically always present—nausea and vomiting.

Many diagnostic errors will be avoided by keeping in mind that much of the dyspepsia of pregnancy is from unrecognized gallstone disease, and that gastric disturbances in pregnancy should receive careful consideration and not be regarded merely as features of the pregnant state. The discovery of calculi in the feces is evidence of their previous existence. X rays taken and interpreted by expert roentgenologists are of paramount importance in the diagnosis of biliary calculi. Cole and George claim fifty to seventy-five per cent., and Lewis J. Friedman (2), asserts that with perfected technic, gallstones can be shown in about eighty-five per cent. of the cases. My own observations have been varied.

Important points in arriving at a diagnosis are: 1, Exact history, including record of previous attacks; 2, location of the tenderness and pain and the nature of the latter's radiating character; 3, thorough examination including inspection and palpation of the abdomen, especially of the gallbladder region; 4, exclusion of such pathological conditions as simulate gallstone disease: lead colic, renal colic, duodenal ulcer, chronic appendicitis, movable kidney, infection of the genital tract. Cholecystitis is frequently diagnosed appendicitis, and vice versa. Gallstone disease and appendicitis are frequently present in the same patient.

TREATMENT.

Acute stage.—When the stones wander from the gallbladder or bile ducts into the duodenum, there is generally acute pain and the sufferer demands relief. Anodynes and hot applications will ease the colic; hot baths and hot drinks—though vomited—will produce some relaxation of the parts and will facilitate passage of the stone. Suppositories of one grain of extract of belladonna or 1/150 grain of atropine by mouth, followed by fifteen drops of adrenalin 1:1,000, the latter repeated, if necessary, have given satisfaction and rendered unnecessary the use of morphine. There are postoperative cases in which adhesions have developed in the upper

right quadrant of the abdomen, with consequent mechanical impediments to the normal functioning of the biliary machinery. These patients complain most bitterly, though many of them look fairly well.

SPECIFIC TREATMENT.

Specific treatment can be given only in the presence of specific etiology. Vaccines constitute a specific form of therapy if the causative organism or organisms have been isolated. In every case culture of the bile should be carried out with the idea of preparing vaccines. The method described offers this possibility. The following points are of value in this work:

1. The patient with gallbladder or duct disease nearly always has foci of infection elsewhere. We therefore make cultures from the nose, throat, teeth, and urine. When a definite strain is located in the gallbladder we make a polyvalent vaccine consisting not merely of the organism isolated from the bile but of the same organism found elsewhere. A difference in virulence undoubtedly exists and this method contributes to the likelihood of an effective antigen.

2. Autogenous vaccines are preferable to stock vaccines, but the presence of organisms elsewhere which are persistent and suspicious in the mind of the clinician, should be borne in mind. I believe that the good results obtained have almost always been due to this precaution. Only rarely do we give the single organism.

3. Small doses, frequently repeated, are given, and increased until a definite reaction is obtained. Strong reactions are to be avoided, although some of the best results have been obtained following a strong reaction with active temperature rise and severe general reaction. In general, however, only those vaccines which give a reaction do good; but a dose should be used which provokes only a slight reaction. A strong reaction indicates that the next dose should be reduced. There is no rule as to the amount of vaccine. If about four steadily increasing injections are given without reaction, the vaccine treatment is discarded. In some cases there is a distinct reduction in the virulence or growth ability of the organism without their disappearance.

4. Occasionally definite organisms are found and vaccine is prepared and given, but in spite of reactions no improvement occurs.

SYMPTOMATIC TREATMENT.

When there is much bloating of the lower intestines, enemas containing a half teaspoonful of turpentine and not over a quart in volume can be given one to three times daily. The patient on arising should drink slowly ten to twelve ounces of hot water and should consume copious draughts of cool water during the day. In constipation or irregular stools a combination of sodium sulphate and sodium phosphate in hot water may be given. For gastric distress or flatulency a prescription containing some carminative and antifermentative may be given. Other drugs should be prescribed according to indications.

I also employ capsules containing sodium succinate, sodium glycocholate, sodium salicylate, and

sodium taurocholate. My favorite prescriptions contain salicylates and one or more of the bile salts. There are various other preparations put forward as sure cures for gallstones and their complications, but these after extensive trial have given no satisfaction.

DIETETIC TREATMENT.

In cholelithiasis a low cholesterol diet is to be aimed at. It seems that increased cholesterol in the circulation plays a part in gallstone formation. Under this head come yolk of eggs, peas, fatty meats, and all fried foods. I have used such methods, and while my colleagues do not agree with me I can point to innumerable persons who undoubtedly have been gallstone sufferers and who are free from symptoms. Apart from the cholesterol content, the diet should be low in protein and fats. Carbohydrates, fruits, and lean meats, the latter in small quantities, are advisable. Meals should be small and frequent and the general nutrition should be supported as far as possible.

LOCAL TREATMENT.

Hot applications to the epigastrium or the hepatic region are valuable. Hot compresses and fomentations should be ordered for the patient's use at home. Heat from a therapeutic (carbon) lamp followed by high frequency currents applied over the hepatic region and epigastrium have given satisfactory results.

Rehfuß, Jutte, and Palefsky employ transduodenal lavage by means of a duodenal tube, and in this way many cases of infected jaundice and duodenitis—some of them associated with cholecystitis and cholelithiasis—have been markedly improved or cured.

The foregoing suggestions are advanced from a practical standpoint as having been employed with satisfaction to me and comfort to my patients. While it is not contended that surgical interference will always be rendered unnecessary, amelioration of uncomfortable or even urgent symptoms may be confidently anticipated; moreover, decided improvement or even a cure will be brought about in a considerable number of cases.

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616 MADISON AVENUE.

Concerning Traumatic Herpes Corneæ.—Sidler-Huguenin (*Correspondenz-Blatt für Schweizer Aerzte*, April 26, 1919) is not of the opinion that herpes corneæ is ever of traumatic origin and presents a number of arguments to support his contention. He believes herpes of the cornea to be an endogenous affection and that some persons have a predisposition to the disease. The treatment recommended for herpes corneæ is rest in bed, a tight bandage, and moist heat until the lesion is well. He finds yellow ointment, which is so very useful in other lesions of the cornea, to be harmful in this. The prognosis is good provided secondary infection does not occur.

INTRATHORACIC GOITRE, SHOWING A
THYROTOXICOSIS.*BY JOSHUA H. LEINER, M. D.,
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A true intrathoracic goitre or struma profunda is one lying entirely within the thorax, i. e., when there is no visible sign whatsoever showing the condition of the gland. This occurs only in from six per cent. to seven per cent. of all goitres. There are some cervical goitres whose poles dip into the thorax, but these are not considered as belonging to the true intrathoracic type. Goitres become intrathoracic from a number of causes, the basis of which is gravity. There are many elements that act as an adjuvant to the natural action of gravity, such as respiration, coughing, the action of swallowing, arduous work requiring extension and flexion of the neck. In addition there is one cause not mentioned, that I have observed frequently, and that is its occurrence after labor, especially when it has been a difficult one, the elements entering into its production being, first, that with the cessation of ovarian function we have a corresponding hypertrophy of the thyroid, and, secondly, the action of straining during labor.

On account of a number of interesting features connected with this case I believe it to be worthy of clinical record. It may fix in the practitioner's mind the possibility of having a goitre, in a place where it is not visible or palpable, still producing symptoms of hyperthyroidism.

CASE I.—Russian, female, thirty-four years of age, married and has three children. Has had no difficulty in labor, no miscarriages, but the dates of her menstruation have always been irregular. At six years of age she had scarlet fever and states that at the age of twenty-nine had an attack of articular rheumatism. In the early part of 1916 she came under my observation for the first time. She showed a marked exophthalmos, a Von Graefe, her pulse was 95 and she had an enlarged thyroid which showed in her neck. A soft systolic murmur was heard at the apex. The patient complained very little of any subjective disturbances, with the exception of feeling somewhat nervous.

About one year later I was called to see her and found her lying in bed. Her entire chest wall was heaving and pulsating. Pulsations were visible in both carotids. At this time she showed objectively a markedly hypertrophied thyroid, marked exophthalmos, a pulse of 140, tremor and other symptoms. She showed therefore a clinical picture of goitre heart.

I did not see her again until the early part of January, 1919, that is one year later. During this interval, according to her statement, she had been treated for heart disease by a heart specialist.

Chief complaint.—Her complaint was marked asthenia, a choking sensation in the throat, difficulty in breathing, and cardiac palpitation. The

patient seemed well nourished, and of large build. Her hair was abundant, palms were moist, glands not palpable, no pigmentation, teeth normal. Her eyes showed some exophthalmos, but not so marked as previously. A double Von Graefe was present as well as a fine tremor of her fingers. Upon examining her neck I could not palpate the thyroid gland, but in its place there was a baggy mass of loose distended fatty tissue. Pulse when sitting was 108, blood pressure systolic 138 and diastolic eighty. Her heart showed a systolic murmur both at the apex and at the base. Percussion over the sternum revealed a small area of dullness. There was an impact against the finger, when it was hooked behind the episternal notch when the patient swallowed. However, I noticed that this could not be elicited after she had repeated the process several times.

Diagnosis.—A diagnosis was made of an intrathoracic goitre with symptoms of hyperthyroidism. A fluoroscopic examination was made by Dr. I. J. Landsman, and the diagnosis was confirmed. He reported the following: The fluoroscopic examination of the chest shows a shadow in the upper portion of the mediastinum. This shadow is distinct in outline, and rounded triangular in shape. The base of this triangle lies upwards. There is no displacement of the trachea or esophagus. These findings indicate the presence of a small substernal struma.

Treatment.—For her thyrotoxicosis, she was given Forchheimer's treatment of quinine hydrobromate and ergotin. Needless to state that her dietetic and hygienic surroundings were considered. She improved somewhat under this treatment but when it was stopped a relapse occurred, both subjectively and objectively. When she received ovarian extract some improvement was noticed in regard to her hot flushes and tremor. The condition of her blood pressure had improved slightly, systolic 135 and diastolic seventy-eight.

On February 7, 1919, she began to show a relapse, her pulse was 108. There was no change in the blood pressure. She also complained of a choking sensation and was extremely nervous and irritable. She also showed marked emotionalism. A Moëbius sign of the left eye was observed for the first time. She was then given five grains of thymus extract three times a day. On February 21, 1919, she reported feeling much better. She contracted influenza after this but continued the thymus treatment during the attack and no exacerbation of her thyrotoxic symptoms were observed.

Discussion.—This case confronts us with two problems, the hyperthyroid condition and the struma profunda. Regarding the Basedow's disease I feel that her toxic symptoms are on the whole objectively milder than they were three years ago when she first came under my observation. The thyrotoxin is burning itself out and if we can have the privilege of seeing her a number of years later we will find her in a state of hypothyroidism. Her improvement under thymus opotherapy recalls the fact that this was first used by Owen, who prescribed fresh thyroid gland for his patient; the butcher, however, had made a mistake and gave

*Read before the Section in Neurology and Psychiatry of the Academy of Medicine, March 11, 1919.

the patient thymus gland instead, with brilliant results. We know that in a case of thyroid Basedow the thymus likewise undergoes a hyperplasia. Although theoretically the feeding of this gland would be contraindicated, clinical experience teaches us otherwise.

Because of the hyperplasia of the thymus during the hyperactivity of the thyroid, Eppinger and Hess and other workers in this field of research have come to the conclusion that there is a distinct thymic Basedow. These workers further state that the Basedow symptoms of thymic origin are vagotonic in nature, whereas the thyroid Basedow stimulates the sympathetic system. In the vagotonic syndrome the tachycardia is moderate as well as the exophthalmos—the Von Graefe is marked but no Moëbius is seen. The blood shows also a marked eosinophilia. The gastrointestinal tract is hyperactive resulting in hyperacidity, vomiting, and diarrhea. An alimentary glycosuria accompanies this syndrome. On the other hand in the thyroid Basedow (sympathetic stimulation) we have a marked exophthalmos but no Von Graefe, and the Moëbius sign is present. No hyperactivity of the gastrointestinal tract is found.

This case as well as many others has never revealed to me a pure type such as these authors describe. They always appear to me as a mixed type showing partly vagotonic and sympathicotonic symptoms. This case showed a Moëbius sign for the first time in February, 1919. According to the theory advanced, has this patient a leaning toward a sympathicotonic state? This is not so, as she still shows a Von Graefe and her exophthalmos is even less marked than heretofore. The improvement which this patient is showing with thymus opotherapy can perhaps be explained upon the theory that in view of its vagotonic stimulating power it counteracts or neutralizes the biochemical products that are responsible for the symptoms arising from thyroid sympathicotonic stimulation.

This theory can be more fully appreciated when one bears in mind the lipid isolations of Iscovesco who holds that the thyroid although a single gland is in reality a combination of separate glands intimately combined and interwoven.

He states that he has separated different lipoids which he calls homostimulants because they have a selective action on the medullary centres and they are specific in nature. One of the lipoids called by him Thyrol A when injected hypodermically produces exophthalmos, tachycardia and swelling of the thyroid; another will produce cachexia if given in large quantities. Be that as it may, we have not reached the point of specific therapy.

Regarding the intrathoracic symptoms, the struma being of small size the pressure symptoms are therefore negligible. Surgical intervention should not be considered and in view of the fact that the thyrotoxic symptoms are also showing improvement I intend to let her continue the present course of treatment.

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THE PRACTICAL APPLICATION OF OUR KNOWLEDGE OF DISEASES AND DEFECTS OF SCHOOL CHILDREN.

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New York.

The conservation of health and vitality in childhood will result in greater strength and vigor in maturity, with an increased capacity and efficiency which will enable the adult to enjoy both a better and a longer life. School hygiene is therefore a subject of no mean importance, and a great responsibility is placed upon all the authorities to see that the school environment given the child in the formative period of his life will not create or accentuate existing impairments, but will be so favorable to his well being that defects will be corrected, and desirable mental-attitudes and physical habits will be established.

The school environment is most important. The child, especially the young child, is constantly receiving mental impressions which are stored away and out of which the character is in large measure formed, so that bright, clean, wholesome surroundings and a teacher with pleasant voice and manner have a permanent influence for good upon the pupil and influence him more than the lessons. The school building should be of rather imposing appearance but not too ornate, situated in a quiet clean street, and have a good exposure so that the sun can enter every classroom at some hour of the day.

The basement should be dry and well lighted, and the toilets well lighted and thoroughly ventilated. The toilets should be kept so clean and so well scrubbed that deodorants are not required. They should be automatically flushed, and so constructed as to permit complete inspection. The playground should be situated on the sunny side of the building and about thirty square feet allowed for each pupil. It is well to have an inspection of the school building two or three times a year in order to detect unsanitary conditions, when the cleanliness of the school, lighting, heating, ventilation, conditions of toilets, purity of water, and general sanitary conditions can be investigated and if found wanting can be repaired.

With regard to ventilation, whether an artificial or the natural system is used, provision should be made for an almost constant supply of fresh air, so that a complete change is effected every few minutes. Poor ventilation has a directly depressing effect, causing inattention, headache, drowsiness, and other symptoms. If the artificial system of ventilation is employed, the air should be obtained from a clean source, washed if necessary, and warmed if required before introduction to the classroom; and while the purity may be tested in a number of ways, the sense of smell remains one of the best guides, and if a stale musty odor is perceptible to a person coming in from the fresh air, attention to the ventilation is indicated. Because of the tendency to stagnation an effort should be made to keep the air in motion, or the depressing effect of the still atmosphere will soon become evident. We have abundant proof of the

value of fresh air in the remarkable improvement seen in the physical condition of children placed in fresh air classes.

The direct indirect system of heating with steam and hot water is preferred for schoolrooms, though the hot air furnace can be used if the air is kept moist. The temperature of the rooms should be maintained between 65° and 68° F.; the humidity should not be above 70° and there should be a difference of four or five degrees between the temperature and the humidity, which is easily determined by means of the sling psychrometer. A thermometer should be hung at the breathing line and hourly readings taken and recorded.

The cleanliness of the school must be above reproach, for cleanliness is a very important part of the child's education; beside dirt and dust have a distinctly depressing effect. Poorly ventilated, dusty rooms contain an enormous number of bacteria. Dry sweeping should not be allowed in schools. Dust may be kept down by means of damp sawdust or damp paper; there is now an oil-brush on the market containing a small tank of kerosene which is let down gradually as required. The vacuum cleaner is, however, probably superior even to the oilbrush. Oiling the floor is recommended. It has been found that an old floor that has been oiled is superior to a new floor not so treated. The untreated floor should be varnished once a year, the furniture washed every few weeks, and the windows cleaned several times a year. The school should be thoroughly swept and dusted every day. Feather dusters should be discarded and replaced by damp dusting cloths. Provision should be made for a supply of good drinking water, the use of the common drinking cup discontinued, and bubbling fountains installed. Individual paper towels are necessary, as well as automatic containers of liquid soap or soap powder. Toilet articles such as combs, brushes, toothbrushes, soap, washrags, etc., are to be kept for individual use, for infections are often spread when these are used in common.

In the primary grades, a minimum space of fifteen square feet is allowed for each pupil, though eighteen feet is better, and provision should be made for the admission of 2,000 cubic feet of air every hour. For senior classes from 2,500 to 3,000 cubic feet of air is necessary. The room should be oblong in shape. A room accommodating fifty pupils might be twenty-four feet long, twenty feet wide and thirteen feet high. Arrangements should be made for the light to come from the left, the top, or the back, never from the front. A glare is very trying and is to be avoided. That important article of furniture the blackboard is hung opposite the best light but not between windows on account of the glare; its color should be dull black and it should be possible for the pupils to see it easily from any part of the room, as well as to hear the teacher's voice from the furthest corner. The scholar's desk is an important piece of furniture, as a badly made desk may induce postural defects as well as myopia, and the defects so induced often become permanent. Books should be printed on good paper with dull surface,

the type should be clear and for young children the print should be large. The desk chair should be adjustable and provided with a back rest, the seat concave. A foot rest is not necessary. Desks and seats require adjustment about once a year. Every classroom should be provided with a cloakroom of its own to which access may be had either from hall or from classroom. The cloakroom should be well ventilated, lighted, and heated so that wet clothing may be dried and disagreeable odors removed. Some provision should always exist for drying wet clothing, for no child should be allowed to sit with damp shoes on or wet clothing of any kind.

Medical inspection in schools was established for the purpose of preventing and controlling contagious diseases, an object not yet achieved; and while the eruptive diseases are present at all times of the year, they prevail most extensively in the colder months when the windows are generally kept closed.

Opinions regarding the transmission of communicable diseases have been undergoing radical changes. Less attention is now given to the surroundings of the patient and the objects with which he comes in contact and more to the patient himself. Attention is also being directed to the conditions which propagate such diseases, for the resulting mortality is large while the complications and sequelæ frequently cause death. It has been said that nearly all contagious diseases leave their mark on the heart, lungs, kidneys, and other organs. It is not surprising, therefore, to find on physical examination that impairments have quite frequently resulted from some acute contagious disease, a fact which doubtless explains in part the large number of physical defectives found among the men drafted for military service. The premeditated exposure, therefore, of a child to a communicable disease on the ground that as he is bound to have it anyway the sooner he gets it over the better is indefensible from any point of view.

Measles, one of the commoner zymotic diseases and often regarded rather lightly, has a mortality of four per cent, which is rather higher than that of scarlet fever: beside it frequently leaves a legacy of a discharging ear and a predisposition to tuberculosis. Whooping cough, regarded by many as one of the almost negligible diseases of childhood, may be complicated by bronchopneumonia, hernia, hemorrhages, heart strain or nervous conditions.

The largest proportion of the acute contagious diseases occur between the ages of five and ten, while sixty-eight per cent. occur between birth and fifteen years. Special effort should therefore be made in those early susceptible years following the child's entrance to school to prevent exposure to contagion, for if this can be done the contagious disease may be evaded.

Transmissible diseases are often spread by means of carriers. Diseases like influenza, cerebrospinal meningitis, diphtheria, and pneumonia are not infrequently spread in this manner. There are also diseases so mild and atypical they are not recognized, and these are fruitful sources of contagion as no precautions whatever are taken against them.

Contact is, however, the commonest as well as the most certain mode of infection, and such infection may be spread by means of the pencil carried from the mouth of a sick child to a well one, by the common handkerchief, by kissing, by taking bites out of a piece of cake or fruit, or by the stick of candy passed from mouth to mouth; also by the common toothbrush, common drinking cup, common towel, and by soiled hands which carry germs to doorknobs and to mouths.

The teacher would do well to be on the lookout for the symptoms of eruptive disease, and her suspicions should be aroused by the following symptoms: Flushed face, rash, lassitude, nausea and vomiting, red watery eyes, discharge from nose, cough, scratching, aches and pains, sore throat, and headache. Discharges from the nose and throat in the incipient stage of an eruptive disease are almost certain to contain material of contagious character; while discharge from nose, throat, and glands of neck in convalescent cases are equally dangerous, and such individuals should be isolated until all discharges have ceased. Desquamation in the final stage of scarlet fever or measles is no longer considered contagious.

It is usual in most schools, and it is a good practice, for the teacher to inspect her class every morning, when she has an opportunity to detect suspicious cases which can be sent to the doctor or nurse without delay. The hearty and intelligent cooperation of the teacher is indispensable to the successful prevention and control of the communicable diseases of childhood.

Medical inspection in schools is no longer confined to the detection of contagious diseases. It has now developed into a very important branch of preventive medicine which aims by the detection and correction of physical impairments and the establishments of good hygienic conditions to secure full development of mind and body, thus aiding the child to reach a strong and vigorous maturity. In the attainment of this object a large share of the responsibility rests upon the teacher; if she is alert, observant, and interested in the welfare of her young charges it is very much easier for her to detect physical or mental impairments in a class of thirty to fifty pupils than for a nurse to do so who is endeavoring to care for the health of thousands.

It does not require a medical expert to detect most of the conditions which handicap the child's progress. There is such a close connection between the child's mental and physical condition that reward is certain if the child's handicaps can be removed and he can be placed in a good hygienic environment.

A long step in preventive medicine is taken when good health habits are established. In teaching these habits it is not necessary to explain why they are desirable unless the explanation is a very simple one. The child learns not by abstract reasoning but from object lessons, by imitation, and above all by doing again and again the thing required until the practice becomes a habit and is done instinctively without thought or effort.

While the young idea is being trained in the

proper direction it would be well for those who are caring for him to bear in mind that during rapid growth the power of mental application is probably diminished, that young growing children require a considerable amount of rest, intermittent exercise, fresh cool moving air, as well as good nutritious food; and that if the child's resistance can be increased there will be fewer colds, catarrhs, skin lesions and other affections to keep him away from school.

The interested teacher will of course be on the lookout for all abnormal conditions including those of nose, throat, eye, ear, and skin, as well as loss of weight, cough, puffiness of face, pallor, swelling of the glands of the neck, growing pains, frequent requests to leave the room. To these may be added nervous movements, restlessness, irritability, awkward jerky movements with tendency to let articles drop out of the hands, stammering, twitching, inattention, lack of concentration; such cases should be reported to the medical attendant. Other observations should be made on the child's general appearance, his color, animation, nutrition, development, deformities, posture, and on whether the physiological and chronological ages correspond.

The sensitive, emotional, or easily fatigued child suffering from insomnia is probably heading toward a nervous collapse and requires careful watching. The poorly nourished child has little resistance, is easily fatigued, is susceptible to infections, and is apt to suffer from catarrh, eruptions and other affections of the skin. Loss of muscular tone is indicated by cold blue hands, dry skin, blepharitis, dark circles under the eyes, as well as mental dullness. The intelligent child is usually well nourished, but in judging cases of nutrition it is well to bear in mind that girls are fatter than boys. Children with growing pains, anemia, and chorea often have weak hearts, and if such children get out of breath easily or show disinclination for exercise, they should receive immediate attention. Dilatation of the heart may occur in a debilitated child showing fatigue without apparent cause.

Long continued work should be avoided; exhaustion is often shown by the number of mistakes the child makes and by difficulty in holding his attention. Unusual excitability is often the first symptom of fatigue, and frequently repeated fatigue is a distinct handicap to the child.

The apparently inattentive child may suffer from impaired hearing, for about fifteen per cent. of children in our schools suffer in this way, and the defect is frequently due to nasal obstruction. Apparent dullness may be due to the presence of adenoids, which lead to poor lymphatic drainage in certain areas of the brain. Headache is quite common among school children and may be caused by the eyes, teeth, nasal obstruction, constipation, bad air, or malnutrition. Discharging ears should be treated at the earliest possible moment, and these pupils should have their hearing tested with the greatest care. The presence of adenoids is indicated by mouth breathing, nasal or thick wooden voice lacking resonance, mental dullness and frequent colds. Mouth breathing tends to produce

deformity of the jaws, and crooked and prominent teeth are also a symptom of adenoids. The habit of mouth breathing tends to persist even when the nasal obstruction causing it has been corrected; in such cases it is well to give breathing exercises so the child is required to breathe with his mouth closed.

A number of children suffer from defects of vision—probably as many as twenty-five per cent. The defect is easily discovered by means of Snellen's test types, or even by observation and questioning the child. The nurse or teacher is quite equal to making the test for hearing or vision.

Vision should be tested once a year, for overuse or strain may cause myopia which is often progressive as the child goes from class to class. The child suffering from strabismus or crossed eye should be fitted with glasses without delay. The deterioration in the unassisted eye is sometimes very rapid. Eyestrain is indicated by wrinkling the forehead and scowling when using the eyes for close work, as well as by red and granular lids, inattention, and backwardness in class. Blurring of the print, seeing double, and spots before the eyes are positive evidences of eyestrain.

We no longer overlook defects of teeth in young children. Even the primary teeth should be repaired and no foci of pus should be allowed to remain in the mouth. An aching tooth means a defective tooth. Every child should possess his own toothbrush and not allow any one else to use it. He should also be taught to use it properly with a circular or rotary motion instead of the horizontal or crosswise sweep, in order to get all around the teeth. He should also be shown how to use floss silk to remove particles of food from between the teeth and be taught to wash his teeth after each meal. The dentist should be visited frequently to have tartar removed and necessary repairs made.

But we must not overlook the fact that keeping the teeth clean is not enough. Teeth are composed largely of lime and phosphate and unless these materials are supplied in the child's food good teeth cannot be expected. Among the foods which supply these necessary salts are oatmeal, whole wheat bread, fresh milk, fruits and vegetables. If the child's food is composed largely of such foods as white bread, farina, tapioca, polished rice, and similar denatured foods, good teeth cannot be expected.

The child suffering from chorea should be sent home and not allowed to mingle with the other children, for imitative movements are apt to occur among other susceptible members of the class. The anemic child and the child predisposed to tuberculosis should be placed in separate fresh air classes where appropriate attention may be given.

As the home environment is always to be reckoned with, a knowledge of the conditions affecting the child there is essential. It would be well to know the quantity and quality of the food given at home, and especially for breakfast, which is notoriously the most inadequate meal of the day in many families where children are growing up. Sometimes no breakfast is eaten at all, for the child gets

up late and rushes off to school, and one might almost as well expect to set fire to a block of ice as expect to teach a hungry or half starved child anything he will remember. It would also be well to know how much time the child sleeps, if his windows are kept open, if there are bathing facilities in his home, and if he works after school hours, and if so, at what sort of work, and so on.

As the teacher is expected to know the history of each one of her pupils and to be familiar with the physical condition of all, it is suggested that she make a health survey of her charges and keep the record so obtained for reference as well as to enable her to know which ones should be referred without delay to the school physician. The teacher makes this survey at her own convenience. In doing so, an attempt is made to discover every detail of the child's life which might have any bearing on his individual condition. She notes his age, grade, illnesses, what he eats at meals, whether he drinks tea or coffee, if he sleeps with his windows open, if he uses a toothbrush, if he is subject to headache, if he sees what is written on the blackboard easily, if he has carache, if he tires easily, and so on. Then the individual observations are recorded, and note is made of general appearance, color, animation, posture, impairments, condition of eyes, ears, nose, throat, and skin, also if there is any discharge from nose or ears, character of voice, expression, and other important deviations. The teacher should not hesitate to make the ordinary tests for vision and hearing and she quickly learns to pick out probable cases of adenoids, to detect dental caries, malnutrition, anemia, nervous and other affections which handicap the child's progress. She is also less dependent on a busy doctor or nurse, and the child most needing attention can have it in a shorter time.

Another problem which presents itself to the teacher is the disposal of the abnormal and atypical child. This will include the incorrigible, the precocious, the quarrelsome, the morally defective, and the sexual pervert. Some of these abnormal children are very destructive as well as cruel. Defective children should of course be taught in a room entirely apart from the other children. According to Goddard from one to three per cent. of the children in our schools are defective. These are not always recognized, however, for many of them look well, but they lag behind. There are also some exceptional children some of whom are slow and dull but not necessarily lacking in judgment. In placing these misfit children the Binet scale is of some service, but a mechanical measuring rod cannot be relied upon to too great an extent in the appraisal of human values. All children should be closely and carefully observed before arriving at a decision. It has been said that children nine years of age retarded as much as two years, and children from nine to fifteen, retarded as much as three years, belong in State institutions for the feeble-minded. Other children such as the precocious and nervous may be greatly helped by training. A medical writer has suggested that the principles of mental hygiene be applied in public schools, that cases of mental instability and borderline cases, can

be reeducated, wholesome interests developed, regular habits of attention, and orderly association of ideas formed, resulting in improvement and ultimate cure. Such education would, of course, necessitate special training on the part of the teacher, besides demanding much of her thought and time.

School clinics are very helpful in getting the physically defective child under treatment. Here the child may be sent for diagnosis as well as special advice and treatment, and in the clinic the parent may be brought to see the necessity for medical care. Special arrangements can be made with dispensaries and hospitals for required assistance. Children requiring long continued treatment as in some skin diseases and running ears, can be treated until cured, and it has been found that such patients yield to treatment in a much shorter time than when cared for in the usual way.

The dental clinic also fills a long felt want, providing a ready means of dental treatment for children who cannot afford to pay a great deal, and as the correction of physical defects in childhood means a greater national health and strength the expense is justified.

The establishment of health habits is an exceedingly important part of the child's education. If cleanliness is to be inculcated their cleanliness should prevail everywhere in the school. No child is clean instinctively. Among the hygienic habits to be inculcated are: The avoidance of spitting, covering the mouth and nose when sneezing or coughing, to avoid putting coins, pencils, and similar articles in the mouth, not to swap bites of any kind of food, to use the individual drinking cup, to keep for separate and individual use hairbrushes, toothbrushes, combs, soap, and towels, to wash the hands before eating and after toilet attentions, not to moisten the fingers with saliva when turning over the pages of a book, to keep hands and finger nails clean at all times, and to bathe frequently. The esthetic advantage of external neatness should be urged, and commendation of neat attire, clean linen and polished shoes is not without reward.

The hygienic necessity of the elimination of waste material should also be taught, especially the elimination of intestinal wastes, for bad habits formed in childhood have a remote as well as a present evil effect.

The parent should be urged to take an active interest in the work that is being done for the child for much of the parents' responsibility seems at times to be shifted to other shoulders, yet it is and must remain fundamentally the parents'. Parental hindrances often proceed from ignorance; when the object striven for is explained the frank antagonist and obstructionist becomes a friend and ally. Visiting the homes of the parents thus becomes a means whereby a valuable educative influence can be introduced; it also cultivates a spirit of cooperation and good will, while it discloses the actual conditions to which the child is subjected when away from the school guardianship.

The teacher's own health is also an important part of school hygiene. The strain placed upon her is great, and she loses much of her effectiveness

when she is irritable, nervous, or ill. If she is suffering from nerve exhaustion or from tuberculosis she may injure her pupils materially. She should try to neutralize the dull routine of the day's work by variety and recreation after school hours. It is a good thing for her to cultivate interests outside her profession and to keep in touch with all the important questions of the day, for it must not be forgotten that she is the hub around which all these questions relating to the work of health supervision in the schools revolves.

TREATMENT OF JOINT, BONE, NERVE, AND MUSCLE INJURIES BY MECHANICAL MEANS.

BY JOSEPH C. SCAL, M. D.,
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The most common injuries demanding early mechanical treatment are acute and chronic sprains, fractures, dislocations, and joint and nerve injuries. Acute sprains should never be made light of as they sometimes result in disability lasting from six to eight weeks and leave quite a complicated condition. In small joints a sprain may be accompanied by a spicula of bone which has been detached and this is diagnosed only with aid of the x ray. In these cases the swelling and disability persist for a shorter or longer time depending on the treatment adopted.

In sprains the sooner mechanical treatment is instituted the more rapidly a normal condition can be obtained. After resting the injured part and applying cold applications for twenty-four hours, active and passive treatment, consisting of exercise and massage, should be begun. No pain accompanies proper movement; the presence of pain is an indication that the treatment should be stopped temporarily. This treatment can do no harm as there is no danger in exercising and using a sprained limb, but on the contrary it tends undoubtedly to restore function to muscles and joints, reduce swelling and edema, promote absorption, and prevent adhesions. A joint kept long at rest will become stiff, due to formation of adhesions, no matter how slight the injury may have been.

In cases where the relief of swelling is necessary during the first twenty-four hours a bandage applied firmly and evenly over a number of layers of absorbent cotton will obtain the desired result by preventing further extravasation and promoting absorption in from six to eight hours. This treatment should be used only in the first twenty-four hours after the injury. In cases where the confidence of the patient cannot be obtained so as to make him cooperate in exercising and using his limb, strapping is the next best thing. This is used most often in severe sprains of ankle joints with rupture of the lateral ligaments. In strapping the ankle the foot is everted and fixed to keep the injured leg relaxed and so permit healing. This will encourage the patient to walk and use the injured limb which recovers more speedily when in use.

Sprains of muscles.—Sprains of muscles result

from trauma or overwork. In either case limitation of movement should be obtained immediately whenever possible and this should be followed by graduated contractions, light massage, and exercise, which will quickly result in the alleviation of pain.

Fractures.—The ideal treatment of fractures consists in reduction and the x ray; prevention of recurrence by splintage; relief of pain and elimination of edema by early baking and gentle massage, and the prevention of adhesions and muscular wasting by graduated contractions. Early baking, light massage, and passive movement will shorten the period of disability and length of treatment and prevent aftereffects, provided good union and good apposition exist; will prevent adhesions and stiffness in joints; reduce atrophy of muscles to a minimum and prevent excessive callus. When a fracture is near a joint and kept immobilized in splints until union is firm, the joint undoubtedly will become stiff and muscular atrophy will result. In these cases it is advisable to remove the splints as early as possible and institute baking, massage, and the various mechanical movements.

In treating a Colles fracture after reduction and x ray apply molded splints and institute light massage in from three days to a week after the accident; or two weeks later if the pain persists. The splints are removed and the limb massaged above and below the site of fracture. Encourage the patient to keep moving his fingers. When recovery has progressed, one splint is removed permanently and the wrist baked and massaged and after a short time associated exercises commenced. The removal of the second splint depends entirely on the individual case, some fractures needing support longer than others.

Nerve injuries.—Especially in peripheral nerve injuries weakness and muscular wasting inevitably result and these are followed by paralysis and contractions. When nerves are cut the joints should be kept free and the nutrition of the muscles around them maintained so that the joint will be able to respond when the nerve recovers. If a severed nerve is sutured, which should always be done if possible, it must be held in a position which will produce as little tension as possible on the nerve or paralyzed muscle until its function is restored.

To provoke electrical muscular contractions use the galvanic current getting the contractions on the "making" and "breaking" of the current, five to ten milliamperes usually being sufficient. The faradic current is used to ascertain the return of excitability of a muscle and when recovery is advanced this current should be the form of stimulus used. It acts by stimulating muscular activity and improves the local circulation and nutrition of a part. The combined galvanic and faradic current are often found very useful.

Treatment by heat.—An affected limb should be kept warm and protected from cold. Heat also makes treatment by massage and electricity more effective and should be applied before and after such treatment when possible. The methods of heat applications are immersing the limb in hot running water, placing the limb in an electric

or gas baking apparatus and permitting it to remain there as long as the patient can comfortably bear it; or placing the limb under a therapeutic lamp with a metallic reflector until the limb is thoroughly reddened.

The heat in the apparatus can be brought up to almost 400° provided it is kept dry and well ventilated; twenty to thirty minutes is the usual time allowed for each treatment. In using water for heating a limb, the forcible hot douche as well as immersion in hot baths will be found practical. The use of the whirlpool, in which the water is circulated by a propeller or other mechanical means and in which air is introduced into the water so as to give rise to the formation of bubbles, is recommended when easily obtainable.

Once having seen a limb come out of a baker, preparatory to being massaged, appearing red, moist, and warm and the joint very movable, no one will massage such patients unless heat is applied first. Beside, the feeling of comfort enjoyed by the patients should encourage its use more frequently. Fixed joints and scarred tissue will become soft and relaxed and adhesions will break down and function will be restored.

Treatment by massage.—To be effective massage must be gentle at the beginning, all movements must be painless and should be applied daily from the early stage. This treatment will soon promote nutrition to the affected parts by improving the circulation to that part, alleviate pain, and reduce the swelling. Such treatment will also prevent contractions and limitation of movement to joints. The best results are obtained by light massage in acute cases where pain exists, using the gentle, stroking movements. In chronic cases where no pain exists heavy kneading, stroking, pinching and percussing movements should be employed. The use of friction with the finger tips or vibrating with the hand is recommended and a lubricant of some oily substance, such as petrolatum or liniment, adds to the comfort of both the patient and the masseur.

Treatment by exercise.—This is used for reeducating and redeveloping wasted muscles and consists of active exercises against resistance. For muscles of the foot and ankle, tiptoe exercises consisting of standing with heels together and toes apart and rising on the toes twelve times are advised. After a rest repeat the exercise with toes together and heels apart. Other exercises consist in raising the inner border of the foot (inversion exercises). For muscles of the knee rise on toes, fully flex the knees and assume a squatting position which must be held for a few seconds and original position assumed. For a shoulder joint with limited movement the so-called "wall climbing" exercise is advised. This consists in the patient standing with his face against a wall or door and putting the hand of the affected side as far up as he can, endeavoring to place the finger tips on the top. When he reaches the top he fixes the hand with other well hand and bending knees slightly uses his body weight to exert a pull on the joint. Intraarticular adhesions in a shoulder joint are shown by pain in a joint on its manipulation while,

if the pain should be free in any one movement extraarticular adhesions exist. Limitation in all directions of movement of shoulder joint denotes arthritis and the forcible breaking up of the adhesions under an anesthesia is indicated.

Treatment by Zander and other mechanical apparatus.—While these are of great aid in mechanical treatment they are really unnecessary. Beside their great cost, the large amount of space necessary and the difficulty in obtaining them now, prevents the average practitioner from using them. These machines, however, can easily be replaced by the ordinary pulley and weight exercises and with a little mechanical contrivance can be put to numerous exercises.

Treatment by graduated contractions.—This is ideal routine for muscular wasting and muscular insufficiency, and no matter how wasted a muscle is, provided the nerve supply is undisturbed, a contraction can be obtained. It should be given daily from ten to fifteen minutes, together, of course, with gentle massage. It is indicated principally in sprained muscles. The method of application is to place the limb at absolute rest, and apply the faradic current, the degree of contraction being controlled by the manipulator, and a group of muscles is stimulated while in absolute relaxation.

In conclusion I would say that a stiff and crippled part can be restored to functional utility only by getting rid of adhesions, restoring mobility and rebuilding the muscular tissue which has been permitted to waste and atrophy. I believe that with the early application of the forms of treatment outlined here we will see fewer stiff joints and wasted members than we have seen in the past.

235 LAFAYETTE STREET.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,
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SODOKU OR RAT BITE FEVER.

This disease has appeared sporadically for some time past on the Continent and particularly among the soldiers in France during the war.

PATHOLOGY.

Of the pathology little is known. In an autopsy reported by Miyake the writer merely states that there was a hyperemia of the spinal dura mater with an increase of the cerebrospinal fluid. Blake's description of the morbid changes found is much more complete, but the patient was sixty-seven years of age and in reading the autopsy report it seems that the endocarditis, the infarcts, and the hepatic and renal lesions were the result of old cardiovascular or cardiorenal lesions. For this reason it is hardly possible to consider them as directly due to sodoku.

The more recent reports of Kaneko and Okuda contain some pathological data. Hyperemia of the kidneys, liver, and meninges was marked, but here again the subject was old (seventy years), and it is difficult to decide to what extent the morbid changes were due to sodoku. Lesions of the lymph nodes examined after surgical removal or autopsy

are certainly frequent. They consist of follicular hyperplasia with hemorrhagic areas, cell necroses, and infiltration of leucocytes with a polymorphous nucleus. But of course these are the commonplace lesions of an inflammatory process.

The duration of incubation of the disease is variable, usually about a fortnight, but it may be from three or four days to three or four weeks or even more, according to some observers. The characteristic feature is a notable lapse of time between the receipt of the rat bite and the onset of the infectious phenomena. The onset is ordinarily brutal, the patient being seized when apparently in good health and after the bite has healed without any apparent cicatrix.

SYMPTOMS.

The clinical picture of sodoku when complete is characterized by a group of general phenomena and local symptoms which appear together or very shortly following one another. The local symptoms are constant and consist in a reappearance of inflammatory phenomena at the site of the bite, redness, tumefaction and pain. The area surrounding the bite becomes brilliant, hot, and as hard as leather, while frequently traces of the rat bite may be detected. This erythema may be accompanied by the appearance of vesicles and followed by more or less extensive necrotic lesions, lymphangitis with tumefaction of the corresponding lymph nodes, or even more infrequently of all the lymph nodes. Lymphangitis is a common symptom.

The principal general symptoms are fever accompanied by a generalized eruption. The temperature is characteristic; it often affects the remitting intermittent type. The temperature suddenly reaches 39° C. (102.1° F.) to 40° C. (104° F.) and remains at this level for a few days; it then drops to normal, only to go up again a few days later. Thus after the first paroxysm one or several paroxysms occur separated by intervals of apyrexia. It is not uncommon to find a temperature of 37.2° C. (99° F.) to 37.7° C. (100° F.) in the morning and 39° C. (102.1° F.) to 40° C. (104° F.) in the evening. The number, duration, and severity of the febrile paroxysms are variable factors. The periods of temperature and of apyrexia alternate unequally and in relation to each other.

The febrile paroxysms usually recur every third or fourth day but frequently the interval is longer. Sometimes the first paroxysm is the severest, but it may be mild while those that follow are severe. The total number of febrile paroxysms is usually more than two, but there is no fixed number. Thus rat bite fever is characterized by its cyclical evolution.

The eruption is as constant a symptom as the temperature and occurs along with it or very shortly after its onset. The eruption is usually generalized but when localized it occurs preferably in the neighborhood of the site of the rat bite. When the eruption is generalized the elements composing it are usually more numerous on the limbs.

The cutaneous surface presents spots, papules, and round or oval plaques slightly elevated and varying in size from a lentil to a silver quarter

dollar or even the palm of the hand. Their color is light rose or violet red; the latter tint may succeed the former. The elements are of firm consistency, do not disappear upon pressure, and are sometimes a bit painful to the touch. In Suveyor's case (the bite being on the patient's face) the eruption extended to the buccal and pharyngeal mucosæ which were red and edematous. The eruption becomes pale and disappears after a few days but recurs with the next febrile paroxysm.

In addition to these two principal symptomatic phenomena others of unequal importance may manifest themselves. The febrile attack is usually accompanied by chills, anorexia, and nausea, while the drop in temperature is followed by a more or less intense sudation. Nervous symptoms such as headache, muscular and joint pains, especially in the lower limbs and exaggeration of the tendinous reflexes are not uncommon. In exceptional cases delirium and coma may supervene, but these are rare.

Examination of the patient reveals no visceral lesion which can be attributed to the disease. The liver and spleen are not increased in size. The cardiovascular symptoms observed by Blake were probably not due to the disease.

The blood changes are not marked, involving only some of the elements. The number of red blood corpuscles and their globular value are normal or at most only slightly decreased except in serious cases, when the number of red blood corpuscles may fall below 4,000,000 or even lower. The changes arising in the red cells are uncommon and involve nothing but size, yet this anisocytosis is only of medium intensity and poikilocytosis is never met with.

The principal changes are those in the leucocytic count. Leucocytosis and eosinophilia have been noted by almost all writers on this subject. The leucocytosis is almost always moderate, 10,000 to 18,000, but it has been known to attain 19,000. The percentage of eosinophiles varies from seven to eleven per cent. It first appears and increases during the eruption so that a number of observers are of the opinion that this phenomenon is related to the appearance of the eruption.

In all instances where the Wassermann has been made the result was negative except in one patient who was known to have had syphilis. The serum of convalescent patients contains specific antibodies for the spirocheta of sodoku. In only one case was albumin present in the urine and the patient presented other symptoms of nephritis.

Sodoku, as I have pointed out, has a cyclical evolution and is a disease of febrile recrudescences. The febrile paroxysms last in most cases from three to four days but their number varies. Perhaps the mean number may be better put at from four to five days. The complete evolution of the affection covers from one to two months but may be more, and it has been known to last for several years.

PROGNOSIS.

The usual outcome of the disease is recovery—at least this has been the rule in the cases reported in

Europe. The paroxysms diminish in frequency, the local symptoms disappear, the general health returns to a normal standard, and the patient almost always recovers without complications. In one instance, however, an exophthalmia developed in a few hours (negative Wassermann) without any appreciable cause. On the right side this morbid phenomenon was very pronounced, with vascular injection and edema of the conjunctivæ, but there were no disturbances of vision and the patient made an excellent recovery. The relationship of the exophthalmos with sodoku is possible but not sufficiently demonstrated.

Japanese writers give a more serious prognosis. Hata's statistics show a mortality of ten per cent., while two new cases in which death occurred have been reported recently by Kaneko and Okuda (*Journal of Experimental Medicine*, 1917). In fatal cases death is preceded by pulmonary symptoms and particularly by local and general edema, evidences of nephritis, delirium, somnolence and coma. These symptoms are probably the result of secondary infections in subjects who already have organic defects and are therefore only distantly related to sodoku.

TYPES OF RAT BITE FEVER.

Some writers have attempted to make a distinction as to the clinical types of the disease. It seems premature to undertake a description of clinical types in the case of an affection, or rather a syndrome, the complete symptomatological expression of which is as yet imperfectly established. Nevertheless it is only proper to indicate the four types described by Misoguchi and Miyake.

Misoguchi makes the following classification: 1, A type with predominance of the local symptoms of infection, gangrene, edema of the wound (bite) and an eruption either localized in the neighborhood of the bite or generalized; 2, a febrile type of the intermittent variety undergoing an evolution in irregular febrile paroxysms combined with a generalized exanthema; 3, a painful type beginning with pain and following an evolution similar to the preceding type; 4, the nervous type with a predominance of motor and sensory disturbances (parasthesia, paresis, diminution of the reflexes) and an exanthema.

Miyake describes three forms: 1, A febrile type with an exanthema (the most common); 2, an apyretic type with marked nervous disturbances; 3, an abortive type composed of one or two febrile paroxysms without an exanthema.

TREATMENT.

The local treatment is that of edema in general and need not be discussed. The general treatment is still under study, but experimental work on animals has shown that salvarsan acts rapidly on the supposed specific spirocheta of sodoku. Opinions vary as to the effectiveness of this arsenical preparation as applied to man; but it seems unquestionable that the drug has only a momentary action on the parasite and that there exists as yet no specific treatment for the disease. In one case the exhibition of atoxyl completely failed.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CXCVI.—How do you treat infected wounds? (Closed.)

CXCVII.—How do you treat fracture of the femur? (Answers due not later than August 15th.)

CXCVIII.—What is the proper equipment for a rural physician? (Answers due not later than September 15th.)

CXCIX.—How would you make a diagnosis of pregnancy? (Answers due not later than October 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication.

The prize of \$25 for the best answer to Question CXCI has been awarded to Dr. Louis Neuwelt, of New York, whose paper appears below.*

PRIZE QUESTION CXCVI.

THE TREATMENT OF BURNS.

By LOUIS NEUWELT, M. D.,
New York.

Burns are usually described as being of three degrees, depending on the intensity and prolonged action of the heat. In the first degree, the skin is reddened, hot and swollen; in the second, vesicles or bullæ are formed, and in the third there is complete destruction of the skin with more or less injury to the underlying tissues.

First degree or slight burns should be plunged immediately into cold or ice water for about twenty or thirty minutes to relieve the pain, after which the permanent dressing is applied. If the burned area and surrounding skin have been thoroughly disinfected, the old fashioned remedy, sterile carron oil, petrolatum or boracic acid ointment may be applied on sterile gauze cut into strips two or three inches wide and of suitable length. These are held in place by a layer of cotton and a bandage. Cotton should never be placed directly on the wound. In an emergency any oily substance such as sweet oil or castor oil may be used. If surgical sterility cannot be maintained, dust the part thickly with flour or cornstarch, bicarbonate of soda, boracic acid, or dermatol and cover it with gauze and a bandage.

In second degree burns, blisters are opened with a sterile needle, the skin not being removed, and the fluid drained off. Picric acid solution one to two per cent. on sterile gauze is applied covered with cotton and a bandage, and left undisturbed for two or three days. The second dressing may be left until healing has occurred. The advantage here is the infrequent dressing. In removing the dressing, the gauze should be moistened with sterile normal saline solution to prevent bleeding and destruction of the granulation tissue. If suppuration occurs, remove the loose and macerated skin, irrigate the wound with sterile normal saline solution followed by hydrogen peroxide solution, mop it dry with sterile gauze and reapply the picric acid dressing. This process may be repeated until healing has occurred. Symptoms of intoxication from picric acid must be looked for when treating extensive burns.

In third degree burns, severe local and constitutional symptoms may be encountered and require treatment. The indications are the relief of pain, combating the shock, and the prevention and infection. Here rest in bed is essential. The pain and shock are treated together by frequent but small hypodermic doses of morphine and subcutaneous or intravenous injections of sterile normal saline solution with adrenalin (a dram to the pint). Hot water bottles and blankets should be applied.

The clothing should be removed very carefully to prevent further removal of skin and infection and should be cut away rather than have the patient undressed. Adherent foreign substances, as clothing and tar, should be left until they loosen spontaneously. After the shock has passed, if there is a possibility of infection aseptic methods must be employed. If the dressings are very painful general anesthesia may be employed. Scrub the surrounding healthy skin with a wad of sterile gauze using soap and water followed by alcohol and a bichloride solution. Irrigate the wound with sterile normal saline solution removing all foreign matter. Cover wound with strips of gauze spread with sterile boracic acid ointment as described for the treatment of first degree burns. The dressing is removed once daily and the wound irrigated with sterile normal saline solution and a fresh dressing applied. The frequency of dressings here depends on the amount of pain or infection.

In extensive burns and where skilled nursing is available the complete submergence of the part in a normal saline solution with a temperature of 105° to 110° F. is advisable. In burns of the fingers and toes dressings should be kept between the burned members during the healing process to prevent webbing. When the burns are near joints and about the neck appropriate splints and extension must be applied to avoid deformities. If granulation proceeds slowly, stimulation with a mild silver nitrate solution helps. Exuberant granulations should be cut down, and flabby granulations require pressure. If healing is slow in an extensive burn skin grafting should be done as soon as possible after the wound is rendered aseptic.

The body emunctories must be kept active by attention to the bowels, kidneys, and bladder. The

diet should be light and nutritious, consisting preferably of soup, milk, eggs and cereals. Tonics and stimulants are indicated. If the urine is highly colored and cloudy, give potassium citrate (twenty grains) in water three times daily with sweet spirits of nitre (thirty minims).

In clean granulating wounds, one of the various paraffin preparations on the market should be used. The wound, after irrigation with normal saline solution, is thoroughly dried by fanning or tapping it with sterile dry gauze. The wound and surrounding skin are then painted with a sterile brush with the melted paraffin, over which is laid a thin layer of cotton. The whole region is then painted with another layer of melted paraffin. This method is clean, efficient and cheap. The dressing is changed at first daily and later every second or third day.

40 ST. NICHOLAS PLACE.

Dr. Melville A. Hays, of New York, says:

Burns are usually placed in one of three classes according to the extent of the damage done, viz.:

1. Those producing only a reddening of the skin without the formation of vesicles.
2. Those in which the inflammation of the skin is also accompanied by the formation of vesicles.
3. Those in which there is destruction of the tissue (partial or complete) with the formation of more or less deep sloughs.

The treatment depends entirely on the amount of damage done to the tissue. Burns of the first degree will be promptly relieved by the application of compresses wet with saturated solution of sodium bicarbonate, or boric acid; these compresses must be kept wet by the frequent addition of the solution. Pain is relieved and the inflammation quickly subsides.

In burns of the second degree, all vesicles must be carefully opened under aseptic precautions. The part is then dressed with compresses wet with a saturated solution of boric acid until the injured skin peels off, after which a dressing of boric acid and zinc stearate in liquid petrolatum is substituted to prevent the gauze from sticking to the abraded surfaces; when the wound is nearly dry, a dusting powder of equal parts of boric acid and zinc stearate is substituted.

In burns of the third degree, warm compresses of saturated solution of boric acid, or equal parts of solution of aluminum acetate and water, are applied until the sloughs can be loosened and removed. The oil dressing previously described is then substituted and renewed at least twice daily, the entire part being encased in a thick layer of absorbent cotton to maintain the temperature of the part. Burns of this degree often require skin grafting owing to the extensive destruction of the tissue and are nearly always accompanied by severe constitutional symptoms; shock is combated by stimulants, warmth to the body, and liquid nourishment, while other indications (renal, pulmonary, etc.) must be met as they arise. When there is extensive loss of tissue, it is often necessary to use splints or other fixation dressings to overcome contraction and prevent deformity.

124 AUDUBON AVENUE.

Abstracts and Reviews.

INFLUENZA CROUP.*

By HENRY L. LYNNAH, M. D.,
New York City.

A study of the laryngeal and tracheobronchial pictures in a number of influenza cases at the Willard Parker Hospital revealed four distinct types of respiratory involvement according to the location of the lesion.

1. *Laryngeal*.—This type of influenza croup is clinically indistinguishable from diphtheritic croup unless a direct examination is made. The gradual progressive inspiratory and expiratory dyspnea frequently present in diphtheritic was absent in influenza croup. At times there was a persistent recurrent glottic spasm very distressing to the patient, producing a marked inspiratory crowing sound and an expiratory croupy cough when the subglottic region was involved. The larynx and trachea were extremely irritable. The recurrent whoop and paroxysmal cough might even suggest pertussis. When the stenosis was marked physical examination might show that no air entered the chest, and the airway must be made free by the introduction of an intubation tube or bronchoscope.

2. *Tracheobronchial*.—These cases might show tracheobronchitis for several days before definite signs of respiratory difficulty developed. The voice might be normal in spite of dangerous obstructive symptoms. The larynx usually appeared normal, but when a tracheoscope or bronchoscope was introduced it was seen to be fiery red and edematous. The trachea and bronchi might present a stippled appearance with scattered adherent plaques of tenacious, blood streaked mucus. Intubation might be necessary to save life.

3. *Bronchopulmonary or asthmatic*.—A violent onset might usher in the attack with the premonitory symptoms of laryngotracheobronchitis. The patient might be stricken while asleep with a fulminating influenza easily mistakable for some form of food anaphylaxis. The lungs were engorged with blood and respiration was extremely difficult. Violent glottic spasm might add to the gravity of the picture. There was a short, stridulous inspiration and a prolonged wheezing expiration audible at some distance. The bronchoscope might reveal congested bronchi comparatively free from secretion. When secretion was profuse it afforded relief if aspirated bronchoscopically. Dr. Jesse Bullowa and the writer did not believe that marked spasm of the bronchi was the cause of the attack but that it was probably due to the enormous engorgement of the lung producing inelasticity. If the condition became extreme interstitial or tissue emphysema might result. The absence of cough even after the introduction of the bronchoscope was noteworthy. The difficulty was expiratory. Adrenal hypodermatically might afford relief.

4. *Pneumonic*.—Lobar or bronchopneumonic types of dyspnea with the characteristic signs of air hunger.

*Abstract of a paper read before the Section in Laryngology, Rhinology, and Otology, American Medical Association, June 13, 1919.

Editorial Notes and Comments

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A WORD ON THE EARLY HISTORY OF MESMERISM IN ENGLAND.

With the advent of the Restoration, mesmerism returned to France; at the same time it spread rapidly in other European countries, especially those in the north of the continent. It attracted but little attention in England, notwithstanding the sporadic labors of a few professional lecturers, until 1829 when Doctor Chenevix, a chemist and a renowned mineralogist, presented it to large and representative audiences. He died in the following year, but not before the medical profession had displayed considerable hostility toward him.

Among his audience was Dr. John Elliotson, a man of considerable mark, sometime president of the Medico-Chirurgical Society. Censor and lecturer to the College of Physicians and professor at University College, London, Elliotson's private practice was considerable, but he was not popular with his professional brethren. He did not suffer fools gladly, nor was he careful to combine *suaviter in modo* with his habitual *fortiter in re*. Moreover, he seemed to many of them a setter forth of strange gods. He was the first in England to use the stethoscope, and he introduced many drugs hitherto unknown to the medical profession.

Elliotson proceeded to give public demonstrations of mesmerism in the University College Hospital, and although his high standing in the medical profession ensured at first a respectful hearing for

his theories, his colleagues on the staff held aloof from his experiments. Then, one of his mesmeric subjects was accused of imposture; and the *maxim ab uno disce omnes* was freely, nay joyously applied. He became involved in a quarrel with the authorities of the hospital, the medical journals turned against him, and his private practice fell away.

It should be noted that though personally believing in the higher phenomena of mesmerism, he based its claims to recognition by the medical profession on its preventing pain during the most severe surgical operations, and on its curing many affections which had defied all other therapeutic measures. He died in 1868, forgotten and almost unknown. After severing his connection with University College Hospital, Elliotson published a medical magazine called *The Zoist*, a frequent contributor to which was Dr. James Esdaile, a surgeon in the service of the East India Company, who, by the help of mesmerism, had performed hundreds of painless operations. A dead set was made against him by the medical profession in India and by the Indian medical press; nor did he fare better when, his term of service having expired, he returned to England in 1851. Prof. J. G. Simpson, of Edinburgh, advised him "to let his proceedings be known in England," but the medical journals boycotted him. He died in 1859.

The founder in England of what is now known as hypnotism was Dr. James Braid, who practised in Manchester, where he was highly esteemed as a medical practitioner. He had been led to take an interest in mesmerism by attending the lectures and demonstrations of M. Le Fontaine, who visited England in 1841. But he viewed it merely as an adjunct to other therapeutic measures, disregarding its higher phenomena. To emphasize this disregard and at the same time to disarm his medical brethren, he invented the name of hypnotism for the magnetic sleep, which he employed largely and effectively in surgical cases and in the treatment of various serious affections. His researches were doubtless the cause of the hypnotic movement which made very considerable progress in France. He died in 1860. After his death, hypnotism seems to have almost ceased in England for a few years until it was revived by a number of the medical profession, conspicuous among them being the late Doctor Bramwell. Frequent use for suggestion has been found during the war in the treatment of disordered mental conditions among the soldiers.

RELATION BETWEEN THEORY AND TREATMENT OF IVY POISONING.

The variance which often exists between theory and practice in medicine is admirably exemplified in the case of the suggestions made by laboratory workers for the treatment of ivy poisoning and the actual results obtained by the use of the means of cure suggested. A few years ago the chemists told us very confidently that by applying alcohol liberally to the affected part the poison would be promptly dissolved and removed. A bland ointment was all that was needed for a prompt return to normal. Those who have tried this formula have usually been disappointed in the results obtained. Quite recently a distinguished chemist appeared before a gathering of physicians, and, with the utmost confidence, announced that the cure of ivy poison consisted in the application of a saturated solution of potassium permanganate to the affected part. The reaction between this chemical and the toxin from the plant brought about complete neutralization, and the poisoning ended at once. Much to his disgust, a clinician of undoubted ability remarked that he had tried the treatment thoroughly in three cases without any better results than he had had from the older methods.

If the person to be poisoned by the three leafed vine were to carry a bottle of alcohol or of potassium permanganate about with him, and were to follow his contact with the plant with an immediate sponging with the chemical, possibly the reaction would work out according to the findings of the laboratory worker. After the absorption of the toxin, however, it is quite another and more complicated matter, and this is evidenced by the outcome of the treatment. Possibly the use of potassium permanganate may have more effect in hastening recovery from the poisoning, but as a speedy cure we fear it is not more of a success than most cures.

It is a pity that chemists and other laboratory workers who have to do with medical research have not had both a theoretical and a practical medical schooling. It would have a great deal of waste energy and of premature discovery. In the treatment of ivy poisoning, as in all other medical matters, prevention is better and any amount surer than cure. Recent careful study of the matter seems to show (we hope our researchers are not again premature) that the toxin from the ivy is never volatile and that the skin cannot be affected at a distance from the vine, as has been asserted. This being the case, the prevention will be easy enough, provided the person will inform himself as to the appearance and habitat of the plant.

THE CANADIAN ARMY MEDICAL CORPS.

During the progress of the Great War there was from time to time bitter and acrimonious criticism of the administration of the Canadian Army Medical Services, particularly as to that branch of the service established in England. In no way did this criticism apply to the doctors and nurses actually engaged in the care of the sick and wounded. It became acute and enlivened when the Militia Department at Ottawa appointed Dr. Herbert A. Bruce to make an extended and thorough investigation into the whole hospital situation in England as affecting Canadian troops. Colonel Bruce associated with him a very competent board of inquiry and made a searching investigation into various matters which resulted in a comprehensive report and many recommendations for reform. This set the heather on fire.

The report was most damaging to the competency of administration officers and the story goes that they enlisted the sympathy and cooperation of social elements with the powers higher up. Thus politics was called in and the whole service soon became a seething cauldron, which boiled over and spilled the broth all over Canada. The somewhat anomalous step was then taken of appointing a special court of investigation to investigate the investigator, Colonel Bruce, who had for the time being been given the high sounding title of Inspector General, though apparently not with plenipotentiary powers: hence the Baprie Commission and the Baprie report, which was adverse to the findings of Colonel Bruce. To this Colonel Bruce made rejoinder. However, for some reason best known to the Canadian Government, the second report of Colonel Bruce has never been made public, until, failing to have justice accorded him, Doctor Bruce, on his return, finally decided to have published in book form, under the title, *Politics and the C. A. M. C.*, a complete history of his official connection with the C. A. M. C., and the correspondence he had with officialdom on the entire matter.

The public of Canada feel that Doctor Bruce has not received at the hands of the Government that British fair play which has always been the pride, glory, tradition, and birthright of the British race; for not only was he deprived of his special appointment, but he appears to have been actually threatened with arrest by the Canadian High Commissioner if attempts were made to leave England to return to Canada. Colonel Bruce at that time had the satisfaction, however, of not resting under any unseemly reproach for long, for the Imperial Army sought his services on the western

front and he was appointed consulting surgeon to the R. A. M. C. Thus he has lived to see practically all the recommendations in his original report carried out and brought into effect by the C. A. M. C.

But the matter is not resting there. At the annual meeting of the Canadian Medical Association recently in Quebec, which was attended by prominent medical men from every part of Canada, Colonel Bruce proposed and Colonel George E. Armstrong of Montreal, seconded a resolution which was unanimously adopted by that conference. This resolution had reference to the C. A. M. C., and pointed out that although the war is over, a permanent army medical organization must be maintained. This resolution calls for a course in each Canadian medical college on the medical history of the war, military sanitation, military medical organization and other vital subjects; calls for a research fellowship to be established by the militia department in each medical college in Canada for graduates who show special aptitude for such work; and calls for the rate of pay in the C. A. M. C. to be placed on a par with that prevailing in the R. A. M. C. A special committee was appointed by the Canadian Medical Association to endeavor to bring about constructive effort to establish the whole system of administration in accordance with modern scientific developments.

CLINICS AND THEIR CLIENTELE.

The attitude of patrons toward clinics varies somewhat in different countries. It would be well, therefore, for the physician to consider the point of view of the patient attending a free clinic and at times it would not be amiss for him to stop and consider his own mental reaction to the patient. The mental attitude toward clinics which is held by the patients frequently has a direct influence on the condition for which relief is sought. This can be accentuated or modified by the physician, and better results will be secured by a bit of kindness and consideration shown at the proper time.

In reading *Mury, Mary*, that charming story of James Stephens, which speaks from the heart of lowly people, we find: "It did not occur to either of them to send for a doctor. Doctors in such cases are seldom sent for, seldom even thought of. One falls sick according to some severely definite, implacable law with which it is foolish to quarrel, and one gets well again for no other reason than that it is impossible to be sick forever. As the night struggles slowly into day, so sickness climbs stealthily into health, and Nature has a system of medicining her ailments which might be thwarted

by the ministrations of a mere doctor. Doctors also expect payment for their services—an expectation so wildly beyond the range of common sense as to be ludicrous. Those who can scarcely fee a baker when they are in health can certainly not remunerate a physician when they are ill."

Doctors also expect payment for their services. That then is the crux of the entire matter, the attitude of many of the needy and less well informed bear toward medical men, and it is to be regretted that at times they have been helped to this belief. They feel that medical attention is only a luxury at the command of the more prosperous. How are they to know that the physician is responsible for their restoration to good health—is responsible for the health of every individual—for the health of the community?

The argument has been advanced by agitators for compulsory health insurance that the laboring man who is out of work is obliged to go to a clinic where he is no longer accorded treatment befitting a human being. Surely this indictment cannot be allowed to stand unchallenged. This condition does not exist in all clinics, it is true, but there are clinics where poor people are jostled about, made to wait an entire day, and then told they must return the following day, thereby losing time from work.

In clinics of this type the physicians are not giving the best they have and not getting the best scientific results. For here in the great clinics the advantages should be for both patient and physician; here cases may be studied in groups and valuable data secured. The practice derived from these large groups is invaluable, but it can be obtained and the patients at the same time treated with consideration and thoroughness. The most that can be said for the free clinic is that here in America the patrons receive better care than in any other country—but there is still room for improvement. It would not take a great deal of attention to put them above the criticism of the most fastidious.

SOME REMARKS CONCERNING CANCER.

It is often laid down as an axiom that cancer cannot be treated successfully unless a correct diagnosis has been made in the early stages of the disease. This statement is obviously true. On the other hand, the fact that cancer occurring in certain parts of the body is, as a rule, most difficult, almost impossible, to diagnose correctly at first, is not taken sufficiently into consideration. Lawson Tait, who was as greatly famous or notorious for upsetting medical precedents and for blurting out unpalatable truths as he was renowned for bold

and skillful surgery, said that accurate diagnosis in the abdomen was not possible, and that only the ignorant asserted that it was so, while only fools attempted it. Perhaps this was a somewhat blunt way of putting the situation, but it may be stated of internal cancer that its early diagnosis is, generally speaking, practically impossible. Therefore, the physician or surgeon is frequently on the horns of a dilemma. If cancer is not recognized soon enough it cannot be cured, and the obstacles in the path of early clinical recognition are so bristling and numerous as to be to all intents and purposes insuperable. It is patent, consequently, that a clinician has no right to state definitely on purely bedside evidence that a patient is not suffering from cancer.

The pathologist must be called in to confirm or deny the suspicion of cancer and the pathologist himself must be a responsible being and an expert at his work. Moreover, the pathologist cannot be expected to make bricks without straw and here again another difficulty crops up. It is dangerous to interfere with a cancer and rash in the extreme to excise one for the purpose of making a thorough pathological examination. Thus, taking it all in all, the problem of the diagnosis of early cancer is hard of solution even when the growth is superficial or easy to reach. Clinically it may be suspected, and in certain regions, such as the tongue and the vulva, the condition termed leucoplakia can be recognized by sight and touch. This condition is probably almost always followed by cancer, but it must be borne in mind that there are many other lesions presumably innocent which when put to the test must be regarded with grave suspicion. Furthermore, histologically, there is frequently no hard and fast line between innocency and malignancy. The diagnosis of early cancer is beset with pitfalls.

SPECIALIZATION.

This is said to be the age of specialization, and judging from the number of physicians who are limiting their practice to eye and ear, nose and throat, genitourinary disorders, gastrointestinal disorders, and even psychoanalysis—among a great many other headings—one is inclined to agree.

A similar situation exists in the dental profession. We are beginning to have exodontists, orthodontists, prosthodontists, and destroyodontists in increasing numbers. Perhaps the army experience is to a degree responsible for this sudden outburst of intellectual achievement. Was it not with a certain amount of forethought that many of our physicians joined the service and, determined to make the best of a bad bargain, enlisted in the particular specialty that would "go best" in their home towns? And indeed there are reasons. To begin with, one's

income is sure to be increased and one's actual work decreased, to say nothing of the added reputation.

To be sure, many conditions require special knowledge and skill for a proper diagnosis, but is it not logical to suppose, for instance, that only patients with nose and throat troubles would seek relief from nose and throat specialists? Then why should it be necessary for the specialist to have any knowledge of things other than noses and throats?

Are we to assume this attitude with regard to specialization, or shall we rather specialize in medicine in its entirety and its relation to human welfare, limiting our actual work to the field of our special skill and interests? Would our work not then tend to become something bigger than the mere practice of medicine or dentistry? Would it not have a real influence upon the political and economic welfare of the world? Would it not then become a real art?

Specialize, by all means.

News Items.

Typhus in Baltimore.—The first case of typhus fever in several years has been reported in Baltimore.

Pasteur Institute in Nicaragua.—The Government of Nicaragua has established a Pasteur Institute at Managua.

Campaign for Medical Recruits.—The army medical department is about to begin an extensive campaign for recruits for service in the general hospitals.

Bequest to St. Luke's Hospital.—The will of Harriet Emily Ogden, of Elizabeth, N. J., contains a bequest to St. Luke's Hospital of \$7,000 for the Aaron Ogden Bed and \$5,000 for the Robert Traversers bed.

German Scientists Excluded.—The International Research Convention, which is in session in Brussels, has decided to exclude German scientists from its research conferences until Germany is taken into the League of Nations.

Shortage in Medical Corps.—If 500 men are not enlisted immediately in the Medical Corps for service at Fort McHenry Hospital, Md., patients can not get the proper medical attention. The majority of men there will be discharged by September 30th.

State Labor Body to Discuss Health Insurance.—Health insurance will be one of the topics for discussion at the convention of the New York State Federation of Labor on August 26th. A health insurance bill was defeated in the last session of the State legislature.

Interallied Floating School of Tropical Medicine.—The proposal of Dr. Louis Sambon at the Royal Society of Medicine of an interallied floating school of tropical medicine for investigation, scholastic, and hygienic purposes has met with a cordial reception among British medical men. Dr. Sambon's idea is to equip a floating laboratory with a staff of experts of various nations and complete laboratories and to study the cause and prevention of tropical diseases where they exist.

Public Health Service Investigates Ohio River.

—The United States Public Health Service has resumed the investigation of the pollution of the Ohio River, which was suspended during the war. The investigation is in charge of Dr. W. H. Frost.

American Legion Post for the Blind.

—A post of the American Legion composed of blinded members of the Army, Navy, and Marine Corps has been formed at Baltimore. The post will have its headquarters in that city and will have branches in other States.

Senate Bill Provides Woman Health Secretary.

—The bill introduced by Senator France, of Maryland, to create a department of public health, provides that a woman shall be named the third assistant secretary of public health. To qualify for such an office the woman must be trained in medicine or nursing and in public health.

Maternity Under State Care in Germany.

—A press dispatch reports that the Weimar assembly has adopted a bill placing maternity under the care of the government. Unwedded mothers are to be designated *Frau* and the same education is to be provided for illegitimate and legitimate children. Large families are to be given government assistance.

Yellow Fever Quarantine of Salvador Raised.

—The Guatemalan quarantine against land and maritime travel from San Salvador has been raised, except as it applies to Acajutla and La Libertad. Sanitary regulations at La Union and San Miguel are said to have resulted in an apparent checking of the yellow fever outbreak there, only four isolated cases being reported.

Serbian Relief.

—Twenty physicians and nurses sailed on the steamship *President Wilson* for relief work in Serbia. Dr. W. B. Brush, of New York, until last May a naval surgeon on transport duty, is the head of the unit. The American Woman's Hospital, which has been working in Serbia, is co-operating by paying salaries and supplying uniforms to the women physicians.

Drug Victims to Pelham Bay.

—New York city has been given permission by Secretary Daniels to use the Pelham Bay Naval Training Camp as a place for the treatment of drug addicts. The camp has been vacated and can be taken over by the city at any time. Pelham Bay Park covers 1,756 acres and has 537 buildings substantially constructed. As many as 16,000 sailors have been in training there at one time.

Poland Appeals for Aid in Checking Typhus.

—The Polish department of health has appealed to all the Allied governments, whose relief work is in charge of Herbert C. Hoover, for aid in checking the spread of typhus. One hundred and seventy thousand cases of typhus are reported to exist in Poland and the Baltic Russian states. A group of 550 American officers and volunteers, all sanitary experts, will leave Paris in a few days to fight the disease. Colonel Harry L. Gilchrist, of the Medical Corps, U. S. Army, will head the expedition. American and British army authorities have sold Poland the larger part of their delousing equipment, and the Polish Minister of Health is gathering all such equipment left behind by the Germans.

Ecuador Closes Ports against Yellow Fever.

—The Ecuadorian Board of Health is reported to have closed all ports of Ecuador to vessels arriving from northern Peruvian ports because of reports of yellow fever prevalent in northern Peru.

Navy Register.

—The United States Navy Register for January 1, 1919, which has just been issued, contains the names of 54 medical directors, 93 medical inspectors, 70 surgeons, 90 passed assistant surgeons, and 966 assistant surgeons.

Switzerland Aids Wounded Soldiers.

—More than 100,000 seriously wounded soldiers have been transported to their respective countries through Switzerland during the war, according to a press dispatch. The men were transported in hospital trains with the assistance of the Swiss Red Cross.

Professor Rappard Appointed Secretary of Red Cross League.

—Professor William H. Rappard, of the University of Geneva, has been appointed secretary general of the League of Red Cross Societies. Professor Rappard is a member of the International Committee of the Red Cross and was for two years connected with the faculty of Harvard University.

Investigation of Venereal Disease Conditions in Baltimore.

—An investigation into venereal disease conditions in Baltimore will be made by Health Commissioner John D. Blake. Government statistics in regard to the second million draftees of the army place Baltimore second on the list with a percentage of 7.28. The wiping out of the segregated district has apparently had no effect on the prevalence or character of these diseases.

Home for Aged Physicians.

—The Physicians' Home, the purpose of which is to maintain a home for aged or infirm physicians and their wives or widows, was granted a certificate of incorporation in New York on July 25th. Some of the medical men who are the directors and incorporators are: Dr. Graeme M. Hammond, Dr. Alexander Trautman, Dr. Daniel Cook, Dr. Max Einhorn, Dr. Silas F. Hallock, Dr. Wolff Freudenthal, Dr. Robert Tuttle Morris, Dr. Ralph Waldo, and Dr. Albert G. Weed.

Chief Surgeons of A. E. F.

—The *Army and Navy Journal* states that there have been but three chief surgeons of the A. E. F. Colonel Alfred E. Bradley was the first to hold that office and served through the first year of organization until he was stricken by illness. He was succeeded by Brigadier General Merritte W. Ireland, who was shortly promoted to the rank of major general and on General Gorgas's retirement was made surgeon general. The present chief surgeon is Brigadier General Walter D. McCaw.

One Bathtub for 1,703 Persons.

—A housing survey of a block in East Thirty-third Street, New York, revealed one bathtub in forty-three tenement houses in which live 1,703 persons. The bathtub is the property of a saloonkeeper and few of the other 481 families on the block have even seen it. The next nearest approach to bathing facilities discovered by the investigators was a stationary washtub fitted up with a partition which can be lifted out on Saturday nights. The survey was made for the State Reconstruction Commission.

\$5,000,000 for Influenza Germ.—A joint resolution providing for the expenditure of \$5,000,000 in organized effort to find the germ of Spanish influenza has been introduced in Congress. Authorization is given for an investigation of the cause of pneumonia as well as influenza, in the hope of preventing epidemics such as that of last year. The resolution asks that universities and colleges throughout the country be aided in investigations and that the public health service turn over information and equipment for the search of the germ.

Auto Truck Carries Baby Clinic to Rural Mothers.—The Children's Bureau, Department of Labor, has fitted out a large automobile truck as a baby clinic and has started it out on a tour of rural districts, carrying advice on child care to rural mothers. Dr. Ruth McGuire, one of the women physicians attached to the bureau, is in charge of the "Child Welfare Special," the first trip of which was through Morgan County, Illinois. Babies are brought to the truck, weighed, measured, examined for defects, and given ratings by the bureau specialists.

To Fill Vacancies in Medical Corps.—An examination to fill 600 vacancies now existing in the Medical Corps, Regular Army, will be held August 25th. Only applicants who have served as emergency medical officers during the war are eligible for the examination. Applications must be received in time to enable action to be taken on them by the surgeon general prior to August 16th. Applicants should state full name, date and place of birth, permanent home address, medical schools from which graduated with dates, professional experience, and if an officer who has served during the emergency complete statement of military service.

International League against Cancer.—An international league to deal with all aspects of the cancer problem—research, study of preventive means, and treatment—has been initiated in Paris, and bears the name of Franco-Anglo-American League Against Cancer. Patrons are Lord Bertie, of Thame, British ambassador in Paris; Mr. William Sharp, late United States Ambassador; M. Mesureur, director of the Assistance Publique in Paris; Dr. Roux, director of the Pasteur Institute; Professor Roger, of the Faculty of Medicine, and M. Leclainche, inspector general of veterinary services. M. Justin Godart is president. A questionnaire has been sent to French medical men.

Needless Typhoid Loss in New York State.—Notwithstanding the preventability of typhoid fever and diphtheria, these two diseases caused a loss of 2,300 lives within a single year in New York State. The June issue of *Health News*, the bulletin of the State Department of Health, points out that while for two consecutive years the annual death rates for the State have been lower than in previous years, at least half of the deaths that occurred could have been prevented. In each year an extensive water borne epidemic occurred, and in each instance the municipality had been forewarned of the danger. Today other municipalities are continuing to use unsafe water supplies in spite of warning. Other extensive outbreaks resulted from the use of infected milk.

Aid for Handicapped Children.—Pennsylvania has passed a bill whereby handicapped children in the public schools may be classified and given such special instruction as their mental and physical condition requires. Tuberculous children who require open air schools, those with defective sight, hearing, or speech, retarded pupils, and incorrigibles will be listed and examined in mental or medical clinics. It is estimated that about 150,000 or ten per cent. of the school population of the State would be reportable.

450,000 Influenza Deaths in the United States.—Statistics compiled by the Metropolitan Life Insurance Company show that there were 450,000 deaths in the United States from influenza during the recent epidemic. The mortality of males was greater than that of females, and the epidemic had its worst effect on infants and persons in adult working life. The highest mortality caused by the disease affected persons of the wage earning class, especially those situated in the lowest economic range.

Doctor Graham-Rogers Appointed Captain in Medical Corps.—Dr. Charles Theodore Graham-Rogers has been appointed to a captaincy in the Medical Corps attached to the Forty-seventh Infantry, New York Guard. Dr. Graham-Rogers served in the war as a line officer, not wanting to be sent to the Medical Corps while there was actual fighting. On October 15th, at Vaux Audigny, when the enemy gassed the town and shelled it heavily, Dr. Graham-Rogers voluntarily returned to the rôle of surgeon, fitting up a first aid station and dressing wounds. While there he was wounded himself and blinded for a time by gas.

Personal.—Colonel James M. Kennedy, Medical Corps, U. S. Army, who has been on duty at Hoboken, N. J., as surgeon of the Port of Embarkation, has been assigned to duty in command of the Letterman General Hospital, San Francisco.

The Senate Military Committee has reported favorably the nomination of Lieutenant Colonel Robert E. Noble to be a brigadier general, Medical Corps, Regular Army.

Major General William C. Gorgas, who recently returned to Washington from Ecuador, where he spent several months studying the yellow fever situation, is reported to have sailed the 1st of August for San Salvador.

Commander Charles M. Oman, Medical Corps, U. S. Navy, has been detailed as aid to the commander-in-chief, U. S. Atlantic Fleet, as fleet surgeon. He recently returned from France, where he commanded Navy Base Hospital No. 1.

Dr. H. L. K. Shaw, director of the division of child hygiene of the State Department of Health, has been appointed to the advisory child welfare board of the Federal Children's Bureau.

Dr. Leverett D. Bristol, of Augusta, Me., has been elected dean of the University of Tennessee College of Medicine and professor of bacteriology and public health.

Colonel Albert P. Clark, Medical Corps, U. S. Army, has been detailed to duty as a student in the General Staff College.

Asks War Hospital to Keep Personnel.—Because of the effective work of Base Hospital No. 8, the unit formed by the Postgraduate Hospital, New York, Surgeon General Ireland has asked that its personnel be kept together for future emergencies. This fact is revealed in a report on the activities of the unit in France written by Dr. Charles Gordon Heyd for the board of trustees of the hospital.

Southern Illinois Health Survey.—A survey of thirty counties in southern Illinois with reference to the presence of malaria, hookworm, and trachoma was recently made by Dr. Henry B. Hemenway of the State Department of Public Health. Contrary to expectations no hookworm was found. A decrease of eighty per cent. in malaria was reported in some sections, due to better drainage and antimalarial measures. There is a great deal of trachoma in the section surveyed.

100,000 Typhus Cases in Kuban.—The American Red Cross has outfitted a ship to proceed to the Kuban district in the Caucasus with complete equipment for a five hundred bed hospital, 1,500 tons of drugs, and 1,500 tons of clothing. Ten Red Cross officers and fifteen American relief administration workers will establish a hospital and distribute the supplies. Investigating a report that the Cossacks of Kuban were dying of typhus, the Red Cross found that there were 100,000 cases of typhus on the slopes of the Caucasus, that the wounded soldiers of the army engaged in frontier fighting were without dressings or anesthetics for even major operations, and that there was not an ounce of ether or chloroform in Kuban.

Vital Statistics of Great Britain.—British medical estimates, according to published reports, show that war and influenza combined have killed 18,000,000 men throughout the entire world and maimed 10,000,000 others so that they will be incapable of competing in the industrial world. 98,998 or forty-one per cent. of the deaths in Great Britain from January 1 to April 1, 1919, were due to influenza; thirty-five per cent. of these were young men in the prime of their vigor. The latest returns of the British registrar general state the number of English deaths to be in excess of the number of births. Between January 1 and April 1, 1919, the deaths in England exceeded the births by 70,443 and between April 1st, and July 1st, by 69,802. In preceding years births averaged an excess of 40,785 over deaths.

Continue Social Hygiene Board.—Congress has included in the Sundry Civil Bill approximately \$1,000,000 for the continuation of the Interdepartmental Social Hygiene Board, which was created in 1918 to prevent the spread and mitigate the danger of venereal diseases. The statement of the work accomplished shows the closing of 124 "red light" districts in America, the detention and care of 30,000 delinquent women and girls, the special study of the causes of delinquency, the enforcement of laws and ordinances relating to venereal diseases in communities surrounding the military and naval camps, and the greatest reduction in military venereal disease rates ever recorded in history. It has also secured legislation with the States and the establishment of divisions of venereal diseases in various State boards of health.

Variation in Cancer Death Rate.—Dr. Francis Carter Wood, director of the George Crocker Special Research Fund, Columbia University, has pointed out that variations in the cancer death rate due to the dislocation of classes of the population have long been observed in the United States. Vermont has the highest cancer death rate in this country, the figures reaching 109.9 in 1914, while the rate in Utah was only 45.6. According to Doctor Wood, there is not the slightest reason to suppose that cancer is more frequent among people of the same age in Vermont than in a Western State such as Montana where the 1914 cancer death rate was 51.5.

Twenty Babies in a Thousand Saved by Child Hygiene Bureau.—The Philadelphia health department estimates that its division of child hygiene has reduced the death rate of infants under one year approximately twenty in a thousand. During the first six months of this year the rate was 98.65 in a thousand deaths under one year, as compared with a rate of 109.0 in 1918 and 100.65 in 1917. The division has at present 18,000 babies and 3,000 expectant mothers under the care of its public health nurses. When the report of a birth is received, a nurse is sent to the home to ascertain whether proper care for the mother and child can be provided. Insanitary conditions, overcrowding, and the presence of communicable diseases are referred to the proper agencies or authorities and followed up until corrected. Eight health centres and twenty-two baby clinics are also maintained.

Americans to Found London Hospital.—A hospital which it is hoped will be the headquarters of American medicine in Europe is to be founded by American residents of London, according to press dispatches. A meeting was held July 17th at the Royal Society of Medicine at which committees were appointed to take charge of the project. No detailed plans for the American Hospital for Great Britain have yet been formulated, but it is intended to build an institution of the first rank, equipped with the latest scientific apparatus and costing at least \$10,000,000. Subscriptions will be sought both in the United States and Great Britain.

The idea is an outgrowth of war conditions. At the meeting it was pointed out that during the war there was the closest cooperation between British and American medical men, and British schools were thrown open freely to large numbers of Americans. It was desired to continue the close relations thus established. In addition, London provided practically no opportunities for research or advanced teaching for graduates from other countries. American medical men consequently went to Germany and Austria, and only rarely to Great Britain.

The medical committee for Great Britain consists of Sir William Osler, Sir W. Arbuthnot Lane, Sir Humphrey Rolleston, Sir John Bland Sutton, J. Y. W. MacAllister, and Philip Franklin. The medical committee for the United States consists of Dr. George W. Crile, of Cleveland, Dr. W. J. Mayo and Dr. Charles H. Mayo, of Rochester, Minn.; Dr. Albert J. Ochsner, of Chicago; Dr. Rudolph Matas, of New Orleans, and Dr. Franklin Martin, of Chicago.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

DIETETICS IN DISTURBANCES OF METABOLISM.*

BY ROBERT HUGH ROSE, M. D.,
New York.

PROTEIN FEEDING SIMPLIFIED.

Knowledge of the protein value of food is perhaps of more importance to the writer of dietaries than that of either fats or carbohydrates. Physicians have been greatly hampered in the treatment of disease by a lack of familiarity with dietetics, especially by a lack of such knowledge as may be put to practical use. Textbooks fail to present the subject in a clear and satisfactory manner. Having passed through a period during which the calculation of dietaries was laborious, the writer has evolved certain facts which greatly simplify the subject. Thus the offhand prescription of diets has become possible. These principles will be presented in a series of papers. The present one deals with proteins.

PROTEIN REQUIREMENTS.

The standard of Voit, for many years considered correct, is 110 grams of protein daily. Professor Chittenden proved experimentally that fifty grams a day is quite sufficient. Adopting as a golden mean a standard midway between these two, a diet is chosen which furnishes approximately eighty grams. Although it is aside from the purpose of this paper to enter into a discussion of the point, it may be remarked that a standard of eighty grams is free from all danger of protein insufficiency, and is much less likely to cause symptoms of gout and uric acid than the higher standard of Voit.

PROTEIN FOODS.

The principal protein foods are meat (including chicken and fish), eggs, milk, and cheese. These four are easy to remember and after learning the short table, it will be a very simple matter to prescribe a definite amount of protein. The following table shows the protein content of familiar amounts of these four foods.

TABLE I.

Chief protein foods.	Protein content.
Meat, 100 grams (.2 lb.)	23 grams
Eggs, 2	13 grams
American cheese, 3x1x1 inch.	12 grams
Milk, 2 glasses.	17.5 grams

A sample maintenance diet is also presented and analyzed. The diet furnishes approximately 2,400 calories which is quite sufficient for one engaged in a life not overactive, i. e., for the average city dweller. It is suitable for a person with a normal weight of 150 pounds. A menu is given for breakfast, luncheon and dinner. The protein content and caloric value of each article of food is indicated. The total protein drawn from nonprotein foods as well as from protein foods is given for each meal and also for the day.

TABLE II.

SAMPLE MAINTENANCE DIET.

	Grams protein.	Calories.
<i>Breakfast:</i>		
Fats—		
Butter, one ball or one third ounce.		80
Cream, thin, four tablespoonfuls.	2	120
High content carbohydrates—		
Cereal	2.5	100
Bread, two slices, 4x4x½ inch.	4.6	140
Sugar, two teaspoonfuls.		66
Low content carbohydrates—		
Orange	1	70
Coffee		no value
Breakfast totals:		
Protein from proteins.	0	
Protein from fats and carbohydrates	10.1	
Protein from all sources.	10.1	
Calories		576
<i>Luncheon:</i>		
Proteins—		
Eggs, 2	13	160
Fats—		
Olive oil, two teaspoonfuls.		74
Butter, one ball.		80
High content carbohydrates—		
Bread two slices.	4.6	140
Macaroni, two tablespoonfuls.	2	50
Sugar, two teaspoonfuls.		66
Low content carbohydrates—		
Lettuce, one half head.	1	18
Fruit, apple	.5	75
Luncheon totals:		
Protein from proteins.	13	
Protein from fats and carbohydrates	8.1	
Proteins from all sources.	21.1	
Calories		663
<i>Dinner:</i>		
Proteins—		
Meat, three tenths pound, 5x3x¾ inch	34.5	450
Fats—		
Butter, one half ball.		40
Cream, two tablespoonfuls.	1	60
High content carbohydrates—		
Soup, thickened	5.5	160
Bread, one slice.	2.3	70
Potato, medium size.	2	90
Sugar, one teaspoonful.		33
Low content carbohydrates—		
Squash, two tablespoonfuls.	1	40
Peas, two tablespoonfuls.	5	80
Apple, one	.5	75
Dinner totals:		
Protein from Proteins.	34.5	
Protein from fats and carbohydrates	17.3	
Protein from all sources.	51.8	
Calories		1098
<i>Day's totals:</i>		
Protein from proteins.	47.5	
Protein from fats and carbohydrates	35.5	
Protein from all sources.	83	
Calories		2337

EXCESSIVE EATING OF PROTEIN.

It is very easy to exceed one's protein requirements. Two eggs for breakfast, three tenths of a pound of meat for luncheon, with both fish and other meat for dinner not only exceed the eighty gram protein standard, but go even beyond the standard of Voit. And this is not all, for the

*The first of a series on this subject.

dinner oftentimes contains fish with two other kinds of meat, some cheese, and frequently egg in salad or dressing. Therefore such a diet cannot be long continued without the ill effects of excessive protein feeding.

PROTEIN INSUFFICIENCY.

Consideration of this dietary analysis shows that there is no danger of protein insufficiency when meat is eaten regularly. When meat (including chicken and fish) is not taken daily, milk, cheese or eggs must form a part of each day's dietary or the average of eighty grams daily will not be approached. The only articles of food which contain no protein whatever are sugar, butter, and oils. In analyzing this maintenance diet it is found that nearly all articles of food contain some protein, e. g., such fats as cream contain a small amount, as do also such low content carbohydrates as lettuce and fruit. It is a very remarkable fact that all the protein obtained from foods not classed as proteins, when taken together, furnish 35.5 grams of protein which almost satisfies the low requirements of the Chittenden standard, and furnishes almost fifty per cent. of the requirements according to our golden mean of approximately eighty grams.

A few cases in which these facts will prove of value will now be indicated.

DIET IN NEPHRITIS.

Suppose for instance that a patient with chronic nephritis is to receive treatment. The question may arise in the mind of the physician as to what dietary this patient should follow to spare the kidneys unnecessary work, and at the same time maintain his strength. Starting with approximately thirty-five grams of protein obtained from foods not classed as proteins, the physician, if he wishes to include meat in the diet, may allow three tenths of a pound daily and furnish approximately seventy grams of protein. If he wishes to exclude meat entirely he may give one quart of milk in place of the three tenths of a pound of meat. Again, he can substitute, in part for the milk by either cheese or eggs.

INTESTINAL PUTREFACTION—AS SHOWN BY INDICANURIA.

If it is found upon inquiry that the patient is greatly exceeding the amount of meat indicated in the sample diet, it may be reduced to three tenths of a pound daily. If no such excessive amount has been ingested, or if for any reason further reduction is found necessary, milk or cheese may be substituted in proper amount for the meat withdrawn.

GOUT AND URIC ACID.

It is often essential to limit the meat and egg protein to free the patient of arthritis or other symptoms of gouty etiology. These same facts point the way. It is unnecessary to mention other instances in which these principles are of value. The important point has been developed that nearly fifty per cent. of the protein requirements are obtained from articles which are not classed as proteins, but as fats and carbohydrates. Over and over again its usefulness in the management of the

dietary of individual patients will occur to the mind of the physicians.

40 EAST FORTY-FIRST STREET.

THE TREATMENT OF VACCINIFORME HYDROA.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

This cutaneous lesion is not a special morbid entity, and it should be regarded as a syndrome or a peculiar mode of reaction of the skin congenitally predisposed and irritated by a special agent. The agent may be either the solar rays or electric light. Vacciniforme hydroa is not the only mode of reaction of the cutaneous surface to light. It belongs to a group of dermatoses called recurrent summer eruptions, having a common etiology with hydroa but essentially differing from it in the fact that vacciniforme hydroa always leaves cicatrices. These never occur in the recurrent summer eruptions. Vacciniforme hydroa is also pathologically characterized by the necrotic form of the lesions and their repair by means of permanent cicatrices.

The treatment of vacciniforme hydroa should primarily be prophylactic, and the physician should endeavor to prevent the annual recurrence of the process, from the beginning of spring until the advent of autumn. The patient should not be exposed to the solar rays. For this purpose a thick red, yellow or green veil should be constantly worn for protection of the face. Thick gloves should be worn and the application of certain protective pastes to the exposed skin surfaces should be prescribed. After the vesicular eruption has appeared there is really little that can be done to control it or shorten its duration. It is perhaps good practice to open the vesicles as soon as they appear, express their contents and then dust them with iodoform powder. Some time ago Eddowes, having carried out histological rescarches on the lesions, expressed the opinion that the necrosis of the lesions is provoked by the pressure of the fluid which forms an exudate in the epidermis and dermis. He advised puncture of each vesicle as soon as it appeared so as to lower the tension of the fluid exudate and consequently prevent cicatricial formation. When the crusts have formed their removal may be hastened by continued moist compresses, which have the advantage of calming the pain which is quite severe in cicatricial bullate hydroa. After the scabs have fallen off, Audray, of Toulouse, has found that the application of small compresses of lint dipped in aromatic wine is advantageous, inasmuch as he believes that this treatment activates cicatrization.

At the Skin Clinic of the University of Bonn the following ointment is prescribed:

Quinin. tannat.	1.5 grams
Glycerit. amyli	ad 30 grams
M. f. ung.	

At the same clinic, for the prevention of scars, they use a two per cent. salicylic acid lotion, a boric acid lotion or a lotion with a one per cent. watery solution of acetotartrate of aluminium.

To conclude the treatment of vacciniforme hydroa Unna employed the following ointment:

Cureuma	3 grams
Boli alb.	
Glycerin	
Dextrin	175 grams
Aq. dest. }	
M. f. paste.	

Bazin, who first described this morbid process, greatly favored a general alkaline treatment, especially with the waters of Bourbon.

Gastropexy.—Dougal Bissell (*American Journal of Obstetrics*, May, 1919) maintains that a ptosed stomach can by surgical means be permanently fixed to the anterior abdominal wall. If limited to an area measuring seven by four centimetres, such fixation does not seriously interfere with the motility or mobility of the organ. In uncomplicated cases it restores the normal functioning of the organ. Elevation and fixation of the stomach to an approximately normal position will also elevate the transverse colon, which is necessarily prolapsed in gastropsois; in most cases, fixation of the transverse colon is unnecessary. If the liver is also prolapsed, a condition usually accompanying gastropsois, its round ligament must be anchored in the upper angle of the abdominal wound to prevent its descent and pressure on the fixed stomach. The true value of gastropexy can be determined only after all complications have been corrected. In operating in gastropsois, the author makes an incision slightly to the right of the median line and midway between the ensiform cartilage and the umbilicus, so as to enter the peritoneal cavity to the right of the round ligament of the liver. This ligament is now severed about 2.5 centimetres or more from its hepatic insertion and anchored firmly to the fascia in the upper angle of the incision with two or more linen or kangaroo sutures. The stomach is next delivered over rubber dam or gauze pads, a stomach tube passed through the esophagus into it, and the organ inflated with air to its full capacity. This procedure greatly facilitates suturing and the avoidance of blood vessels. Four linen sutures are passed for about 7.5 or 8.5 centimetres through the gastric serosa and muscle wall, at intervals of from one to 1.5 centimetres, and following somewhat the direction of the lesser curvature. At right angles to these four horizontal sutures and about their middle are passed two or three vertical sutures at intervals of about one centimetre. The surface to be fixed is now scarified, the organ allowed to collapse and replaced in the abdomen, and the peritoneum of the parietes also scarified. The free ends of the sutures are passed through the abdominal wall, those to the left of the stomach emerging near the costal border and those to the right midway between the border and the incision. The elevation of fixation depends upon the degree of gastric and hepatic prolapse. The lower border of fixation should usually be three to four centimetres above the navel. After closure of the incision, the sutures are tightly tied over a pad of gauze three centimetres thick, made of plain gauze covered with iodoform gauze. On the seventh day the wound is inspected but the pad not disturbed. The wound is again dressed on the twenty-first day, when the threads are removed.

Treatment of Lagophthalmia in Permanent Facial Paralysis.—R. Leriche (*Presse médicale*, April 17, 1919) lays emphasis on the distressing epiphora which occurs where, as a result of facial paralysis due to a wound in the mastoid and parotid region, the power to close the eye on the affected side is lost. In some cases one of the muscle transplantation procedures may be availed of with success. Gomoin, for example, transplanted a portion of the temporal onto the orbicularis. In other cases, however, extensive temporomalar scarring may interfere with such procedures. In a case of this kind one of the well known effects of section of the cervical sympathetic was availed of by the author with success. This operation is followed by retraction of the eyeball and narrowing of the palpebral fissure. In a man wounded in 1915, whose eye was giving him much trouble, Leriche cut the sympathetic of the corresponding side below the superior cervical ganglion. Whereas, before the operation, the eye remained wide open even during pronounced attempts at occlusion, as soon as the operation had been concluded, only a narrow strip of the eyeball remained visible when the patient tried to close his eye, and by evening of the same day the lids could be almost completely approximated. Two months later, the condition had improved and the marked lachrymation of which the patient had complained was relieved.

Preoperative and Postoperative Treatment of Neoplasms with Radium.—A. M. Willis and S. W. Budd (*Virginia Medical Monthly*, April, 1919) state that tumors arising from mesoderm are very sensitive to the gamma ray emitted by radium, while epithelial tumors are, perhaps, more resistant. If the tumor contains calcium, as do some bony tumors, the prognosis is not so good. Sarcomata of the round and spindle cell types do exceptionally well under radium treatment. Basal cell epitheliomata react to it, but squamous cell epitheliomata are somewhat resistant. Practically all gland cell cancers respond favorably. In the treatment of uterine fibroids, radium is especially valuable in the small submucous and the intramural growths occurring in young women, where hysterectomy or even resection of the uterus is disadvantageous. The authors have relieved with radium a number of cases of metrorrhagia due to small fibroids, at the same time preserving function. Radiotherapy is also of great value as a preliminary to operation in old or large fibroids, where constant loss of blood has reduced the hemoglobin to a dangerous point. It is very beneficial in the severe leucorrhoea which often attends bleeding fibroids. Whether the growth does or does not diminish in size, the patient's general condition is always greatly improved, probably because of a clearing up of the endometritis. In cases of obscure metrorrhagia, without enlargement of the uterus, and recurring repeatedly in spite of curettement and continued treatment, in many of which relief had been obtained only by hysterectomy, radium is of the greatest value. In cancer of the breast the authors have in the past substituted radium for the x ray. The breast is radiated to the extent of 1,000 to 2,000 milligrams

hours before operation and from 2,500 to 4,000 after operation. In tumor of the mouth, the growth is first burned off with a cautery—Percy or soldering iron—and then radiated for 1,000 to 4,000 milligram hours, spaced over a period of one to two years. If there is cervical metastasis, radium is applied to the neck until the glands disappear or get beyond control. In inoperable carcinoma of the cervix, as much of the tissue as possible is burned with the Percy cautery and radium later applied. Radium can now not only render the patient comfortable in advanced inoperable cases but allow of successful surgical treatment in cases that are on the borderline of operability.

Effect of Diet on the Healing of Wounds.—

Admont H. Clark (*Bulletin of the Johns Hopkins Hospital*, May, 1919) has been the first to report the effect of specific diets on wound healing. His work was carried out by inflicting wounds on twelve dogs and then studying the healing of these wounds. Three dogs were given a mixed diet containing fat, lean meat, and bread; three were given a carbohydrate diet of bread and water; three were on a protein diet of lean meat, and the fourth group was on a fat diet. The first effect noted is that the diet does seem to affect the length of the quiescent period, as in protein fed dogs contraction of the wound began at once, there being no quiescent period. The dogs on the carbohydrate diet had a quiescent period of three days; those on the mixed diet of four days, and those on the fat diet of six days. Therefore the diet is apparently a factor in determining the beginning of granulous contraction. The formation of epithelium starts on the same day, irrespective of the diet and the size of the wound. The closing of the wound is due to a combination of contraction and epidermization.

The Medical Treatment of Duodenal Ulcer.—

Frank W. Foxworthy (*Journal of the Indiana State Medical Association*, June 15, 1919) divides the dietary treatment of this condition into five parts. 1. The nutrient enema period, lasting from four to seven days. This should be begun at once after diagnosis, or following hemorrhage. 2. The liquid, or albumen water period, from one to two weeks, commencing with the whites of two eggs in water every three hours and increasing gradually. Cream is used when eggs do not agree. 3. The semiliquid period, one week, in which the regular feedings of albumen water are kept up, substituting for certain feedings such food as creamed toast, potato soup, or purees. 4. The semisolid period, lasting one week, which is a prolongation of the semiliquid period, during which oatmeal, mashed potatoes, tapioca, custards, soft boiled or soft poached eggs are added to the dietary. During this period albumen water may be safely withdrawn, although at any indication of recurrence the diet should drop back to the diet of the second period—albumen water only. 5. The solid food period, broiled meat patties, the meat, lean only, ground very fine, broiled squab, breast of chicken minced, following which the patient should be able to take the ordinary diet for ambulatory ulcer patients, which is a maximum of albumens and a minimum of starches and sugars.

Salicaria in the Treatment of Diarrhea and Dysentery.—Henri Dufour (*Bulletin de l'Académie de médecine*, April 22, 1919) states that of 100 infants suffering from severe diarrhea, two thirds were markedly improved or rapidly cured upon administration of fluid extract of salicaria in doses of 0.5 to 0.6 gram in the twenty-four hours. The other third succumbed, but each of these children was simultaneously suffering from bronchopneumonia, tuberculosis, or inherited syphilis. In adults the remedy likewise yielded excellent results in a daily dose of three or four grams in cases of simple diarrhea, acute or chronic enteritis with diarrhea, dysenteriform enteritis, and typhoid fever with profuse diarrhea. The tannin contained in the plant, and perhaps also other therapeutic principles, seem to exert a selective beneficial action upon the intestinal mucosa.

Use of Alcohol in Influenza.—There is no difficulty in bringing to light any desired shade of clinical opinion concerning the value of alcohol in influenza. Recently recorded views range in complete array from that of Sir James Cantlie who, in November, 1918, wrote of alcohol as being "the most potent of our drugs" in influenza, to the diametrically opposite view of several recent clinical writers, who state that they have found it devoid of utility. As in so many instances in which opposite views are simultaneously held, the truth apparently lies between the two extremes. Pharmacological as well as clinical studies afford in this case a fairly definite indication of what may be expected from alcohol. Its value would seem to be as a nutrient and stimulant to the circulation where, through toxic depression, the functions of this system tend to flag. "The exhausted heart," says Sollmann, "may be stimulated by the nutrient action of the alcohol" in small therapeutic doses. Again, alcohol might be useful as a source of immediately available energy for the body at large, of especial value, perhaps, in cases in which enough energy cannot be obtained from the diet. Finally, in small doses alcohol is known to be a direct stimulant of the respiratory centre—an action doubtless serviceable on certain occasions. Against these favorable effects, on the other hand, must be balanced the important fact that the influenza virus is peculiarly an irritant to the nervous system and that alcohol, likewise a nervous irritant, seems likely in many cases to do more harm than good for this reason. Sir John Moore, 1919, touches upon a somewhat different aspect of the latter argument when he writes: "The mental state in this malady is so excitable, so unstable, so impressionable—in a word, so neurotic—that the seeds of intemperance may be sown by following the unthinking advice to take wine or spirits as a stay in weakness." He advises that alcohol, if ordered at all, be given with food, and only for a limited time, like any other powerful drug. On the whole, recent experience may be considered to have indicated that alcohol is in no sense a specific or routine measure in influenza, though it may on occasion prove of some service in carrying the patient through a difficult period of circulatory depression and nutritive deficiency.

Miscellany from Home and Foreign Journals

Heart Muscle Equations.—Harold W. Dana (*American Journal of the Medical Sciences*, June, 1919) says that no single procedure or formula gives universally applicable information regarding the integrity of the heart muscle in a given case. He considers the following criteria to be arranged in the order of their value as indications of a damaged pericardium: 1, The general appearance of the subject, with special reference to his color, to the occurrence of actual dyspnea, distress, cough, or exhaustion resulting from exercise; 2, the presence of a true gallop rhythm at rest or following exercise; 3, the production, as the result of exercise, of a relative mitral insufficiency, as evidenced by a murmur; 4, the presence, in the absence of valvular disease, of signs of decompensation, as edema of the lungs or of the extremities, whether at rest or after exercise; 5, weakening of the first sound at the apex, resulting from the effort test; 6, increased strength of the first sound over the right ventricle, as compared with the first sound at the apex, occurring after exertion; 7, weakened first sound at the apex, at rest, in the absence of emphysema; 8, the production, following the effort test, of irregular heart action or the increase in irregularity, already present, brought on by exertion; 9, loss or weakening of the second sound at the apex, due to exercise. He believes that variations in the systolic, in the diastolic, or in the pulse pressures give relatively little information regarding the cardiac function.

Exact Shade Measurement in the X Ray Diagnosis of Thoracic Disorders.—Manoel de Abreu (*Bulletin de l'Académie de médecine*, May 6, 1919) points out that such terms as loss of transparency, semiopaque shadow, veiled appearance, complete opacity, commonly used in describing the density of shadows in x ray plates, are quite insufficient for both scientific and practical purposes. They are no more precise than would be such expressions as slight temperature, high temperature, considerable fever, etc., if used in place of numeral thermometric readings. Normal and pathological x ray shadows, if of like extent and form, can be distinguished only by differences of shading. Mild and recent pathological changes, as well as congestion and edema, show a relatively light tint, while processes of consolidation are generally manifested in deep shadows. Estimation of the amount of fluid present in pleurisy or hydropneumothorax is based in part upon the tint. In serial studies of individual cases of tuberculosis, changes in the depth of shadows are of great significance in showing whether the lesions are progressing in extent or depth, are undergoing sclerosis and calcareous infiltration, or are being absorbed. Two original methods of densimetry or shadow notation are described. The first consists in comparing the shadows at diseased areas with those at certain definite landmarks, viz., the ribs, which correspond in density to two or three centimetres of water; the clavicles, four to six centimetres; the heart, seven to eight centimetres; the ribs and clavicles

superimposed, six to nine centimetres; the ribs and heart superimposed, nine to eleven centimetres, and the liver, fifteen to twenty centimetres. The depth of shadow at the affected area is thus described as costal, clavicular, cardiac, costoclavicular, costocardiac, or hepatic, or is simply noted numerically according to the number of centimetres of water to which it is equivalent. The second procedure consists in radiographing along with the thorax a series of thicknesses of tin or other metal constituting a scale extending from one to thirty centimetres of water. By noting the density of a diseased area and subtracting from it the density of the corresponding area on the sound side of the body, the degree of pathological increase of density can be numerically expressed. In the case of a rarefying process such as emphysema or pneumothorax, the diseased side is subtracted from the sound. The first of the two procedures is simpler, requiring no metallic densimetre, and in practice gives sufficiently precise notations.

Chronic Bony Fistulæ.—R. Atkinson Stoney (*British Medical Journal*, June 21, 1919) says that the chronicity of these cases is due to the fact that the infection is firmly implanted in the tissues of the bone, and that often a foreign body or sequestrum is present. Every case must be examined carefully with the x ray and the operative procedure determined by the result of the findings. If it is possible the fistulous track should be completely excised down to the bone, removing as much of the scar tissue as possible. The periosteum should then be elevated for some distance about the opening into the bone, the entire infected area of bone should then be exposed and explored. All foreign bodies and sequestra should be removed, the overhanging wall should be removed by forceps or chisel, the walls of the cavity should be made to slope gradually inward to the deepest point of the cavity, and if possible the entire lining of the cavity should be removed until normal, healthy, bleeding bone surfaces are everywhere exposed. After this has been completed as thoroughly as circumstances permit the wound is dried thoroughly, swabbed with ether or methylated spirit, and packed for a couple of minutes with gauze wrung out of either of these liquids. A modified bipp, consisting of two parts of iodoform, one of bismuth and twelve of petrolatum, is then rubbed into the walls of the bony cavity and the cavity finally is filled with it. The wound may then either be closed in layers, or if this is not deemed safe it may be plugged tightly with iodoform gauze saturated with the bipp and left for two days, after which the cavity should be found dry and it may then be packed with bipp and covered with a superficial dressing which is changed every four days, the cavity being kept filled with fresh bipp. Under this treatment not less than ninety per cent. of cases can be cured in an average of one month from the initial operation for cleansing. The method is also suggested as being of great advantage in the treatment of mastoiditis.

Observations on the Clinical Pharmacology of Digitalis.—Alfred M. Webb (*Bulletin of the Johns Hopkins Hospital*, May, 1919) bases his report on a group of patients showing all possible valvular defects, all grades of decompensation, varying degrees of renal lesions, systolic blood pressures from ninety to 230 mm., and nearly all of the recognized types of myocardial involvement, such as intraventricular block, bundle branch block, complete dissociation, etc. In no case was a clinical entity encountered which could be considered to be a contraindication to the use of digitalis. Two different lots of a standardized tincture were used. The first proved less efficient, probably due to failure of complete absorption from the alimentary canal, as a larger amount was necessary to produce a change in the T wave, the earliest demonstrable digitalis effect. The daily dose varied from eight to twelve c. c. usually ten c. c. This was administered until definite evidence of digitalis action appeared. The indications to discontinue the drug were alimentary disturbance, derangements of cardiac mechanism, or slowing of the pulse rate to a level beyond which it was not thought wise to continue. No constant relation between the amount of the drug that could be given and the age or body weight of the patient or the condition of the myocardium could be found. The toxic dose varied from twenty to 100 c. c. In studying the electrocardiogram the first definite digitalis effect was an alteration in the T wave. In several cases the P wave was changed, in the third lead, and in one case a U summit appeared after thirty c. c. of digitalis had been given.

The Leucocytes in Influenza.—G. Lion and A. Crétin (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 6, 1919) report a careful study of the leucocytes in nineteen cases of influenza at the height of the 1918 epidemic. Most of the cases were severe, with pulmonary involvement. Leucocytosis was generally but slight, in spite of the lung complications. In three of the eight instances in which counts were made the number of cells was not above 7,000 to 9,000; in three it was slightly above 10,000, while in two it reached 16,740 and 25,700 respectively. Marked variations from day to day were noted; in the case with 25,700, the count dropped to 7,130 two days later, before death. The chief feature of the investigation was the finding of a considerable number of mononuclear cells with neutrophilic granulations in all cases. Some of these had rounded nuclei and amphophile protoplasm; the remainder, elongated, irregular or notched nuclei and generally an acidophile protoplasm. These abnormal granular mononuclear cells or myelocytes made up from four to 28.5 per cent. of the whole number of leucocytes, the average being eleven to sixteen per cent. The neutrophilic polymorphonuclears constituted, as in health, the greater mass of the white cells, but differed from normal cells in showing a high degree of fragility, many of them exhibiting various stages of destruction, such as flabbiness of the cell, bursting of the protoplasm and filamentous nucleus, or finally, the mere presence of reticulate plaques, representing the remains of cell nuclei. Cells in this last stage of destruction averaged six to nine per

cent. of the entire number of white cells. The number of nongranular or normal mononuclears (lymphocytes) in influenzal blood was greatly reduced, ranging from four to sixteen per cent. The myelocytopenia was constant, whether the case was mild or severe, simple or complicated; it was present at the onset of the disease, persisted for some time after defervescence, and was uninfluenced by treatment. It appears to be of marked diagnostic value. The fragility of the polymorphonuclears and the presence of many reticulate plaques, indicating pronounced destruction of white cells, are of some prognostic significance.

Diagnosis of Typhus by the Weil-Felix Reaction.—Ramon E. Ribeyro (*Cronica Medica*, March, 1919) reports a series of cases of typhus where the blood serum of the patients agglutinated the bacillus proteus x nineteen, according to the Weil-Felix test. Inasmuch as up to this time there have been no laboratory tests of any value in the diagnosis of this disease, Ribeyro expects great results from this reaction, not only in the diagnosis of typhus proper but also in the differential diagnosis of typhoid and recurrent typhus which coexist in the same localities. The fact that the reaction takes place with dead bacilli will facilitate its employment in communities where laboratories do not exist for the growth and maintenance of the living cultures.

A Functional Conception of Pathology as a Basis for the Diagnosis and Treatment of Heart Disease.—W. S. Morrow (*Canadian Medical Association Journal*, June, 1919) says that no matter what form of heart disease or disorder we have to treat, whether the standard authorities would classify it as organic or functional, we must remember that we have to deal with a living, active tissue, the heart muscle. The conception of pathology which gives the most prominent place to functional conditions can be applied to treatment with the happiest results. Such a conception not only simplifies diagnosis but it leads to correct therapeutic measures more directly than does the old structural conception of pathology. This does not imply that one must adopt a narrow point of view. No knowledge that one possesses need be wasted. A good knowledge of diagnosis is of inestimable value in helping one to trace disorders of the heart to their respective causes and, as far as may be, to eliminate the continued operation of these causes. Let us by all means find out all we can about the valves and pericardium. Let us estimate the size of the heart as accurately as possible. Let us study the changes brought about in other organs by the disordered circulation. Let us differentiate between the various infections as our knowledge of bacteriology will permit. Let us give due weight to any evidence of disordered internal secretions. Let us do all this and prepare ourselves to do it better as the years roll on, but let us never forget that the heart is first and last a muscle, and that the real problem of heart disease is to increase the functional capacity of that muscle or reduce the work it has to do to such an extent that a proper factor of safety may be reestablished and harmony reign once more.

Posttyphoid Bone Complications.—Umberto Tassone (*Gazzetta degli Ospedali e delle Cliniche*, May 1, 1919) divides posttyphoid bone complications into four classes, the first of which is that of rheumatoid complications which often end spontaneously. The second class is that of acute osteoperiostitis with systemic symptoms and local changes accompanied by suppuration. The milder cases have merely a periostitis which in the graver cases extends into the bone and medulla, producing a true osteomyelitis with necrosis. The third form is that of chronic suppuration of slow onset and course similar to the so-called cold abscesses. The fourth is chronic and nonsuppurating but with a tendency to the formation of exostoses. Young persons are particularly predisposed to these bone complications, and the bones most frequently affected are the tibia, scapula, and the metatarsals. The treatment is purely surgical, although vaccine therapy may give excellent results.

Twenty Thousand Cases of Pulmonary Tuberculosis.—Jose Verdes Montenegro (*Archivos de Medicina Interna*, February, 1919) gives a marvelously complete review of this enormous number of cases. One of the points on which he lays great stress is hemoptysis, and he formulates the following rules: 1, Every hemoptysis in a subject under thirty years of age should be looked upon as tuberculous until the contrary is proved; 2, if mitral stenosis is excluded and the rare occurrence of hydatid cyst, it may be safely stated that all hemoptysis in youth is tuberculous; 3, the so-called vicarious menstrual hemoptysis occurring in girls before, during or after menstruation must be looked upon as tuberculous; 4, this criterion or axiom that all hemoptysis is presumably tuberculous is to be maintained no matter what may seem to be the exciting cause, as colds, physical overexertion, or traumatism. Hemoptysis is of serious import only when it is accompanied by fever.

Epidermal Inclusion Tumors of the Hand and Fingers.—G. Métivet (*Presse médicale*, April 10, 1919) states that these tumors, originally described as "epidermal cysts," occur nearly always on the palmar surface, in particular on the four fingers or over the corresponding metacarpophalangeal joints. They are of traumatic origin, injury with some pointed or cutting instrument resulting in the introduction into the deeper tissues of epithelial cells, which proliferate and soon become surrounded by a shell of connective tissue. There is little or no pain, but some tenderness may be noted if the tumors are repeatedly pressed upon. The tumor may appear as a pearlike, translucent body developing within a scar; as a growth the size of a pea developing in the skin and covered with an attenuated epidermis, upon which traces of scarring may be visible, or, in the majority of instances, of a tumor of the size of a hazelnut or almond, sometimes fluctuating, always movable over the deeper tissues, and at times independent of the skin. Such tumors have usually been present for several years before medical advice is sought. Spontaneous elimination of the growth is exceptional. Suppuration may occur and result in an ulcer or sinus. According to Pinsolle, malignant degeneration rarely

occurs. The diagnosis is generally easy, though absence of scarring or of a history of injury might be misleading. A fibrous cyst around a foreign body may present similar appearances. A case of nodular actinomycosis of the hand, developing around an embedded splinter, has been reported. The treatment is extirpation, preferably in conjunction with the adherent scar, if such a scar exists. The author reports two cases, in one of which gradual spontaneous elimination of the growth took place.

The Diagnosis of Ureteral Calculi.—Daniel N. Eisendrath (*Chicago Medical Recorder*, June, 1919) says that the clinical history cannot be relied upon absolutely to make a diagnosis of ureteral calculi, since there are many other conditions that give rise to ureteral colic which must be excluded. The presence of a shadow along the course of the ureter does not necessarily mean a calculus. The three best methods to determine whether the shadow lies within or external to the ureter are the x ray catheter, ureterography, and stereoröntgenography; the last is the most reliable and should be employed in every case if possible.

An Easy Approach in the Operation for Strangulated Hernias.—J. A. Hendrick (*New Orleans Medical and Surgical Journal*, July, 1919) calls attention to the difficulty of reaching and relieving the constricting fibrous band in the usual operation for strangulated hernia. To avoid this difficulty he makes his incision as in an ordinary nonstrangulated hernia, separates the tissues down to the peritoneum just above the internal ring, enters the free peritoneal cavity about an inch internal to the constricting band, introduces his finger through the constricting ring, and divides it over his finger. The adhesions between the sac and intestines are easily separated, and the condition is then dealt with as in an ordinary hernia. He says that this method of attack makes an operation on a strangulated hernia, where the parts are swollen, discolored and adherent, as easy as one for simple hernia and saves time, which is an important factor in this class of case.

Acromegaly and Diabetes.—Marcel Labbé (*Paris médical*, May 3, 1919) reports the case of a man who began to suffer from acromegaly at the age of twenty-five years and at forty-eight developed polydipsia, polyphagia, polyuria, and glycosuria. Five litres of urine a day were passed, with 300 grams of sugar. A carbuncle appeared on the buttock. Under a low carbohydrate diet, the glycosuria diminished in six weeks to five or ten grams a day; then, after fasting treatment for three days, disappeared completely and permanently. Study of this and of previously recorded cases leads Labbé to conclude that there exists a nervous type of diabetes, in which the disturbance of glycogen regulation is manifest in the same manner as in the hepatic and pancreatic forms of diabetes. Glycogen regulation appears to be dependent upon a complex physiological mechanism in which participate both the liver, pancreas, nervous system, and endocrine glands. Disease of any one portion of this apparatus is sufficient to give rise to diabetes.

"Turgeszierung" of the Placenta.—Eugen Frey-Bolli (*Correspondenz-Blatt für Schweizer Aerzte*, April 19, 1919) injects from three to five hundred c. c. of saline solution or plain boiled water through the umbilical vein into the placenta, when the latter is retained and there are hemorrhages. He finds this method quite efficient, although the procedure may need to be repeated several times. His explanation is that the injected fluid distends the placenta, renders it heavier, alters its shape, and so tends to detach it. At the same time the turgidity of the placenta acts as an irritant on the inner wall of the uterus, which responds with contraction and helps to cast it off.

Human Anthrax.—Joseph C. Regan and Catherine Regan (*American Journal of the Medical Sciences*, June, 1919) report a mild attack of anthrax contracted through an accidental cut during shaving and the use of a new shaving brush from which anthrax bacilli were obtained. Anti-anthrax serum was given by intramuscular injection and by injection into the tissues immediately about the malignant pustule. No other treatment was required. The local and constitutional symptoms subsided and recovery was complete, although the lesion was situated on the neck. The micro-organism obtained from the lesion and the brush was proved to be the anthrax bacillus by its morphology, cultural characteristics, and results upon animal inoculation.

Phthiriasis and the Prophylaxis of Typhus Fever.—Chavigny (*Bulletin de l'Académie de médecine*, May 6, 1919) notes that whereas at present phthiriasis exists only among persons of a low social order and among backward peoples, in the Middle Ages and until quite recent times all classes of society harbored lice. The surprising epidemic of phthiriasis encountered recently in the contending armies depended directly upon the favorable conditions of environment presented for the development of the parasites. The eggs laid by lice in clothing yield larvæ in six days provided a mean temperature of 31° C., which is that of the clothing on human bodies, is uniformly maintained during that time. Alternations of temperature causing the eggs to be exposed for twelve hours each day to a temperature below 21° C. greatly retard or seriously compromise the hatching of the eggs. The mere removal of the clothes on going to bed thus prevents the hatching of any eggs that happen to have been deposited in the clothing. Moreover, the adult louse, attached to the clothing, from which it passes to the skin only during rest at night, is completely eliminated when the underwear is removed to be sent to the laundry. These biological peculiarities account for the widespread phthiriasis invasion among the armies in Europe. Since typhus transmission depends upon lice, the only measure required to eliminate it, where present, is to insist upon the wearing of underwear, to be changed at intervals and removed at night. Baths, hitherto always recommended, exert no specific effect and constitute an unnecessary complication in prophylaxis. Typhus can be mastered in short order by very simple means and without the encumbrance of shower apparatus autoclaves.

Action of the Thyroid Gland on Glucose Metabolism.—Marcel Labbé and Georges Vitry (*Presse médicale*, April 24, 1919) injected a solution of glucose intravenously in rabbits, then estimated the excretion of glucose in the urine. The experiments were conducted on normal rabbits, on thyroidectomized rabbits, and on rabbits fed with thyroid substance. Ingestion of thyroid substance caused no appreciable change in the amount of glucose which the organism could fix. Removal of the thyroid, on the other hand, slightly reduced the amount of glucose fixed, and in consequence, increased the glycosuria.

Elimination of Potassium Iodide in the Urine and Saliva.—Ameuille and Sordel (*Presse médicale*, April 24, 1919) found that in the normal subject potassium iodide, injected intravenously, is eliminated in a parallel manner in the urine and saliva. In cases of renal insufficiency it might *a priori* be supposed that, the elimination through the urine having been reduced or arrested, an increase of elimination with the saliva would occur. As a matter of fact, the saliva eliminated no more iodide than the urine in these cases. The iodide seems to be fixed and retained by the tissues under these conditions.

Influenza and Streptococcus Hemolyticus.—David B. Medalia (*Boston Medical and Surgical Journal*, June 5, 1919) found the influenza bacillus in a number of cases of undiagnosed pyrexias with a slight irritation of the throat. Altogether separate from this was his discovery of the Streptococcus hemolyticus on the walls of an operating room, in which a number of patients operated on for appendicitis, had become infected. It was found to be the habit in that hospital to have a number of adhesive plasters cut and stuck to the wall; after the operation sterile pads were applied and secured in place by strips of plaster taken from the walls. Washing and repainting of the walls, together with a cessation of this habit, stopped the occurrence of infection after operation.

Bilharziasis.—N. Hamilton Fairley (*Lancet*, June 14, 1919) presents a review of the advances which have been made in our knowledge of this parasitic infection. He points out that the early clinical manifestations of the disease both in man and in experimentally inoculated monkeys are evidently toxic in origin. That the pathological lesions in the tissues of inoculated monkeys, dying before the ova are deposited in the tissues, are evidently of toxic origin. That the cellulohumoral response, demonstrable through the circulating antibodies, and by the specific complement fixation test, are indicative of a toxic reaction. Likewise the eosinophilia, and the excess of eosinophile myelocytes in the bone marrow are of toxic origin. He has developed a simple and highly specific complement fixation reaction, using an emulsion of the livers of infected snails as antigen, and following closely along the lines of the usual Wassermann reaction. This test is positive in about ninety per cent. of moderately early cases, in about seventy-five per cent. of more chronic cases, and is invariably negative in noninfected persons.

Proceedings of National and Local Societies

AMERICAN SURGICAL ASSOCIATION.

*Fortieth Annual Meeting, Held in the Hotel
Traymore, Atlantic City, N. J.,
June 10, 17, 18, 1919.*

The President, Dr. LEWIS S. PILCHER, of Brooklyn, in the Chair.

(Concluded from page 175.)

Cancer of the Stomach.—Dr. CHARLES H. MAYO, of Rochester, Minn., said in this paper that the greatest number of cancers came in the area of highest acidity, the stomach. More than one third of the cancers in men and more than one fifth of the cancers in women appeared in this organ. Ninety-eight per cent. of intestinal cancers were in the colon, while cancer in the small intestine was rare, about two per cent. In taking a general survey of the various theories and reviewing the clinical evidence concerning the etiology of gastric cancer, it seemed that not one but several conditions were essential to its development. The change from the normal to the cancer cell was not great. In a general way it might be said that the nucleus was proportionately larger in the cancer cells than in the normal cells and was ready for division with less than the average amount of cytoplasm surrounding it. When some cell exhausted its controlling granules in division and reverting to primitive life became parasitic, there might be the beginning of cancer, but only if other factors were present such as an acid condition, which undoubtedly stimulated cancer growth or greatly lowered alkalinity. It was reasonable to assume concerning the normal division of a cell that the brain directing its division came from the centrosome; possibly other granules might serve this purpose.

From October 1, 1897, to January 1, 1919, 2,094 operations for cancer of the stomach were performed at the Mayo clinic. Seven hundred and thirty-six of these were resections with a mortality of 13.7 per cent., 746 were explorations with a mortality of 2.9 per cent., and 612 were palliative operations with a mortality of 11.1 per cent. For the last three years the anterior instead of the posterior Polya operation had been done in the clinic. Better afterresults seemed to be obtained by turning the bowel to the right, isoperistaltic, by closing the end of the stomach in toward the lesser curvature, and protecting the closed portion by suturing the unopened bowel over it.

Four hundred and twenty-seven patients were operated on during the three years previous to September, 1917. Those who died in the hospital and those not heard from numbered 121. Those who recovered from the operation and who had been heard from numbered 306; 115 (37.6 per cent.) of these showed three year cures. Three hundred and thirteen patients were operated on during more than five years before September 1, 1917. Those who died in the hospital and those not heard from numbered 79. Those who recovered from the operation and who had been heard from numbered

234; 59 (twenty-five per cent.) of these showed five year cures. This was a most satisfactory showing for the surgical relief of an otherwise hopeless condition which was attended by much suffering.

Dr. ARTHUR D. BEVAN, of Chicago, said that he had been fortunate in being associated with a colleague with a very large service in disease of the stomach, and was convinced that the great majority of gastric and duodenal ulcer could be cured medically and could be kept cured under proper after-treatment. With the opportunity of studying a large series of cases surprising results of surgical management would be seen in recurrences after gastroenterostomy for ulcer. He believed, however, that most medical men pushed the matter of medical therapy too far. An ulcer persisting after proper medical treatment was a surgical matter. The treatment of cancer of the stomach was as definitely surgical as was carcinoma of the breast. The science of diagnosis as applied to cancer of the stomach must remain largely in the hands of our medical colleagues, and that they were becoming very expert in the early diagnosis of this disease was our one great reliance. Within the last month Doctor Bevan said that he had resected three stomachs in which there was very early carcinoma. Carcinoma of the stomach was one of the most curable carcinomas in the body if it was recognized early.

Dr. FRANK E. BUNTS, of Cleveland, said that the curative result of a gastroenterostomy was not to be measured by the immediate result of the operation, but such cases demanded the most careful attention following the operation that could be given by the best medical men.

Operative Treatment of Peptic Ulcer.—Dr. JOHN B. DEEVER, of Philadelphia, said that other things being equal excision of the ulcer or resection followed by gastroenterostomy was the procedure of choice. Other things, however, rarely were equal, and the powers, whichever they might be, which afflicted humankind with peptic ulcers did not always place them where they could be removed without great difficulty; or as sometimes happened, in perforating ulcers the surgeon was spared the trouble of removing them. He could not entirely agree with Doctor Balfour's implication that spontaneous perforation, if complete, cured the patient. He had observed recurrence of perforation in two instances. Gastroenterostomy of itself was a curative measure for a time, but to insure a positive result the ulcer must be removed. It had been his experience that a gastroenterostomy properly made and properly placed, with a patulous pylorus, did not close. Resection plus gastroenterostomy presented the same advantages as the less complete one with the added benefit of a direct attack on the ulcer. Perforation of peptic ulcer in the past year occurred in about 5.2 per cent. of the author's cases. The proper time for medical treatment for the results of chronic indurated peptic ulcer was after and not

before the operation—if treatment was then still needed. Carcinomatous degeneration of gastric ulcer was a menace which could not be ignored. Probably nowhere did the personal equation of the operator enter more than in the operative treatment of peptic ulcers. In ulcers distant from the pylorus with very little exudative induration simple excision might suffice. This applied also to saddle-back ulcers and those situated on the lesser curvature toward the cardia, for which circular resection was the indicated operation. From his experience on two occasions he was becoming convinced of the advantage of following circular resection with a gastroenterostomy. For perforation of a duodenal ulcer, he found it best after closing the perforation, to plicate the duodenum and fortify the area by covering it over with the gastrocolic and the gastrohepatic omentum and complete the operation with a posterior gastroenterostomy. To January 1, 1919, the total number of perforations he had thus far treated amounted to fifty-six operations for perforated peptic ulcer with two deaths; one occurring twenty-two years ago and the other during the past year, making fifty-four consecutive operations with 100 per cent. recoveries.

Foreign Bodies in the Stomach.—Dr. RANDOLPH WINSLOW, of Baltimore, said that foreign bodies were found in the stomachs of three classes of persons: 1, In those who swallow objects accidentally; 2, in insane or otherwise unbalanced individuals, including those who swallow articles with suicidal intent; 3, in mountebanks or professional jugglers who eat glass and swallow other dangerous objects as a means of livelihood. That it was remarkable that so many sharp and pointed objects pass through the alimentary canal without producing serious results. That multiple objects were swallowed either by the insane or by mountebanks and that practically all of these individuals came to operation sooner or later. Doctor Winslow reported a case in which he removed 1,290 different objects from the stomach of an insane woman, which he believed to be the largest number of individual articles reported in the literature as having been successfully removed from the stomach of a living human being, though Vandivert and Mills reported the removal at autopsy of 1,446 objects from the stomach of an insane mulatto woman. The foreign bodies removed were as follows: Straight pins, hair pins, safety pins, pieces of bone hair pins, pieces of wire, buttons, iron screw staple, iron hook, wire nail, paper clamp, garter buckle, breast pin. Besides these the skiagraph showed pins and hair pins in the intestines previous to operation, and subsequently straight pins and two hair pins passed per anum. The woman made an uneventful recovery. Doctor Winslow said that while many single objects passed through the intestinal canal and were safely extruded, multiple foreign bodies usually lodged in the stomach and required to be removed by gastrotomy; that this operation was a comparatively safe one and the percentage of recoveries was very high, even when the foreign bodies had remained in the stomach a long time.

Dr. S. J. MIXTER, of Boston, had seen a patient in the operating room some time ago with a lump just above the umbilicus having the appearance of an abscess; incision revealed a quantity of yellowish pus which, interestingly enough, proved to be actinomycosis; the case was the first, he thought, recognized in Boston as human actinomycosis. In this abscess were two large fishbones.

Dr. WILLY MEYER, of New York, said that some years ago, before the time of the x ray, he had been called upon to operate for what seemed to be a gastric condition and had found at operation a large knitting needle sticking out of the stomach. In another case a boy of four had swallowed an open safety pin. Following the well known potato cure the boy had passed the safety pin.

The Results of Splenectomy in the Anemias.—Dr. WILLIAM J. MAYO, Rochester, Minn., said that splenectomy as a curative agent had been given a fair trial in three types of the anemias: splenic anemia, pernicious anemia, and hemolytic icterus, and its successes and failures could be reasonably shown by the data at hand.

Splenic anemia.—While splenic anemia was a clinical entity, it could not be said to have a definite pathological existence. It might be defined as a fibrotic splenomegalia with marked endophlebitis causing a secondary type of anemia which was progressive but not constant until the later stages. A few clinicians regarded all splenic anemias as syphilitic in origin but the writer's experience did not bear out this theory. A much better idea of splenic anemia would be obtained if the pathological condition of the spleen and its effect on the blood were made the criteria and all cases of known causation as well as those of unknown causation were classified as splenic anemia. Banti's disease was merely a late phase of some cases of splenic anemia. Of sixty-one patients with splenic anemia from whom the spleen was removed, seven (11.7 per cent.) died.

Pernicious anemia.—The etiology of pernicious anemia was unknown, the early symptoms were indefinite, and by the time the diagnosis could be made the patient could not be cured. The disease might be described as a progressive degeneration of the red blood in which there was a permanent loss of blast cells or mother cells of the erythrocytes. If it might be asserted that the spleen exhibited definite pathological changes or that in cases of pernicious anemia in which the hemolysis was most marked patients had a greatly enlarged spleen, a direct connection between the spleen and the disease would be established. Unfortunately, however, experience did not support this hypothesis, and the size of the spleen did not seem to bear definite relationship to the severity of the disease. Splenectomy in pernicious anemia did not appear to be based on sound reasoning and there seemed to be little foundation for the belief that the procedure would cure pernicious anemia, although splenectomy was a means of marked palliation. Fifty patients with pernicious anemia were splenectomized, with three deaths (six per cent.).

Hemolytic icterus.—Hemolytic icterus had not been classified with the anemias, but the peculiar splenic activity resulted in an anemia which was the cause of death. As in splenic and pernicious anemias, the etiology of hemolytic icterus was unknown. The well developed case of hemolytic icterus stood out with a vividness unequaled in splenic anemia and in pernicious anemia. The characteristic features were an enlarged spleen, chronic jaundice with exacerbations, normally bile-colored feces, and absence of bile in the urine. The enormous destruction of red corpuscles in the spleen inundated the liver with blood pigments and rendered the bile thick. The viscid bile in hemolytic icterus tended to form gallstones. Sixty per cent. of all the patients with hemolytic icterus operated on had associated gallstones and all the possibilities of biliary duct infection. The triumph of splenectomy was the cure of hemolytic icterus. The only patient lost of the twenty-seven splenectomized for hemolytic icterus was one operated on during an acute exacerbation.

Life Expectancy of Patients Following Operations for Gastric and Duodenal Ulcer.—Dr. DONALD C. BALFOUR, of Rochester, observing that life expectancy was the major consideration with the patient, said that the records of the Mayo Clinic had been used by the Actuarial Society of America in an effort to determine the life expectancy of persons operated on for gastric and duodenal ulcer. In a study made of 2,431 patients operated on between 1906 and 1915 and without regard to type of operation, it was shown that the operative mortality from all causes in 545 cases of gastric ulcer was 4.5 per cent., and that in 1,684 cases of duodenal ulcer the operative mortality from all causes was two per cent. The association's investigations of the mortality in the years after operation showed that in 521 cases of gastric ulcer the patients were under observation on the average of 3.6 years, and that in that time 88 (17 per cent.) died from all causes. In 1,651 cases of duodenal ulcer the patients were under observation on the average of 3.4 years, when 85 (approximately five per cent.) died from all causes. In gastric and duodenal ulcer in 91 patients under observation on the average of 3.8 years, nine (ten per cent.) died. Mr. Arthur Hunter, who directed the work of the Actuarial Society, regarded as a high tribute to surgery the fact of the survival for three and a half years of ninety-five per cent. of patients operated on for duodenal ulcer. In gastric ulcer, also, a death rate in three and a half years of seventeen per cent. of operated cases appeared to be low, and while the statement could not be proved, Mr. Hunter's belief was that many years of life were saved through surgical treatment. The chief importance of the statistics, however, was the fact that the death rate of a group of persons following operation for gastric ulcer was four and one-third times as high as that of a group of the general population of similar age and sex. In the second year the death rate was three and one-fourth times as high, and in the later years it was still less. The death rate of a group of persons in the first two years following

operation for duodenal ulcer was only that of a group of general population, and after the second year the mortality was actually less than in the general population group. The statistics illustrated strikingly that gastric ulcer was a much more serious condition than duodenal ulcer, not only from an operative standpoint, but from the after-results; also that the patient with a gastric ulcer showed, as a rule, much more evidence of impaired general health than did the patient with duodenal ulcer.

Abscess of Rectus Muscle Following Influenza.

—Dr. HOMER GAGE, of Worcester, Mass., said in this paper that next to empyema the principal complication of surgical interest in the influenza epidemic at Camp Bevens was a group of localized abscesses, most often periarticular and intramuscular, not involving the joints or any of the internal organs usually involved in metastatic processes. Of especial interest in this group were three cases of abscess of the rectus muscle, to which had been added a fourth case observed at the Infants' Hospital in Boston by Dr. W. E. Ladd and, with his kind permission, included here. They were first observed about a month after the onset of the pneumonia—two had no other complication, the third had empyema and an abscess in the chest wall. Culturally all showed pneumococci—two type 1, one untyped. All recovered promptly after incision and drainage.

In the autopsy reports made by Dr. S. Burt Wolbach, nine cases presented clearly defined Zenker degeneration of the recti muscles with rupture of the muscle fibres and intramuscular hemorrhage. To a lesser degree the same process was observed in other muscles of the abdomen and in muscles of the chest. It seemed quite evident that these abscesses represented infected muscle hematoma and that the infection was blood borne. They presented themselves late in the disease, were not accompanied by manifestations of general sepsis, and were not readily diagnosed because unsuspected. Their presence in the tissues about the joints and in the abdominal muscles, and their absence in the joints themselves and in the abdominal viscera, suggested the possibility of a selective action on the part of the infecting agent.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of Wednesday, May 7, 1919.

The President, Dr. WILLIAM J. TAYLOR, in the Chair.

Dr. WILLIAM M. WELCH presented to the college a pamphlet which was the first publication in this country on the subject of vaccination. The article was written by Benjamin Waterhouse, the first professor of the theory and practice of medicine in Harvard University. The pamphlet states that the author received the virus from England and immediately vaccinated his own children. To prove that the children were immune he subsequently took them to the smallpox hospital in Boston where they were inoculated with smallpox virus taken directly from a pustule on a patient in the hospital

at that time. Finding that it made no impression upon the children he exclaimed, "One such fact is worth a thousand arguments."

The Human Machine in the Factory.—FREDERIC S. LEE, Ph. D., of Columbia University, New York, said that in 1913-14 the Marey Institute in France undertook the investigation of industrial fatigue. The war prevented a realization of the plan in France, but did exactly the reverse in England. The paper consisted largely of the results of the work done in England and in America during the war. Of a number of technical physiological methods used for the detection of fatigue three were mentioned: The spring balance method of determining muscular strength, the vascular skin reaction test, and the cinematographic method.

The spring balance method, devised by Professor E. G. Martin, measures in pounds the force required to overcome the contraction of certain selected groups of muscles and computing from such figures the total strength of the body.

In the vascular skin reaction test which was devised by Professor A. H. Ryan, a stroke is made with a suitable apparatus across the skin of the forearm. A white dermographic streak appears, increases in intensity, and gradually fades. The time elapsing between the making of the stroke and the termination of the maximum whiteness of the streak is shorter in fatigue. An index of fatigue is thus obtained, and a diurnal curve of fatigue may be plotted. Interpreted in physiological terms the curve reveals the progressive course of fatigue during the two spells of the day's work and the interruption of the fatigue process, or even a partial restoration of working power, during the luncheon period.

Doctor Lee pointed out that the cinematographic method had been used both in France and America to present in graphic form bodily positions and bodily motions. It indicates the difference between the skilled and the unskilled worker. Amar combined the cinematographic method with a method of tambour registration of physiological movements and thus demonstrated the rhythm of the skilled worker's motions.

The diurnal course of output, a method extensively studied in America, was found in a dexterous operation requiring careful attention and exact neuromuscular coordination, to be as follows: Beginning rather high in the morning the curve rose still further and reached its highest point during the second hour of the forenoon; thence it fell gradually until the luncheon period; beginning at a slightly higher level after luncheon it again rose momentarily, but only slightly, and then fell progressively throughout the rest of the afternoon, reaching its lowest point during the final hour. To increase the total output the possible value of introducing other rest periods than the luncheon period in the working hours was suggested. The results in an experiment in which two ten minute rest periods were introduced showed an increased daily output of from three to twenty-six per cent. Our studies indicated that the problem of the length of the working day had its physiological features, and further investigation, it was predicted, would show that the opti-

mum duration of labor varied with both the nature of the operation and the worker: one length of day was best for one kind of work and certain workers, and another was best for another kind of work and other workers. The establishment of a universal working day would therefore be an unscientific procedure. Doctor Lee said that the indication that night work was not as efficient as day work was supported by British observations which showed that the output of the former was six to seventeen per cent. less than the latter. The seasonal course of output had been shown to be ten per cent. less in August than in January, while by good ventilation this seasonal variation could be considerably counteracted. Most industrial accidents had a physiological origin and here it was fairly conclusive that fatigue was potent, the greatest number of accidents occurring in the final hour of the day's work. In our observations upon the work of the human machine we were seeing a new science, that of industrial physiology. So far as the human machine was concerned science ought to be the guiding influence in the organization and administration of industrial enterprises. As science had changed the aspect of medicine it had a mission to perform in industry and in this regeneration Doctor Lee believed America had a great opportunity for leadership.

Results of Nutritional Surveys in United States Training Camps.—Lieutenant Colonel John R. Murlin, Medical Corps, U. S. Army, said that one of the first activities of the nutritional surveys division was to select men experienced in food survey, send them to the camps in rotation, have them select typical menus and make quantitative studies in order to determine the quantity of food needed, the quantity wasted and the suitability of the food for the need of the soldier. These surveys began about the 1st of October, 1917, and continued almost to the present time. Because of many constructive efforts on the part of the survey members the camp commanders requested that these nutritional officers be allowed to stay longer in the camps. This led to a general order issued about the 15th of July that a nutritional officer be stationed in every camp of more than ten thousand men. Meantime nutritional officers had been trained and sent to France and assigned to the separate divisions. In October of last year the Surgeon General's Office received a request that each division coming to France have a nutritional officer assigned to it. Obviously it was impossible to instruct every mess official in camp and the mess officers and sergeants were therefore directed to see that instructions were carried out. The work was appreciated to such an extent that those men were kept in France and meantime found much to do in connection with the relief work. As a result, what a laborer needed in the way of food had been learned and much other scientific knowledge upon the question of the nutrition of the soldier in France. In the continuance of this work the Army Medical School had established a laboratory for the instruction of medical officers in food nutrition. Work in sanitation would be applied in the inspection of foods in order to insure a properly balanced diet.

Discussion.—Dr. JAMES M. ANDERS said that while the worker must be skilled in his special line of work, the care of the body was but little, if at all, less important from the viewpoint of efficiency. Apart from the question of keeping the worker in fit condition, the employer must bear in mind that he was dealing with a human being who had certain social claims which must be respected. Employers of labor should be encouraged to develop the so-called social conscience. From observation of men in the service it would seem that in physical exercise we had a remedy not only for rapid fatigue, but one which would have greatly reduced the percentage of rejections among drafted men had it not been neglected in the past. From Doctor Lee's significant statement that physical exercise tended to increase a man's resistance to the effects of the fatigue poisons it was obvious that such exercise would make for greater efficiency of the human machine.

Lieutenant Colonel JOHN R. MURLIN, in connection with the restoration effect of the lunch period mentioned by Doctor Lee, wondered whether the hot or cold lunch, the light lunch or one heavy with meat, had a different restoration effect upon the worker.

Dr. ALFRED STENGEL thought the results of the nutritional surveys had shown us an experimental study of nutrition on a large scale; even more, perhaps, had the issuing of rations been experimental medicine on a large scale. The work done, particularly in England upon the rationing of the civilian population was experimental medicine of the highest possible order.

Doctor LEE, in closing, said that the question raised by Colonel Murlin was of the greatest importance. The efficiency of the human machine in the factory was largely dependent upon adequate and properly balanced diet. British investigators had placed a minimum diet of 3,000 calories for munition workers, but had made no observations on the correlation of rations and output. He trusted Colonel Murlin might be induced to undertake such a study.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in Its Relation to Clinical Medicine. By FRANCIS MARION POTTINGER, A. M., M. D., LL. D., F. A. C. S., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal.; Professor of Diseases of the Chest, College of Physicians and Surgeons, University of Southern California, Los Angeles. Illustrated. St. Louis: C. V. Mosby Company, 1919. Pp. 328.

The author's highly interesting papers have appeared from time to time in the NEW YORK MEDICAL JOURNAL. In this book, which at first glance appears deeply technical, he has correlated many obscure and somewhat unrelated neurological and

physiological findings and has woven them into a monograph containing much that is of value in everyday practice. His constant object has been to piece disjointed bits into material capable of logical application. For instance, if he begins with the nerve supply of the lacrimal gland, he immediately makes use of this in its relationship to common affections, such as hay fever and rhinitis. The charts and tables are extremely clear and helpful.

Doctor Pottenger never loses sight of the fact that the human body is a complex mechanism and that experimental findings should at once be made use of in connection with the human body as an entity. He deplors the inaccuracy of clinical observation. He also objects to the study of medicine being made merely a matter of memory, insisting that it is a question of teaching principles and their practical application. This is more than a matter of memory. He quotes Pasteur in support of theory: "Without theory, practice is but a routine born of habit. Theory alone can bring forth and develop the spirit of invention." As he himself states, the author has gathered from the labors of the physiologists data with which he has constructed a bridge between cause and effect in certain disease processes. It is a good bridge.

Births, Marriages and Deaths.

Died.

- BLACKERBY.—In Falmouth, Ky., on Saturday, July 12th, Dr. P. M. Blackerby, aged seventy-four years.
- BRIGGS.—In Shickshinny, Pa., on Sunday, July 6th, Dr. Jacob F. Briggs, aged eighty-three years.
- BRITTIN.—In Springfield, Ill., on Wednesday, July 2nd, Captain Oliver Perry Brittin, Medical Corps, U. S. Army, aged thirty-five years.
- CARY.—In Fort Wayne, Ind., on Wednesday, July 9th, Dr. David Cary, aged eighty years.
- COWLES.—In Plymouth, Mass., on Friday, July 25th, Dr. Edward W. Cowles, aged eighty-two years.
- CURRIER.—In Claremont, N. H., on Monday, July 14th, Dr. John M. Currier, aged eighty-seven years.
- DORMAN.—In Taylorville, Ill., on Thursday, July 10th, Dr. Martin L. Dorman, aged seventy-nine years.
- EDGERT.—In Petersville, Pa., on Saturday, July 19th, Dr. Fred G. Edgert, aged fifty-seven years.
- GOODING.—In Braintree, Mass., on Thursday, July 17th, Dr. E. Jeannette Gooding, aged eighty-eight years.
- OKIN.—In New York, N. Y., on Friday, July 18th, Dr. George Okin.
- ORF.—In Indiana Harbor, Ind., on Saturday, July 12th, Dr. George Orf, aged forty-four years.
- PRICE.—In Philadelphia, Pa., on Wednesday, July 2nd, Dr. William Henry Price, aged fifty-four years.
- RENNOLDS.—In Baltimore, Md., on Saturday, July 5th, Dr. Henry T. Rennolds, aged seventy-five years.
- RITCHIE.—In Harrisburg, Pa., on Sunday, July 20th, Dr. Melancthon Marion Ritchie, aged sixty-nine years.
- SCHUELE.—In Bridgeport, Conn., on Thursday, July 10th, Dr. George J. Schuele, aged forty-one years.
- SWAN.—In Maywood, Ill., on Tuesday, June 24th, Dr. V. N. Swan, aged seventy-one years.
- WARNER.—In Philadelphia, Pa., on Friday, July 18th, Dr. Ellwood Beatty Warner, aged sixty years.
- WARREN.—In El Paso, Tex., on Tuesday, July 1st, Dr. Leslie K. Warren, aged thirty-five years.
- WHEELER.—In Los Angeles, Cal., on Thursday, June 26th, Dr. George W. Wheeler, aged fifty-eight years.
- WILLIS.—In Jersey City, N. J., on Friday, July 11th, Dr. Mary A. Willis, aged seventy-five years.
- WHITE.—In Yonkers, N. Y., on Wednesday, July 23rd, Dr. Thomas H. White, aged eighty years.

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Original Communications

TUBERCULOSIS AMONG THE EUROPEAN NATIONS AT WAR.

By JAMES ALEXANDER MILLER, M. D.,
New York.

INTRODUCTION.

The impulse to renewed activity furnished by the war and the consequent readjustments of old ideas to meet the unprecedented conditions are perhaps nowhere more important than in the field of preventable disease. Among the preventable diseases, tuberculosis has always played a leading rôle and from the campaign against it many of the fundamental principles of public health have been developed and applied widely to other diseases.

Before the war, however, it may truthfully be said that in America, at least, further progress toward the prevention of tuberculosis has been increasingly difficult and we have, therefore, watched with some concern the effect of the more brilliant results attained in other diseases which has tended to create a comparative diminution of the professional as well as public interest in the tuberculosis problem. Explanation of this phenomenon is not lacking. Acute disease with short incubation period and rapid termination lends itself to accurate knowledge of the varying factors in causation, prevention, and treatment. Results of successful efforts against such diseases are consequently more striking and more dramatic than could ever possibly be the case in a chronic infection such as tuberculosis, short of anything but an absolutely specific method of treatment which we as yet entirely lack.

In tuberculosis the more obvious and less difficult methods of procedure have now been in operation for some years and have become commonplace. No new facts have developed in recent years and the principal interest as well as perhaps the chief progress has been obtained along old lines and consequently we had begun to find the antituberculosis campaign settling down to a rather humdrum, uninspiring routine, enlivened only by the mutterings of criticism. This criticism is already, in some quarters, beginning to take shape as an insistent demand for a reconsideration of all the evidence, with the idea that an unprejudiced investigation of the actual results obtained might justify a complete reconstruction of accepted ideas.

Into this rather drab atmosphere in which those

of us particularly interested in tuberculosis were beginning to find ourselves, the crash of world war came with its upheaval of accepted habits, the loosening from many of our traditional moorings and the urgent call for quick readjustments in thought and action to save the very foundations of society. The small part which the members of the Commission for the Prevention of Tuberculosis in France were privileged to play in this momentous drama was along conventional lines but with its interest heightened because of the vivid setting in which the scene was laid. The task therefore which I have set myself at this time is to summarize some of our experiences with tuberculosis under the unprecedented conditions of war and to attempt to analyze these facts so that perhaps some lessons or, at least, suggestions of value may be elicited. Thus perhaps a hackneyed subject may absorb new interest from the vividness of its surroundings and so unromantic a subject as tuberculosis may share in the new spirit and new knowledge which we feel must be born into the world to help compensate for the fearful price which has been paid.

The sources of information at our command lend themselves to the purpose in mind. Our special field of activities being laid in France, our knowledge of conditions in that country are of course particularly complete and are peculiarly interesting because of the fact that modern methods of control of preventable disease have been in the past remarkably deficient for a nation which has contributed so much to the development of scientific medicine. This fact, however, throws valuable light upon the effect of such a shortsighted policy upon the incidence of tuberculosis and also now that finally a vigorous modern public health program is in a fair way to being established, the results should be more striking and the relation between cause and effect in such a program should be more susceptible to critical analysis than is possible in countries like our own where the campaign for better hygiene has been a more gradual development.

In addition to France, however, our contacts have supplied some valuable though less complete information of conditions existing in Great Britain, Belgium, Germany, Austria-Hungary, and Serbia. All of these, with also some consideration of the situation as it affects America, will be included in this discussion.

The influence of the war upon tuberculosis problems falls into two general categories: First, in the armies, and, secondly, among the civilian populations.

TUBERCULOSIS AND THE ARMIES.

The French Army.—It was the cry of alarm in reference to tuberculosis in the French army which first attracted serious attention to the possible great importance of this disease as a factor in army problems. It was Professor Landouzy who first voiced this apprehension with his estimate of 150,000 cases of tuberculosis in the French army. This unfortunate exaggeration has been widely quoted and quite generally accepted as representing the danger to French military efficiency from this source and by inference, therefore, to the armies of other nations as well. In the light of this startling first impression the results of subsequent investigations are peculiarly interesting.

In December, 1917, M. Godart made public in the French Senate the fact that the total number of soldiers discharged from the French army from August 2, 1914, to October 31, 1917, was 89,430. Of these 70,196 were discharged previous to March 1, 1916, and represented largely cases of preexisting tuberculosis caught into the army by the urgently rapid mobilization without proper medical examination and in consequence in no way dependent upon the influence of army life. That consequently from March 1, 1916, to October 31, 1917, the number of such cases was only 19,134, which may be taken as the truer indication of the amount of tuberculosis actually developing in the army during active service. Moreover, M. Godart stated that subsequent careful reexamination of these discharged soldiers revealed the fact that a very large proportion of these cases were erroneously diagnosed and Professor Emile Sergent and Major Edouard Rist, who have personally examined several thousand of these patients estimate that the proportion of such faulty diagnoses may reach the astonishing total of forty per cent. of all.

The exact size of the French army is not public knowledge, so that accurate estimate of the meaning of these figures in percentages is not possible, but it certainly could not have been less than 4,000,000 men the first months of the war or less than 3,000,000 in the later period after March 1, 1916. Upon this basis and accepting the higher figures furnished by M. Godart as official, without consideration of the tremendous reduction which would result from the acceptance of the estimates of Sergeant and Rist, we may estimate that the maximum amount of tuberculosis necessitating discharge from the army was 1.75 per cent. in the early months of the war when, according to general knowledge, large numbers of patients with active tuberculosis were mobilized and .63 per cent. in the later months of the war after such cases were probably largely eliminated.

When we compare these figures with the results obtained in America through the medical examinations for our own army as published by Colonel George E. Bushnell, we find that an average of .78 per cent. were rejected for tuberculosis. This indicates not only that the tuberculosis situation in the

French army was grossly exaggerated but also that the number of cases developing in the army during active service is not greater than that found in a similar group of men taken from civilian life in America. Further corroboration of this point of view has reached us from various sources and with no exceptions the physicians and surgeons of the French army with whom we have discussed this subject state that in their experience the physical condition of the men is much better than among similar groups who have been mobilized into industry or than it would have been in their normal civil life, and numerous examples of early or latent tuberculosis becoming arrested after two or three years of military service, have come to our knowledge.

The British Army.—We have sought for similar evidence from the experience in the British army and through the courtesy of the war office and of the statistical department of the Medical Research Committee, we have secured some interesting data. The case sheets of all sick and wounded in the British army are filed with the Medical Research Committee whose statistical department is engaged in an analysis of them. Up to the present time only the records up to December 31, 1915, had been systematized in such a way that the desired information was available. Doctor Young of this department very kindly went over the records and furnished the following figures.

AUGUST, 1914, TO DECEMBER 31, 1915.

Total number of medical case sheets.....	400,000
Number of cases of wounds.....	130,385
Total number of medical cases, excluding wounds	269,615
Total number cases tuberculosis, excluding glands.....	3,575
Total number cases pulmonary tuberculosis.....	3,020
Total number cases other forms tuberculosis, excluding glands.....	555

From these figures it is shown that tuberculosis forms 1.3 per cent. of the whole number excepting wounds and that pulmonary tuberculosis forms 1.1 per cent.

From the British war office evidence from another angle was obtained. The number of soldiers discharged for tuberculosis during the war not being available, we took the total number of hospitalized soldiers in Great Britain upon a given day and compared it with conditions before the war with the following result:

ON APRIL 30, 1918.

Total number of hospital cases in United Kingdom.....	263,000
Total number of cases, excluding wounds.....	137,000
*Total number of cases of pulmonary tuberculosis.....	1,264
Percentage of pulmonary tuberculosis.....	.92

From the same source we obtained the similar figures for peace times. It appears that the proportion of pulmonary tuberculosis in the British Army has been almost a constant factor for fifteen years so that the percentage curve of hospitalized cases found tuberculous is practically a flat one at 1.1 per cent. The average total number of such hospital cases before the war was from 4,000 to 5,000.

It also appears that the average number of cases

*Of these 680 cases developed in France, 477 in the United Kingdom, 32 in Mesopotamia, 22 in Egypt, 13 in Italy, 10 in Salonica, 3 in Africa, and 27 from all other sources.

discharged from the British Army over a number of years before the war was 1.31 per cent. From these figures, incomplete though they are and probably containing errors incident upon the extraordinary difficulty of maintaining accurate war time records, it would seem justifiable to conclude that the conditions of the present war have not tended to increase the percentage of tuberculosis in the British Army.

The Belgian Army.—The inspector general of the Service de Santé of the Belgian Army has very

TABLE I.
TUBERCULOSIS IN THE ARMIES.

Army.	Period and unit.	Percentage of tuberculosis.
France	..... Early months of war.	1.75
France	..... Last two years of war.	.63
Great Britain	..... Before the war. Entire army.	1.1
Great Britain	..... First seventeen months of war. Entire army.	1.1
Great Britain	..... Hospital cases, April 30, 1918.	.92
Belgium	..... Before the war. Entire army.	.35
Belgium	..... During the war. Entire army.	.26
United States	..... Regular army, 1917-1918.	.75
United States	..... Officers' training camps.	.27
United States	..... Seventeen Divisions National Guard.	1.09
United States	..... National Army.	.67
United States	..... Entire army, 1,406,498 men.	.78

kindly supplied us with information concerning tuberculosis before and during the war. The average number of cases discharged for tuberculosis before the war was 163 a year. The average army strength during the same period was 46,000 men. This gives an incidence of pulmonary tuberculosis of .35 per cent. a year. Since the beginning of the war up to October 15, 1918, the total number of cases of pulmonary tuberculosis discovered in the army has been 2,099. The statistics according to each year are not available but this figure would give approximately 525 cases a year. The average number of effectives in the army during this time was 200,000 men. This gives an incidence of .26 per cent. per annum which is only seventy-five per cent. of the prewar experience. It is thus shown that Belgium with an extremely low incidence of tuberculosis in its army before the war nevertheless has had this rate very distinctly lowered during the war.

The American Army.—When we turn to the short and necessarily inconclusive experience of our own army, we find that tuberculosis is not proving in any sense a large problem. This is very probably due to the extraordinarily efficient methods employed in the examination of recruits and later of the troops in the cantonments. These examinations as already stated showed a percentage of .78 cases discharged for pulmonary tuberculosis, which figure must be taken rather of the incidence of this disease among civilians of the age group from which our army was recruited, rather than in any sense an index of the influence of army life.

The protection against tuberculosis afforded to the fighting forces by the systematic elimination of active or latent cases through careful examination is shown by the fact that only a few hundred cases of pulmonary tuberculosis have developed among the American troops in France, so that this disease was never a serious problem there.

Table I shows the relative incidence of pulmonary tuberculosis in the various armies before

and during the war and the results of examinations of a large portion of our own army.

EFFECTS OF ASPHYXIATING GAS AND CHEST WOUNDS.

Another interesting medical question which affects all the armies is the effect of gas warfare and of chest wounds upon the subsequent development of pulmonary tuberculosis. It appears to be definitely proved that contrary to expectations based upon currently accepted notions, pulmonary tuberculosis does not often develop as a result of these severe mechanical irritations of the respiratory tract. From all of the sources available to us it therefore seems entirely justifiable to conclude that tuberculosis has not been increased because of the influence of this war upon the armies in the field and that if anything the effect of army life is to diminish the hazard from pulmonary tuberculosis. For any effect of the war toward the increase of tuberculosis we must look to the conditions among the civilian populations.

TUBERCULOSIS AMONG CIVILIANS.

In France.—In France the tuberculosis situation among the civilian population is truly a serious one, it is not, however, evenly distributed throughout the country, as high mortalities are found in the cities, while the rural sections are comparatively low excepting in Brittany and Normandy, where special conditions exist.

It is also surprising to find that, statistically at least, the war cannot be proved to have materially increased the tuberculosis death rate. This is shown in Table II of comparative mortalities before and during the war in the city of Paris, where very complete records are available, and for thirteen representative departments of France in Table III the data for which for the years 1912-1916 have been collected with some difficulty by our commission. It must be remembered, however, that all mortality rates are based on 1911 census figures, which the large number of as yet unreported military deaths and the very marked redistribution of the population, due to the war, render of little value as a present day basis.

TABLE II.
DEATHS FROM PULMONARY TUBERCULOSIS IN PARIS OF RESIDENTS AND NONRESIDENTS DURING THE YEARS 1912, 1913, 1914, 1915, 1916, AND 1917.*

Year.	Deaths from pulmonary tuberculosis—			Rate per 100,000 inhabitants resident of Paris.
	Residents of Paris.	Nonresidents of Paris.	Total.	
1912	9,825	1,251	10,776	332
1913	9,268	1,220	10,437	328
1914	9,359	1,439	10,798	328
1915	9,091	1,377	10,468	319
1916	8,756	1,358	10,214	307
1917	8,424	1,152	10,076	295

*From the Weekly Bulletins of the *Statistique Municipale de Paris*.

I have already had occasion (1) to describe the social conditions in France which appear to have their influence upon the tuberculosis problem which in brief may be summarized as follows: 1, A problem of tremendous and often shocking overcrowding in the larger cities due to the influx of refugees from the invaded districts, the unprecedented development of war industries in these centres and the total lack of new housing construction since the beginning of the war; 2, the excessive industrial

TABLE III. TUBERCULOSIS MORTALITY.*

DEATHS FROM TUBERCULOSIS OF ALL FORMS IN THIRTEEN DEPARTMENTS DURING THE YEARS 1912, 1913, 1914, 1915, 1916.

Departments.	Population in 1911.	1912		1913		1914		1915		1916	
		Tuber- culosis deaths.	Rate per 100,000.	Tuber- culosis deaths.	Rate per 100,000.	Tuber- culosis deaths.	Rate per 100,000.	Tuber- culosis deaths.	Rate per 100,000.	Tuber- culosis deaths.	Rate per 100,000.
Alpes (Hautes)	105,083	88	84	96	91	101	96	83	79	58	55
Calvados	296,318	983	248	922	233	1,170	295	1,222	308	1,112	281
Cantal	243,361	200	90	208	93	187	84	224	100	217	97
Côte d'Or	350,044	372	106	378	106	374	122	440	126	419	120
Creuse	266,188	387	145	312	125	419	160	428	162	307	138
Isère	555,911	988	178	876	158	803	144	839	151	901	162
Loiret-Cher	271,231	386	142	394	145	382	141	381	140	371	137
Pyrenées (Hautes)	206,195	303	147	290	141	338	164	318	154	258	125
Pyrenées Orientales	212,086	266	125	279	128	261	124	271	127	...	...
Savoie	247,890	310	125	273	110	277	112	221	89	357	144
Savoie (Haute)	255,137	424	166	418	164	442	173	379	148	400	157
Sèvres (Deux)	433,627	447	132	423	125	452	134	502	149	433	128
Seine (Paris and suburbs) ..	4,154,042	16,871	406	16,627	400	17,021	410	16,487	397	15,825	381
Total for the thirteen departments	7,581,923	22,025	290	21,716	286	22,177	292	21,804	288	20,718	281

*Compiled from correspondence with the prefects of these departments by G. J. Drolot, statistician, Commission for the Prevention of Tuberculosis in France.

pressure which has drafted especially thousands of women into unaccustomed industry and usually under the most unfavorable hygienic conditions, of long hours, excessive strain and special hazards of the working environment itself; 3, the prolonged physical and mental strain incident to the war, nowhere more noticeable than in France, and, 4, excessive alcoholism in such cities as Paris and Marseilles and certain country districts as Brittany and Normandy.

In spite of the fact of the figures, however, it may be said the general impression of physicians in dispensary work in France, including our own, is that there actually exists a relative increase in tuberculosis in France, especially among younger women, which would seem to depend especially upon the continuation of untoward housing and industrial conditions above noted. Whether this is actually true, however, can only be demonstrated later after more accurate records are available.

It is both interesting and important to note that there has been no real problem of under nourishment in France. Food in general has been sufficient and available to the working classes because the higher prices have been offset by the correspondingly higher wages. During the past few months, however, food conditions in France have been unsatisfactory for the first time and we are beginning to see evidences of it in a more general malnutrition among dispensary patients than formerly. If continued this condition will undoubtedly lead to serious results. Our commission is instituting a study of the food factor in the development of tuberculosis among the patients coming under our observation. This is only just begun but the preliminary observations tend to confirm impressions that up to the present time, at least, food conditions have played practically no part in the war tuberculosis problem in France.

CIVILIAN TUBERCULOSIS IN ENGLAND.

The antituberculosis campaign is well organized in England along lines similar to those in America. It has of course been much disturbed by the war but the system of State organization with special tuberculosis health officers for each county has in general held it well in line, so much so as to challenge our admiration. With the staff of physicians and nurses markedly depleted, with the tremendous urgent demands of war needs, the tuberculosis work still goes on, handicapped but not interrupted.

The public health records are also kept up in excellent form, although of course war conditions and the disturbed distribution of population here as in France, render it difficult to draw accurate conclusions from statistical returns. The report of the medical officer of the Local Government Board for the year 1917-18 shows a distinct increase in pulmonary tuberculosis in 1915, 1916 and 1917. Other forms of tuberculosis have not increased.

TABLE IV.
ENGLAND AND WALES.

Year.	Deaths from pulmonary tuberculosis.		Total.
	Males.	Females.	
1911	21,985	17,247	39,232
1912	21,568	16,515	38,083
1913	21,634	16,621	37,055
1914	21,812	16,825	38,637
1915	23,630	18,046	41,676
1916	23,238	18,307	41,545
1917	23,670	19,443	43,113

Table IV shows the exact figures in deaths from pulmonary tuberculosis in England and Wales for the years 1911-1917 inclusive, and Table V shows the effect of the war more strikingly by indicating the increase of such deaths for each year of the war over those of the year 1913. The progressive increase is very evident and is distinctly more marked among women. The comparative number of deaths is probably a more reliable index than percentages on account of the unreliable data on actual population, also, the deaths among women

TABLE V.
ENGLAND AND WALES.
Increase in deaths from pulmonary tuberculosis over the number occurring in 1913 among—

Year.	Increase in deaths from pulmonary tuberculosis over the number occurring in 1913 among—		Total.
	Males.	Females.	
1914	778	804	1,582
1915	2,596	2,025	4,621
1916	2,204	2,286	4,490
1917	2,636	3,422	6,058

may be assumed to afford a better criterion of the effect of social conditions, both because of the removal of the large proportion of the male population with the army and also because the men left at home would naturally include all of the physically unfit among whom the rate of tuberculosis might be expected to be abnormally high.

The medical officer in his report does not hesitate to attribute this excessive mortality among women to their extensive employment in munition and other industrial occupations under conditions of exceptional stress and strain, often associated with

crowded lodging accommodation." Further analysis of the returns shows that the striking increase is among women of the age group of fifteen to twenty-five and that it is most evident in the industrial centres. Interesting confirmation of the effect of war industry upon tuberculosis is afforded by a special report to the Ministry of Munitions by Captain Greenwood and Doctor Tebb. After a very exhaustive statistical study amplified by certain field investigations they conclude that in 1916 and 1917 there was a distinct increase in tuberculosis in industrial centres especially among females between the ages of fifteen and twenty-five, while in rural districts this increase among women of this age is not shown, but the curve of mortality is similar although somewhat higher than the preceding years. They conclude that certain occupations among city dwellers show results only explicable by the assumption that such employment introduces a special factor which favors the development of tuberculosis. They also conclude from their investigation that domestic overcrowding is not a sufficient explanation of the increase of tuberculosis, because such overcrowding is very common in many rural districts and because their special field investigation does not show (statistically at least) that this overcrowding is the prime factor. This is particularly interesting not so much as disproving the influence of overcrowding but rather as placing the greater emphasis upon the rôle of unfavorable industrial conditions.

In general it may be said that poverty among the working class of England does not appear a striking war condition on account of high wages and plenty of work and also that here as in France the food factor is not important. Food in England is most carefully distributed by an efficient rationing system but the supply is sufficient so that malnutrition is not increased even among the poorer classes.

We therefore see that our experience in France is strikingly corroborated by that of England, so that the effect of the war among civilians appears to be a problem of industry in the larger cities, especially among young women, with overcrowding an important although possibly a secondary factor and with no influence attributable to insufficient food.

In occupied Belgium.—I had the unexpected good fortune to visit the authorities of the Belgian Government at Havre just as Hulot the Inspecteur de Service de Sante had completed a very full and remarkable report to the Minister of the Interior upon the health conditions in occupied Belgium. This report is based upon detailed personal descriptions of actual conditions in various parts of Belgium under German domination collected through the *Ligue Nationale* with headquarters in Brussels. The writers are for the most part physicians who support their vivid reports of the heartbreaking conditions with technical details which command acceptance. I wish that it was possible to reproduce the agonizing cry of distress as well as the testimony of heroic struggle against overwhelming odds which rings throughout the pages of this intensely human document, but we must limit ourselves to those portions which deal

with the tuberculosis problem and its corollary the problem of food. From all the numerous sources the testimony is unanimous in stressing infant mortality and tuberculosis as the urgent problems.

These conditions are well demonstrated in Chart I reproduced from Doctor Hulot's report, which shows the comparative mortality for the years 1913-1917 for the cities of Antwerp and Liege.

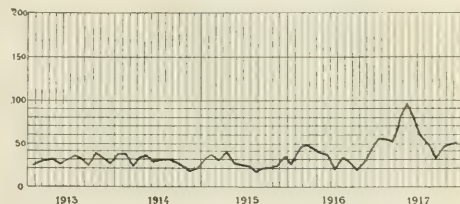


CHART I.—Showing the mortality in all forms of tuberculosis in Antwerp.

The same startling increase, especially for 1917, is evident in both, the increase of 1917 over 1913, ninety-four per cent. in Antwerp and 102 per cent. in Liege. The story of food conditions is the same from all parts of Belgium. As an example I will quote from the report of Van Cauegham, of Bruges, which may be taken as indicative of the situation in general. He addresses to the Spanish Minister the following report in May, 1918:

At the present time, the individual per diem ration of our population is composed of 300 grams of bread, eleven grams of meat, fifteen grams of lard, thirty grams of rice, eighteen grams of corn flour, eighteen grams of beans, and eight grams of sugar.

The other articles of food that formerly gave our population the energy necessary to meet its physiological needs are no longer accessible—as concerns meat, it can claim it has the right to seventy-five grams per week and per person, seventy-five grams which it is not yet given regularly; sausages and preserves practically do not count, fish arrives in very little quantities and at prices altogether beyond the reach of the working classes (75 centimes to 1 franc 25 apiece for herring), mussels arrive but once in a while and crawfish practically never. As for articles of food rich in fats, milk can no longer be obtained, and only in trifling quantities for the sick; the quantity of butter left to the population is so reduced that it no longer counts as a food; it is the same with the homemade lard; cheese has practically disappeared.

Since April 15, 1917, there has been no distribution of potatoes. Beer, very scarce, is not capable of increasing perceptibly the nutritious value of our food ration. There remains therefore practically as regards the regular feeding of the large part of the population only the ration indicated above.

According to all evidence that science places at our disposal, the food ration that is accorded to us, for the households counting only adults and young people, is altogether insufficient both from the point of view of quantity and of quality.

Doctor Hulot informs me that the average adult daily ration for all of occupied Belgium has averaged between 1,800 and 2,000 calories for the entire year 1918. It requires no imagination or scientific knowledge to correlate the increase of tuberculosis with the insufficiency of food, affording a striking contrast with the conditions noted in France and England. Belgium has already organized a splendid program for meeting its afterwar tuberculosis problem and I am informed that the *Ligue Na-*

tionale struggling under the intolerable burden of supplying relief of all sorts during the German occupation, has in addition raised a fund of 6,000,000 francs for tuberculosis with which this program is to be launched. Truly the little that this country has done or can do to help these heroic people fades into insignificance when we realize what they are doing to help themselves.

In Germany.—Accurate information from Ger-

In Austria-Hungary.—The only available data upon the conditions in Austria-Hungary that I have been able to find are given by Sir Bernard Mallet (2), the Registrar General of England, who furnished the information shown in Table VIII for the cities of Vienna, Prague, Trieste, and Budapest. In the period shown, which is only from thirty to thirty-five weeks, the deaths from tuberculosis increased from 7,311 in 1913 to 11,755 in 1917

TABLE VI.

GERMANY.

All cities over 200,000 population.

Year.	Population.	Total births.	Birth rate.	Total deaths.	Death rate.	Deaths under one year.	Infant mortality.	Tuberculosis deaths.	Tuberculosis death rate.	Respiratory deaths.
1917 (11 months)	11,444,917	123,489	10.9	202,694	17.9	18,887	146	26,395	2.3	23,533
1916 (11 months)	11,621,462	142,853	12.3	173,539	14.9	18,462	129	18,909	1.6	18,803
1913 (11 months)	11,014,857	229,938	20.9	134,515	12.2	31,991	139	16,520	1.5	16,603

TABLE VII.

BERLIN.

Year.	Population.	Total births.	Birth rate.	Total deaths.	Death rate.	Deaths under one year.	Infant mortality.	Tuberculosis deaths.	Tuberculosis death rate.	Respiratory deaths.
1917 (11 months)	1,728,198	17,153	9.9	39,823	23.0	....	160	5,329	3.1	....
1916 (11 months)	1,800,742	20,802	11.6	32,845	18.2	....	127	3,658	2.0	....
1913 (11 months)	2,079,789	37,190	17.9	25,579	12.3	....	138	3,518	1.7	....

many is of course scanty but the official publications of the German Imperial Health Office have been issued weekly and show the population, births and mortality from various groups of diseases in cities of 15,000 or more inhabitants. This constitutes a total population of about twenty-seven million or a little less than one-third of the total population of Germany. The total deaths from tuberculosis in 1913 was 40,625; in 1916, 48,446; in 1917, 67,208. The percentages of tuberculosis deaths and total deaths were 11.2, 10.4, and 12.7 respectively for these three years, but excluding deaths from wounds, which are included in the German figures and not in those of the other countries cited, we find that this ratio for 1916 would be 13.3. Similar data for 1917 are not available.

If we take only cities of population of 200,000 or over, comprising eleven millions in all, we have the general situation shown in Table VI. This is only for the eleven months available for 1917 and consequently the corresponding months of 1913 and 1916 are used for comparison. This table shows a rise in tuberculosis death rate from 1.51 to the thousand in 1913 to 2.31 in 1917, the general death rate having risen from 12.2 to 17.9. It is a striking fact that the big increase in both did not occur until 1917, the year 1916 showing only a moderate increase in both general and tuberculosis death rates. Other points of interest in this table are the tremendous fall in birth rate, 1917 being about half of that of 1913, or 10.9 against 20.9, and also that the increase in infant mortality rate is not very marked in 1917 and in 1916 is below 1913—a circumstance difficult to understand. Conditions in the city of Berlin are distinctly worse as shown in Table VII. The statistics show a tuberculosis death rate of 3.1 in 1917 as compared with 1.7 in 1913; a general mortality rate of 23. against 12.3; a birth rate of only 9.9 against 17.9, and a marked increase in infant mortality from 138 to 160. It must be remembered that all of these figures must be accepted with reserve as even though they are official we know nothing of the actual conditions under which they were compiled.

or over sixty per cent., while the increases in the percentage of tuberculosis to all deaths varied from twenty-five to forty-five per cent. These figures indicate conditions far worse in Austria-Hungary than in Germany. Sir Bernard Mallet assumes the probability that bad food conditions are primarily responsible for this situation.

In Serbia.—We know quite as little of conditions in Serbia as we do of the Central Empires. Some information, however, is available, mainly obtained through the Serbian Health Commission in France. Doctor Petrowich, of this commission, in an article on Pulmonary Tuberculosis Among the Serbian Refugees in France, estimates upon the basis of 15,000 persons examined that at the present time fifteen per cent. of his countrymen suffer from the disease. The American Red Cross has established a special Serbian Bureau in Paris under the direction of Dr. Howard Woolston, and the investi-

TABLE VIII.

DEATHS FROM TUBERCULOSIS.

	September quarter—		December quarter—	
	1913.	1917.	1913.	1917.
Vienna	1,395	2,484	1,407	2,029
Prague	681	421	421	591
Trieste	213	267	198	238
Budapest	722	1,389	687	1,138

PERCENTAGE OF ALL DEATHS.

	September quarter—		December quarter—	
	1913.	1917.	1913.	1917.
Vienna	20.8	23.7	17.7	21.2
Prague	68.1	24.4	22.4	20.0
Trieste	17.2	22.8	15.0	20.1
Budapest	18.0	24.1	15.1	21.2

gations of this bureau show that there are 15,000 refugees in France and among them are 2,000 tuberculous or about thirteen per cent. Certainly every indication points to an enormous incidence of tuberculosis in Serbia as the result of privation and insufficient food.

When we attempt to visualize the situation which must exist among many other nations whose tragedies are as yet inarticulate, when we try to think of Russia, of Poland, of Armenia, of Roumania, to say nothing of the enemy nations themselves, we

get some dim perception of the unheard of burdens of suffering and disease which the war has brought to hundreds of thousands of the civilian population. Tuberculosis will surely be one of the most frequent consequences of such experiences and all of the available resources of the rest of the world will hardly be adequate to mitigate its ravages in these stricken countries.

SOME LESSONS LEARNED FROM WAR EXPERIENCES.

Turning from this necessarily cursory review of the tuberculosis situation in Europe occasioned by the war, let us consider some of the lessons which may be learned from it in the problems which now confront us not only in Europe but here at home.

1. The experience of the armies indicates that we may need to readjust our ideas of the hazards of hard physical exertion and exposure as regards the breakdown of resistance to tuberculosis provided these conditions are combined with open air life. In the latent or arrested cases the contrast between the effects of army life and that of city industrial life seems to be too well substantiated to be gain-

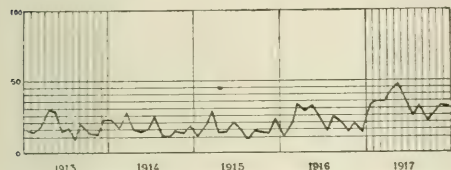


CHART II.—Showing the mortality in all forms of tuberculosis in Liege.

said. It speaks in favor of the advocates of physical work in the open air for patients suffering from inactive tuberculosis and indicates that the risk of overwork in such cases may be less than we have become accustomed to believe.

2. The infrequent development of pulmonary tuberculosis as the result of exposure to poisonous and irritating gases and of chest wounds raises the question as to whether we have not in the past over-emphasized the dangers of mechanical irritation and trauma as exciting causes of active tuberculosis.

3. The very remarkable success in the American army of the system of rapid but systematic chest examinations in eliminating to such a large extent those individuals in whom active tuberculosis is likely to develop leads the way to the adoption of similar methods to large groups in the community, especially important perhaps, among industrial workers.

The standards adopted by our army have eliminated many of the ultrarefinements in physical diagnosis and yet have been most satisfactory. This raises the question of the practical value of such intensive methods and whether their application has not worked considerable injustice in the past by attaching too great importance to slight variations from the normal. My own conviction is that we should never where practicable neglect any known method, but that in making a diagnosis of tuberculosis we should keep more clearly in mind that many patients have not active disease and do not require the strict sanatorium regime, but

rather a modification of their modes of living which we might designate as precautionary and preventive and which does not involve the disruption of ordinary life necessary in cases of active tuberculosis. Such a plan involves much individual thought, supervision, and attention and considerable skill and perhaps we have been too prone to place all cases into one category, thus working injustice not only to the individual but to the community.

4. The experience among the civilian population of Europe which we have studied throws them into two main groups; France and England on the one hand and Belgium, Germany, and Austria-Hungary on the other. In the former tuberculosis has only slightly increased since the war and this mainly among young women in industry; in the latter all classes of the community have suffered and to a rapidly increasing extent as the war went on. The principal difference appears to be that of food. Speaking generally, there has been no food problem in either France or England to the point of insufficient nourishment. That such has been the case is one of the wonderful achievements of the war to which the people of our own country have contributed in no small measure.

In the other groups of countries we have every reason to believe that the conditions described in Belgium are representative and that there has existed long continued undernourishment among the masses of the people, and that the increasing mortality from tuberculosis is largely dependent upon this factor there can be little or no doubt. The mortality curves in Belgium indicate that such conditions can be withstood for some time, even a year or two, without marked effect, but that after that time the effect is cumulative and the results become rapidly disastrous as the resistance of large numbers is broken down. The net results of such long continued inanition is not death from starvation but rather the widespread development of terminal infections, of which tuberculosis is perhaps the most prevalent. If this is true for the countries mentioned the incomplete information available would indicate that it is even far more so for Russia, for Poland, for Turkey, and the Balkan States. It is not improbable that the world faces today the tragedy of widespread famine in these countries with a toll of human life which may dwarf even the terrible losses of the war itself. In this toll, tuberculosis will surely play a leading part.

But apart from this evident and urgent problem may we not learn a lesson, too, in this connection for our own country, only lightly touched by the war. Is it not probable that much of our tuberculosis develops because of long continued insufficient or improper nourishment among many of our people and is not this perhaps the most potent factor in rendering the disease one particularly of the poorer classes? We have long known that this is true, but have we in our programs of prevention stressed this as we should and have we taken any adequate constructive measures to meet this phase of the problem? Is it too much to hope that a nation capable of the wonderful exhibition of voluntary food conservation and restriction with

which we have thrilled the world in the past two years, may be able to work out some plan of more equal distribution of food, so that the prewar waste of our well to do classes might in the future be eliminated to help conserve the health of those less favored, as it has that of England and France during the war?

5. But then there are other lessons in economics to be considered. We have seen the interesting similarity of experience in France and England and we have analyzed this to mean largely industrial conditions especially among young women. I would not minimize the housing problem, but to this we are already alive and much has been done to remedy conditions. This will and should be continued and extended. But we have only barely begun any systematic attempt to attain better industrial hygiene. The experiences we have recounted would indicate that this phase of preventive medicine must loom very large in our future program and that systematic supervision of working conditions must become, far more than in the past, a part of our community responsibility. The leaders of the working classes, especially the trades unions, appreciate this more keenly than do the rest of us, who have thought more in terms of home supervision and sanitation. These must go hand in hand and side by side as they have not as yet. The future is big with possibilities in this direction.

6. The last suggestion which I should like to present from our war experience is that of reeducation and vocational training for the tuberculous.

The war has wrought an extensive development of systems of reeducation for maimed and wounded soldiers which have aroused widespread interest in all countries and have already obtained striking results. The same plan is being applied to the tuberculous soldier. In England especially, the idea of industrial colonies has developed very rapidly and in France also two or three such colonies are in operation. I have had the opportunity to study some of these colonies in both countries and am much impressed with the possibilities which they offer not only for the soldier but for the tuberculous civilian as well.

It is common knowledge that the aftercare of the patient discharged from the sanatorium is as yet the big unsolved problem in the management of tuberculosis. Our followup systems are inadequate; our experiments with farm colonies have failed. Our arrested cases of tuberculosis continue to return to unfavorable environment and relapse in depressing numbers. The chief factor in this situation is economic, the necessity of earning a living, which presses so heavily upon these patients in the majority of instances and the easiest way for them is to return to their old jobs and take a chance on the relapse which all too frequently follows.

The tuberculous soldier is in a different position, which both England and France have been quick to realize. He may, if the government desires, be retained in the army under orders to continue treatment as long as may be necessary or he may by a wise use of pension benefits be relieved of the urgent necessity of quickly returning to civilian work in order to support himself and his depend-

ents. The great development of reeducation for the mutilated soldiers has paved the way for similar schemes for the tuberculous. They appeal to the imagination and to the sense of justice of private individuals and governmental authorities alike. They are and will be amply supported with necessary funds, fully justified by the success they have already attained. It remains only for well directed initiative to direct this same interest and support to the tuberculous soldier.

Already in this country a beginning has been made through the Surgeon General's Office and the Federal Board of Vocational Education, cooperating with the National Tuberculosis Association. Such a movement should enlist the support of all interested in antituberculosis work, for, if the experiments with the soldiers succeed, the adaptation of the same methods to civilians will be an easy step and the record of success will be the solution of one of our most vexatious problems.

Enthusiasm in this direction should, however, be tempered with cautious judgment, for the English experience has already shown that the task is not simple and that adequate methods as yet have not been evolved. The tuberculosis industrial colony is still in the experimental stage but gives evidence of most promising possibilities. It is hoped that the idea may be worked out slowly and carefully in this country in order that full use may be made of the extraordinarily favorable combination of circumstances afforded by the experiences of the war. The responsibilities of the situation are great, for failure now might deal a death blow to all future reeducational schemes to restore the tuberculous patient to economic independence.

CONCLUSION.

Our consideration of tuberculosis and the war had led us far and consumed much time, but even so has only touched some of the salient features of the situation. This discussion aims only to be suggestive and not exhaustive. It could not be otherwise from the very nature and vastness of the problem. We will continue to learn important lessons of public health from the war long after the final treaties of peace are signed. We face today, however, in all fields of human thought and endeavor a period of reconstruction solemn in its responsibilities as it is pregnant with possibilities.

Among other vital interests the health, the very existence even, of millions of people all over the world is at stake. It devolves upon all those who have had previous experience or interest in health problems to assume their full share of the responsibility and of the burden. Probably never before in the history of the world has the need of wise leadership and sane judgment been more urgent.

The best that we can hope for America as its share in this crisis is that the same energy, the same perseverance, the same courage, and the same spirit of self-sacrificing idealism that has inspired our country at war and our wonderful soldiers in France, may continue to dominate us in these less stirring tasks of the rehabilitation of the world. Of these, none are more important, more vital, than the preservation of the health and the lives of the people. Ever mindful of the fearful price which has been paid to gain the peace in which we

all rejoice, may be bend all our energies with renewed consecration to meet the solemn responsibilities which it imposes upon us.

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OBSERVATIONS ON GUNSHOT INJURIES OF THE HEAD.*

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Practically all of our experiences in military surgery have had the tendency to impress upon us the necessity of early surgical intervention. The golden rule of surgery—drainage of wounds in their most dependent position—has been replaced in this early treatment by the excision of the wound in its entirety. If this is not possible because of the location or extent of the wound, then the excision of as much of its devitalized tissue as is anatomically possible should be practised before infection has become established. If a wound can be completely excised it may then be sutured and this primary suture is the ideal treatment of all wounds. When complete excision is impossible the probability of successful primary closure is greatly diminished, and under such conditions the recourse is the sterilization of the wound, after which it may be closed by a delayed or secondary suture. Experience, however, has shown that certain wounds may be closed when it is not possible to practise complete excision. It is into this class that gunshot injuries of the brain have been placed.

It was because of our failure to appreciate the importance of early wound excision, the evil effects of drainage, and the possibility of primary suture after excision, that our operative mortality in these brain injuries so long remained above fifty per cent. Patients having brain injuries of this nature die usually an anatomical death within the first twenty-four hours, or, escaping this, die an infective death after six to ten days, or even after many months; and it is to the prevention of these infective sequelæ that we have directed attention.

During my earlier experience in the French service in 1915, I saw these patients coming back from the front area presenting the most distressing infections on their arrival at the base, this was usually about the fourth or fifth day after their operation; and their temperature and alarming general condition—often resulting in death—was attributed mostly to the evil effects of transportation. It was therefore decided that patients operated on at the front stood transportation poorly. Never have I been convinced, however, that transportation was in any way directly responsible for these severe infections in patients operated upon. I have always thought that it was due rather to the

nature of the operation, in which the infected and devitalized tissues were not removed, and where successful drainage was often blocked in our endeavor to promote the same by the use of gauze. The onset of the general symptoms became manifest on the third or fourth day, which happened to be during or immediately following the period of transportation; consequently, it was ordered that patients with brain injuries should not be operated upon until they were at the base where they could be retained. The result was that by the time they reached the base hospitals the infection had become so established that it seemed but inviting death to attempt surgical intervention for the removal of foreign bodies, etc., and there usually ensued a long period of suppuration, complicated by meningitis, brain abscess, hernia cerebri, and brain fungus.

The operative procedure which was used chiefly at that time was the enlarging of the scalp wound for drainage and exploration, or it was made the centre of a large osteoplastic flap. In either case the devitalized soft parts were not removed and only the more superficial bone fragments and foreign bodies picked out. Little attention was paid to subdural adhesions, which in the endeavor to complete a speedy operation were often torn, thus opening the subarachnoid space to infection.

The necessity for speed in these intracranial operations was due to the profound effects of general anesthesia on these very septic patients. I soon learned that the same operative procedures were possible under local anesthesia, and by its use succeeded in avoiding the shock which had been associated with general anesthesia, and was able to pursue a more deliberate operative technique, thereby insuring greater gentleness in manipulations as well as a more careful toilet of the wound. In this way I avoided many of the stormy experiences of operative intervention, but the infection having once been established continued unchecked in spite of all forms of treatment, until it terminated in death, or abated after a prolonged convalescence.

With greater experience in the treatment of infected wounds it was learned that if the devitalized tissue could be excised early enough, it would be possible to eliminate most of the infection, and gradually these two principles—early and complete



FIG. 1.—Scalp wound showing line of incision.

*Read before the New York Neurological Society, May 6, 1919. Authority to publish granted by the Surgeon General, U. S. Army.

excision—found their place in the treatment of cranial injuries in so far as scalp and skull were concerned. The removal of disorganized brain tissue presented a problem which was solved by Colonel Harvey Cushing,



FIG. 2.—Excision of scalp wound.

who removed it by catheter suction and irrigation and combining this with early excision under local anesthesia, established a definite rational operative technic which he completed with primary closure of dura and scalp. It is this technic which is responsible for the reduction of the operative mortality of gunshot injuries of the brain to its present status.

A distinguishing feature of the present war has been the development of special recognized fields of surgery with the segregation of special lesions in designated hospitals where they received specialized care. The United States Government realizing the value of such a procedure developed the idea from the beginning and selected men, where possible, who had in civil life a broad experience in these special fields. When the supply was limited, special schools were immediately established where medical officers received intensive training for the purpose of qualifying them as thoroughly as possible in their respective branches. Neurological surgery probably presented features the most difficult to cover and the problem of combining neurologist and surgeon was difficult. By the establishment of neurosurgical schools many young surgeons were given an intensive neurological training which made them of very great value in this branch of the service, and whenever possible, they were associated with a senior man who had had experience in this class of work. In France every hospital had one or more surgeons with at least some neurosurgical training. These

neurological training and could not make a neurological examination.

The working out of special departments was conspicuous not alone at the base hospitals and hospital centres, but even in the front areas the evacuation hospitals and mobile operating units were equipped with neurosurgical teams. It was in the capacity of senior member to such a team that I served during the American offensive. As a special team we did all the head surgery—head referring to cranial, in contradistinction to facial, or "oral and plastic surgery."

There were many elements of surprise always present in our work: One was, that it was never possible to judge the condition of deeper structures by the appearance of the scalp wound. Not infrequently did we find after operative investigation, that what appeared to be a most trivial scalp wound was really an extensive fracture with great subdural involvement. The same might also be said with reference to the appearance of the external table of the skull. Here a small depression or simple fissure when trephined usually proved the existence of much shattering or fragmentation of the internal table. It was our experience to find the internal table always the site of the greater damage, and any visible injury to the external table found after excision of the scalp wound was considered a positive indication for continuing the exploration. I have in my possession several specimens removed at operation, in which the external table showed only a slight scratch, yet the internal was extensively fragmented.

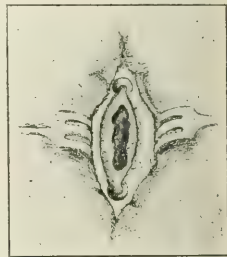


FIG. 5.—Bone removed in one piece.

In the investigation of scalp wounds the external table occasionally showed no evidence of trauma, and in such cases the scalp was sutured without further interference; when, however, the preliminary neurological examination gave evidence of intracranial involvement, the skull was opened at the point of injury and usually a nonpulsating, discolored dura was disclosed. In such cases dural incision was practised—providing infection had not become established—and with the incision of the tense dura there would be extruded a quantity of disorganized brain substance and blood clots, after which the normal pulsations would reappear and the relief of tension would permit an immediate closure of the dura by suture. This procedure was possible because of the early excision of the traumatized area before infection had become established. The opening of a tense, discolored, nonpulsating dura after a careful excision and cleansing technic was a routine procedure and to our knowledge was never followed by subdural infection. If practised later, in the presence of a definitely established infection, such a procedure would certainly be open to criticism.



FIG. 3.—Perforation of skull.



FIG. 4.—Excision of bone lesion in place.

officers had been instructed as far as possible in head surgery, though often they could not be classified as specialists; their intensive training, however, made them better qualified for this work than were many general surgeons who had no

In practically all cases where the dura was intact but not pulsating the patient was irritable and difficult to handle, but would invariably drop off to sleep after the dura was incised and the intracranial pressure relieved. In such cases there were usually no other signs of this increased pressure, as might be expected to be seen in pulse and blood pressure changes; but the force with which the disorganized brain substance was extruded would indicate certainly a very definite localized pressure.



FIG. 6.—Bone block after removal, showing fragments attached.

In gunshot injuries of the brain we did not consider it advisable to resort to spinal puncture, because in open cases, after the withdrawal of fluid by this means, there was always associated the danger of the brain receding, and the possibility of tearing established subdural adhesions which had closed the sub-

arachnoid space around the traumatized area. In these injuries of the brain the localized traumatic edema causes considerable pressure on the edges of the dural opening and so assists in the sealing off process. This is evidently a most important factor in the prevention of infections reaching the subarachnoid space and it was always our practice to give the greatest respect to the margins of dural openings. These were not enlarged to facilitate operative manipulations, as it was usually found that the opening was of sufficient size to permit careful exploration with a catheter of the entire area of cerebral destruction and for the removal of foreign bodies. By the time these patients reached us, the absence of escaping cerebrospinal fluid from the cranial defect indicated that the subarachnoid space was sealed water tight, and in the few cases observed which were draining cerebrospinal fluid we found at operation that the ventricle had been perforated.

Many cases of cranial injury, showing both bone

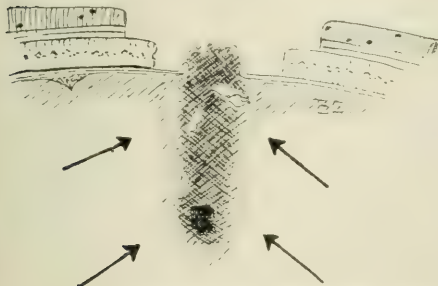


FIG. 7.—Area of disorganized brain substance before removal, foreign body and bone fragments retained.

and dural defect, revealed on removal of the dressings applied at the first aid station, a greater or lesser quantity of extruded disorganized brain

substance, which continued to ooze from the wound during the process of preparatory shaving and during the operation. The extrusion of a sufficient quantity to fill a two ounce medicine glass was a common experience, and one could not help being impressed with the large amount of brain tissue often lost without the production of either focal or general symptoms. This was especially striking in extensive injuries involving the frontal lobes as well as the right parietal and temporal—or the so-called silent areas.

A conspicuous feature in these cases was the large amount of cerebral destruction possible, when associated with an immediate traumatic decompression, without the production of general cerebral symptoms. Injuries in which the dura

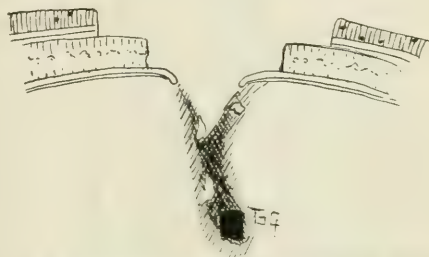


FIG. 8.—Showing area of trauma after destroyed brain tissue has been expressed by having the patient cough or blow.

was not opened, as compared with those having dural penetration, presented the more marked symptoms. In certain cases where all the coverings were opened by the projectile, the extrusion of disorganized brain substance was prevented by the position of bone fragments blocking the cranial opening. Such patients would be very irritable or irrational until the bone block was raised, allowing a gush of semifluid brain substance and clots. This removal of pressure would be followed by a marked feeling of relief to the patient who would become quiet and cooperate in the operation by blowing against his closed lips or by coughing to express the remaining disorganized brain substance.

My experiences with these extensive traumatisms in which there was such great destruction of brain tissue convinces me that the brain may be invaded to the extent of removing entire lobes with but little reaction. The unsatisfactory immediate results which so often attend cerebral operations is, I think, due rather to the anesthetic than to the intracranial manipulations.

It would seem that the shocking effects of cerebral trauma are much greater when inflicted under general anesthesia than without. Many times I have seen the most extensive cerebral injuries associated with open fractures in which the patients showed no signs of shock; but when placed under general anesthesia and some intracranial procedure attempted, shock became evident almost at once. Often even before the operation was started there would be a fall in blood pressure. These results soon impressed me with the extreme seriousness of general anesthesia in intracranial operations. Previous to my war experiences I

always attributed the shock to changes brought about in the cerebral circulation by the operative manipulations, never realizing that it was probably due, not so much to the manipulations alone, as it was to manipulations plus general anesthesia.

Under local anesthesia I found it possible to pro-

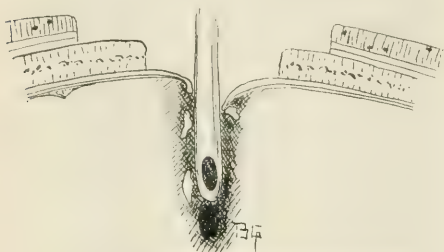


FIG. 9.—Palpation of foreign bodies by soft rubber catheter.

ceed with the same operative technic, and to do so without pain or interference from the patient, and with the complete elimination of the shock element which had previously been so disastrous. With improvement in technic I found it possible to produce complete anesthesia in less than ten minutes, which was a saving in time over general anesthesia. The infiltration of the scalp so reduced the bleeding that when the incision was made much time was saved in that only the larger vessels required clamping, while very often the field was bloodless. The hemostatic effect of the infiltration always lasted through the operation or sufficiently long for clotting to take place in the constricted vessels. In no case in our series were we troubled with late hemorrhage. So satisfactory did we find local anesthesia in head operations, that when the brain



FIG. 10.—Colonel Harvey Cushing's method of catheter suction for the removal of semisolid brain substance.

injury was complicated with other wounds, the head operation was done under local followed by general anesthesia for the débridement of the other wounds. In no instance was it necessary to resort to

general anesthesia to complete the proposed cranial operation. This applied not only to work done at the front where complete operations were done, but it proved to be just as successful in operative procedures at the base hospitals, where we were called upon to operate for brain abscess and other infective conditions associated with retained foreign bodies, cerebral hernia, etc., in patients who had not had the early complete operations at the front.

Another great advantage in the use of local anesthesia, is the cooperation of the patient; by asking him to blow or cough, and thus increasing intracranial pressure, it was possible to quickly remove the semifluid brain substance, blood clots and often foreign bodies. In brain abscess it has proved most valuable in that frequently these abscesses communicate with the surface by a narrow stalk and by increasing the intracranial pressure at the proper time, the location of the abscess is revealed by the extrusion of a drop of pus; and not only its location, but also the area through which it may be safely approached, because at this point

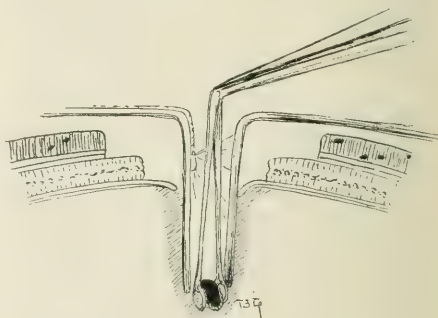


FIG. 11.—The removal of foreign bodies by direct inspection.

the subarachnoid space is usually well sealed off and the danger of its infection greatly diminished.

It is generally conceded by those who have used local anesthesia extensively in intracranial procedures, that it is the anesthetic of choice. While I have heard some objections, I am inclined to think they were not founded on fact, being presented mainly by those who have not used it or by some who had failed through defective technic. While it is true that local anesthesia in many regions is not so satisfactory as general, it is equally true that in certain regions it is more satisfactory—this is especially so in cranial surgery, and its value in avoiding shock and hemorrhage cannot be overestimated.

Those who have been accustomed to the use of general anesthesia too often forget, when using local anesthesia, that only the area infiltrated is anesthetized and to be successful they should learn to respect other tissues; likewise they should consider the general comfort of the patient, as well as consider the psychical aspects of the individual and his surroundings.

It is a good suggestion to give a quarter grain of morphine, one half hour before operation, and should the patient be very restless, this may be re-

peated. However, I have many times operated when no preliminary morphine was used. Usually after the bone is removed and the dura opened the most restless patient will drop off to sleep and the operative manipulation of the brain proceeds with-

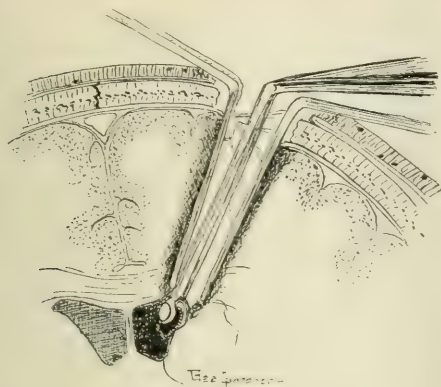


FIG. 12.—Removal of foreign body from ventricle. Direct inspection of ventricle rendered possible by the use of retractors.

out reaching the threshold of consciousness. It is thus possible to do the most radical work. Time is not a factor because it is not associated with general anesthesia and there is no shock; hemorrhage is much less from the cerebral vessels because they are not congested in the manner we are accustomed to see when general anesthesia is used. All manipulations, however, should be gentle, as is required in all intracranial operations regardless of the anesthetic used. While the dura will stand cutting without pain, it does not tolerate traction or rough handling.

In the use of local anesthesia it should be remembered that the success of the procedure depends on infiltration and the completeness with which this is done. The skin, superficial fascia, and aponeurosis are infiltrated as one structure in the line of the proposed incision. After this is complete, the needle is passed below the aponeurosis into the sub-aponeurotic tissue which is very loose and because of which the injected fluid spreads over an extensive area. This is, as a rule, all that is required to give satisfactory anesthesia, but pressure exerted for a few minutes over the infiltrated area adds to its intensity and extent.

The anesthetic used is a one per cent. novocaine solution, to which is added a 1:1000 solution of adrenalin chloride, in the proportion of fifteen drops to thirty c. c. of the novocaine solution. It is desirable to use always a fresh solution of adrenalin. The tablets are to be avoided unless they are perfectly fresh, the use of stale tablets seeming to produce nausea in many patients, a condition not often observed when the fresh solution is used.

Under local anesthesia the bone may be perforated, broken down, or cut away without pain; occasionally, however, when it is very thick some patients will complain of the jarring. Pain is only evident when the dura is encroached upon, but as

previously stated it may be incised without pain; the brain is entirely insensitive. In the temporal and occipital region it is necessary to infiltrate the underlying muscle with care, a procedure which requires considerable attention to detail; and it is in these locations that the greatest difficulty is often experienced. In these regions if the infiltration is not well done pain is sometimes caused by the pressure of retractors. The spreading of small incisions is also a common cause of discomfort, because pressure is exerted often on tissues which have not been anesthetized. It is always better to have an incision rather too large than too small.

After shaving the entire head and making as complete a neurological examination as circumstances would permit, the operative technic used by my team at the front, was the complete excision of the scalp wound, avoiding contact with the lacerated edges; the removal of the area of bone injury *en bloc*, by cutting around same with a DeVilbiss rongeur and lifting the bone block out as one piece, not allowing the instruments to come in contact with the infected tissues in the centre of the piece removed. The evacuation of the disorganized brain substance was rapidly effected by having the patient cough or blow, after which, a soft rubber catheter was inserted to palpate any retained foreign bodies or bone fragments which had not been expressed by the blowing. Catheter palpation was very satisfactory and with its use most of the bone fragments could be located and when they could not be washed out they were removed by delicate forceps which were designed for the purpose by Colonel Cushing. Finger palpation has always seemed to me to be a rather crude procedure in intracranial work and was not used by our team.

In ventricular penetrations it was found possible, after removal of the semifluid brain substance by the method described above, to place it in long, narrow retractors and remove foreign bodies under direct inspection. When the ventricles had been perforated it was difficult to remove the bone fragments from pockets in the walls of the tract, because the catheter would slide by them and enter the

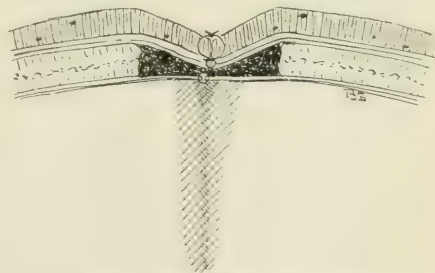


FIG. 13.—Closure of dura and scalp without drainage after the complete operation.

ventricle, so it was mostly in these cases that the operation was not complete, in that some bone fragments would often be overlooked. When the ventricle was not involved, and the toilet of the brain tract was completed, we usually installed a

two per cent. solution of dichloramine-T, which was allowed to run out during the completion of the operation. Often the dura was so badly lacerated as to preclude the possibility of suture, and in such cases the defect was often covered with a piece of paracranium, which was as satisfactory as fascia lata grafts. In other defects which could not be closed by suture, the opening was covered simply by the suture of the scalp, which proved satisfactory in every way. The scalp was always closed by primary suture and if this could not be done without tension the defect was always covered by a flap or some plastic procedure even though it was necessary to rob another portion of the skull of its coverings. The brain lesion was never drained, and the only drainage ever used was just a small piece of rubber glove placed in one angle of the incision which was removed the next day at the first dressing.

(To be concluded.)

NEUROLOGY IN EVERYDAY PRACTICE.*

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Sherrington in *The Integrative Action of the Nervous System* says: "It is the nervous reaction which *par excellence* integrates the multicellular animal, welds it together from its components, and constitutes from a mere collection of cells an animal individual." From this statement it is easy to conclude that a change in any organ affects the nervous system, and reversely a change in any part of the nervous system reflects one one or more organs of the animal.

One can hardly imagine well defined pathological conditions anywhere in the human organism which do not affect the nervous system in one way or another. There are very few, if any, neurological diseases which do not give symptoms referable to one or more organs. This is an axiom and therefore needs no proof. Starting out with this argument, it is hard to conceive how medical men can undertake to practise present day medicine without having a working knowledge of the fundamental principles and the symptomatology of organic and functional disease.

In this paper I do not propose to give an outline of elementary neurology, such can be found in any of the smaller textbooks. Instead, I shall relate a number of instances that have come to my knowledge where outspoken nervous diseases were mistakenly pronounced almost any disease without having raised a suspicion that the pathological phenomena might have been due to a change in the nervous system proper.

As a rule, it may be said that a physician always recognizes a disease of nervous origin where the efferent or motor neurons are involved. When a paralysis exists the doctor knows that he is dealing

with a nervous disease and either diagnoses the case himself or consults his colleague the neurologist. It is in affections of the afferent or sensory neurons that his confusion usually arises. It is here that many sins are committed.

I shall speak first of the most common of these—abdominal pain. A few years ago we had at the Montefiore Hospital a patient with three scars on his abdomen. He had been operated upon successively for gastric ulcer, gallbladder disease, and appendicitis. In reality the man suffered from tabes. The pains for which he had undergone operation were due to spinal root irritation, a cardinal symptom of locomotor ataxia.

Here is another instance: A woman, who is at present in Montefiore Hospital, was operated upon elsewhere for the relief of pain supposed to be caused by gallstones. The operation, however, did not relieve the pain. The surgeon was about to perform another operation, this time for another supposed abdominal condition, when a neurologist was consulted. The latter found the woman suffering from a spinal cord tumor. Neurosurgical operation revealed multiple fibromata of the spinal roots. In neither of these cases should a wrong diagnosis have been made as analysis will show.

The subjective symptom, pain, is a very valuable and reliable aid to diagnosis in the intellectual and level headed patient, and a very misleading guide in the patient whose vocabulary is poor or whose sensitiveness is greatly increased. In the clinics of a metropolis like New York where we have to deal with so many different races, one can readily recognize the racial characteristics of his patient from the way he describes this significant symptom, pain. *Schwertzen*, says the Jew for all sorts of ailments, beginning with the agonizing pains of cancer and ending with slight epigastric pressure after meals. *Misery*, covers everything with the negro. The Slav has his pet word in *bolie*, for all ills that human flesh is heir to. One cannot and must not base his judgment upon the character of the pain as it is related to him by the patient.

The objective symptoms are those by which the physician must be guided. In our first case, the diagnosis would have been established at once had the physician taken the trouble to examine the pupils and test the reflexes properly. To make a diagnosis of tabes, or rather to establish the fact that a disease of the central nervous system exists, one does not need to wait for the classical pinpoint pupil and its Argyll-Robertson reaction. The unequal, irregular pupils with sluggish reaction, and particularly hippus when present, should warn the examiner at once that some trouble exists in the central nervous system. The alteration in the pupils together with the pains in the abdomen surely suggest a question as to the condition of the knee jerks. If these are absent, diminished or unequal, we are most probably dealing with a case of tabes dorsalis. The alterations in the knee jerks are, however, not one of the first symptoms. The absence, diminution or inequality of the ankle jerks usually precede those of the knee jerks. Such mistakes in diagnosis are of quite frequent occur-

*Read before the Clinical Society of Montefiore Hospital, February 7, 1919.

rence and every neurologist can cite instances within his own experience.

The second case, that of the spinal cord tumor, is somewhat more complicated, inasmuch as this patient did not show any changes referable to the cranial nerves, nor were there yet established spinal cord pressure symptoms. Here a little more skill was required in the examination, but if the examiner had borne in mind the location of the seat of the pain and, if possible, established the Head zones, and looked particularly to see whether the pain followed a nerve trunk, with its maximum tenderness at the seat of that nerve, then the correct diagnosis would probably have been established. The accuracy of the Head zones is regarded somewhat doubtfully at present. In themselves they may not be of great value, but if a Head zone for a supposed diseased organ is absent, and tenderness together with other sensory disturbances follows along a nerve trunk and acquires its maximum at the seat of the origin of that nerve, the dorsal root, then it is reasonable to conclude we are dealing with an established process of an incipient organic disease.

A few years ago I was called to see a case of "pneumonia." I found the patient suffering pain in the right side of the chest that interfered with his breathing; temperature 101.5, pulse 100; respiration could not be counted owing to his irregular breathing. The family immediately informed me that the case had already been diagnosed as pneumonia. I could not find any signs in the lungs, and not being a lung specialist I could not make up my mind to a diagnosis of pneumonia without any physical signs. I then began to palpate the painful area and found tenderness along the intercostal spaces and marked tenderness at the corresponding vertebrae. I diagnosed the case as herpes zoster and took a chance to predict that a crop of vesicles would appear within a day or two. It was my good fortune that these appeared. Well, my status as medical wizard is still upheld in that family.

It seems to me that physicians often forget this valuable sign, tenderness, when they are dealing with cranial or chest diseases. In examining for headaches a palpation of the scalp and a percussion of the skull for tenderness should never be omitted. It will often be of value to locate the lesion. Palpation of the chest for tenderness will frequently enable one to differentiate affections of nervous origin from visceral diseases.

Recently a patient, a man of forty, walked into my office. He presented the appearance of a typical case of jaundice. His sclerae were yellow; his skin was dry and itchy. He gave the following history: Five days previously he was suddenly seized with pain in the abdomen, accompanied by vomiting and severe headaches. He called in his family physician who prescribed for him. On the next day he began to pass deep colored urine; he turned yellow, and his feces became white. He attributed the cause of the jaundice to the medicine he had taken. This, as you see, was the history of a typical case of catarrhal jaundice. Before sending him to an internist, however, I examined his

pupils and reflexes and to my great surprise I found unequal and sluggish pupils, very lively abdominal reflexes, and his knee jerks could not be obtained. I told him that he was suffering from *tabes* in addition to jaundice. He then admitted having had a chancre fifteen years ago, which he had denied when previously giving his history. The diagnosis of locomotor ataxia, however, did not exclude catarrhal jaundice but it was excluded by the further history when I suggested a Wassermann test, which I found had already been done and he had also received several salvarsan injections. The last injection had been given a few hours before onset of the toxic symptoms. It was now plain that the catarrhal jaundice was in reality a case of arsenical poisoning due to the last injection of an arsenical preparation used as a substitute for salvarsan in a case of *tabes dorsalis*.

Another most frequent cause of mistake is the so-called nervous headache. When a headache is continuous without distinct prolonged free intervals, and more particularly when such a headache interferes with the daily routine of the patient, it always sounds danger. Here, as a rule, one should never omit to investigate the eyegrounds. At present, the electric ophthalmoscope greatly simplifies this at one time difficult examination. It needs comparatively little practice to be able to detect changes in the disc and bloodvessels sufficient to indicate either an increased intracranial pressure or a systemic disease which expresses itself through trophic changes in the optic nerve, such as syphilis or multiple sclerosis.

Not always, however, will an organic disease of the brain with increased intracranial pressure give evidence in the eyeground. There are such cases at present in the Montefiore Hospital. There is in this institution a patient, a woman, who suffers from acromegaly due to a pituitary tumor and yet the eyegrounds are negative. In this case, it was the roentgenograph that helped to establish the diagnosis of the tumor. Another patient in the Mount Sinai Clinic had suffered from headaches for weeks. All clinical examinations, including the eyegrounds and the Wassermann, had been negative. In addition to this the patient gave a history of a traumatism to the head, and it is easy to see how erroneously it was concluded that the patient was either suffering from a traumatic neurosis or else was malingering. A roentgenogram finally demonstrated that the posterior clinoid processes were destroyed and that there was all the evidence of increased intracranial pressure. No doubt this patient was suffering from an intracranial tumor, probably pituitary in origin. Instances of this kind would simply seem to multiply facts needlessly.

The general practitioner, not the neurologist, is the one who sees the early manifestations of organic nervous disease, and therefore he should also be in position to detect their significance. This becomes all the more important when we remember that while these patients can frequently be helped during the incipient stages, usually nothing can be done for them when the disease is well established. This is particularly true in general paresis. Let me sound a warning. Never make a diagnosis of

neurasthenia in a middleaged patient in whom neurasthenic symptoms developed at or above forty. Here anything might be the diagnosis but neurasthenia. You may be dealing with changes of the endocrine glands incidental to that age; or with vascular changes still not detectable by a superficial examination. So-called normal blood pressure in these cases when tested only once, frequently means nothing. It is the change in the blood pressure after exertion that tells the story. A great increase in blood pressure after a comparatively slight exertion means a loss of balance and the inability of the vascular system to readily adapt itself to moderate exertion. This loss of balance in its turn may have its origin in a disturbed endocrine system, or in changes pointing to the approach of general paresis.

At present it is almost criminal to omit a Wassermann examination of the blood in all so-called neurasthenic cases, particularly when the neurasthenic symptoms appear for the first time at middle age. While the inexperienced eye may not detect any change in the pupil, reflexes, etc., a four plus Wassermann, and particularly the colloidal gold test, may put the physician right in his diagnosis and save the patient from a tragic termination.

In the young adult or adolescent, be careful not to omit a consideration of the organic nervous disease incidental to that age, such as multiple sclerosis and the other abiotrophic diseases. Here let me tell you that within my experience, which I believe is also the experience of every neurologist, increased tendon reflexes with diminished or absent abdominal reflexes, mean an affection or disease of the efferent or motor neurons, quite often an early sign of multiple sclerosis.

Convulsions occurring in the young long before puberty and at middle age for the first time, do not mean epilepsy. In the first instance, they are probably of a reflex origin due to some metabolic changes; in the latter, they are the expression of organic nervous disease. A point not generally appreciated in distinguishing idiopathic epilepsy from that due to organic nervous disease, and particularly if Jacksonian in origin, is that unconsciousness may be present in both but is always present and always precedes the attack in idiopathic epilepsy. In symptomatic epilepsy it may be absent, but when present usually develops after the convulsions have set in.

Von Monakoff showed that due to diasthesis it is impossible to make a correct localization diagnosis in cerebral hemorrhage and in cerebral thrombosis during time of insult. Nor is such a diagnosis needed for correct treatment.

It must be borne in mind that in these cases, we are dealing primarily with a cardiovascular disease. The cerebral insult is a new symptom in the course of the disturbed circulation. The treatment must be directed chiefly toward regulating the heart and the regularity of the pulse, the systolic and diastolic pressures, as well as the pulse pressure, are the determining factors. It is, therefore, a wrong practise to administer vasodilators in all cases of cerebral insults that are primarily of circulatory origin. It goes without saying that these remedies

are indicated where the blood pressure is abnormally high. On the other hand, a low blood pressure may call for such drugs as digitalis. In short, our treatment must be directed entirely toward the cardiovascular system.

The only cerebral symptoms that call for treatment are those due to cortical irritation, viz., convulsions. They are best managed by chloral. This drug is particularly beneficial when the convulsions occur together with high blood pressure.

A few words may be said about the visceral symptoms which are due to vagotonia and sympathicotonia. I shall not repeat them. They can be found in the excellent description by Eppinger and Hess. I shall state, however, that before a syndrome is attributed to this condition, organic diseases should be ruled out. Not long ago, I was called by a colleague to see a case of Basedow's disease. To my great surprise I found the patient suffering from pulmonary tuberculosis, fairly well advanced into the first stage. The patient subsequently died of pulmonary tuberculosis in Montefiore Hospital.

The family doctor who called me in consultation admitted that he also had thought of pulmonary tuberculosis but an internist of a local hospital called in consultation made a diagnosis of Basedow's. If this internist had remembered that incipient tuberculosis presents hyperthyroidal symptoms, at times including an exophthalmos, he might have applied his otherwise experienced ear more closely to the patient's lungs. While the general practitioner may err in neurology, it is not always a fact that the neurologist is exact in his neurological cases when visceral symptoms are present. I well remember a patient of mine who died ensanguinated from a gastric ulcer and who had been constantly treated for gastric crises.

One point to remember in the care of patients suffering from functional nervous disease is that a physician should never advise marriage as a therapeutic agent. Psychoneurotic symptoms are often the heralds of severe psychopathic disease. Dementia præcox in its incipency is very difficult to differentiate from hysteria and psychasthenia. Think of the tragedy that would result from such a marriage. People who want to marry do not ask the doctor's advice. There are other motives that lead them to celibacy or marriage.

When once the physician is consulted on purely psychoneurotic grounds, some trouble is beginning which may perhaps take months and sometimes years to develop fully in the shape of an incurable psychic or organic nervous disease. Another frequent mistake physicians make is to advise young men who are so-called sexual neurasthenics to indulge in promiscuous sexual intercourse. Beside exposing the patient to severe infection, and lowering his morale, he is really never helped by it. For here again the healthy boy who indulges in that kind of vice never comes to the neurologist for consultation, though he may be his potential patient.

252 EAST BROADWAY.

A PLEA FOR THE EARLY ADMINISTRATION OF ATROPINE IN PNEUMONIA.

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The mortality from influenzal pneumonia is so high that one is anxious to read all the reports from all sources, so as to obtain the fullest information possible regarding the best means to save human life when confronted with the problem of treating a pneumonic patient. S. Solis-Cohen in his clinical conferences at Jefferson Hospital, in order to impress upon the class some point concerning the clinical value of a drug, for instance, digitalis in pneumonia, sometimes follows the example of his teacher Ellerslie Wallace concerning bloodletting in puerperal peritonitis and insists upon no minimum or maximum figure alone in answer to his question, What is the dose? but only "Enough—at the right time."

In most of the reports in the literature concerning the treatment of influenzal pneumonia, the real drugs seem not to have been given in "dose enough" or "at the right time." I read the reports in the medical journals and find a great deal of good in them; but the use or clinical application of a certain drug is rather disappointing, especially as pertains to the recent epidemic. This remarkable drug is atropine or belladonna. With the exception of one or two reports, all the papers are discouraging with reference to the power of atropine or belladonna to prevent or check pulmonary edema. We are passing through a stage in the therapeutic application of this drug similar to that of digitalis in pneumonia.

It took a long while for clinicians to realize that digitalis should be begun early in pneumonia. It is the same with atropine. Treatment with this drug should be started in the early stages of pneumonia, or as soon as the patient is seen, especially in the present type of pneumonia, so as to prevent serum exudation if possible.

According to H. A. Hare (1) the physiological effect of belladonna is to decrease all the secretions of the body except the urine, which is sometimes increased in amount under its use; its effect on circulation is to produce a rise of arterial pressure. Reichert has proved (quoted by Hare) that belladonna is not a heart depressant unless the dose is simply overwhelming. Hare further states "during the presence of a case of pneumonia, typhoid, or other severe disease, belladonna should be kept in the house and administered freely if collapse or vasomotor relaxation suddenly asserts itself."

In the present epidemic of influenzal pneumonia for the last five or seven months (and very likely it will be the same for the year to come) all the pneumonias that I have seen started with a vasomotor relaxation, as is also proved by all the pathological reports from camp and civilian pathologists.

Blanton and Irons (2) report necropsy findings in 123 cases of bronchopneumonia: "Section of the lung through lower lobes usually displayed an exceedingly moist cut surface, the slightest pres-

sure forcing to the surface quantities of blood tinged fluid. The exudate may be very dense or very thin; in either case edema and congestion have been marked, and so greatly compromised the remaining lung tissue; . . . many are like the lungs of the drowned."

Alfred Friedlander, Carey P. McCord, Frank J. Sladen, and George M. Wheeler (3) inform us that "Section through an involved lobe revealed an extreme grade of congestion and edema. Immediately on section there was a free flow of thin, dark red fluid from the cut surface; from 150 to 200 c. c. of this fluid were measured from a single section across the lung in the different cases. . . ."

They further state: "The condition suggested that occurring after exposure to chlorine gas. In many the serous fluid almost poured out from mouth and nostrils on change of position or bubbled out in a distressing effort to breathe. The man struggled against asphyxia with all the accessory muscles of respiration. Some of the patients retained consciousness for a remarkable period suffering intensely. In a word it was as if the severity of the irritation in the respiratory tract was so caustic as to produce an immediate reaction serous in character. It was essentially an acute inflammatory pulmonary edema . . ."

Hirsh and McKinney (4) make the statement that "Approximately 200 postmortem examinations were made during the epidemic. The gross appearance of these lungs was striking in that they appeared voluminous and dark red with much blood and edema." Dr. E. R. LeCount (5) in a report based on approximately 200 necropsies, says: "Ranking in importance with the relative small amounts of actually pneumonic lung or perhaps entitled to first place as a conspicuous feature is the huge, often thin and watery, bloody exudate in the lung tissue and bronchioles. This bloody fluid, on the development of rigor mortis, often poured out of the nostrils so as to stain a large part of the white sheets in which bodies are wrapped."

Nuzum, Pilot, Stengel, and Bonar, from a large civil hospital (6) report: "At necropsy the pleural cavities contain the blood tinged fluid remarkably free from fibrin content, and varying from 300 to 1,000 c. c. in amount . . . On cutting transversely across the trachea to reflect the viscera from the thoracic cavity, large quantities of blood tinged, frothy fluid exuded from the air passages . . . Large quantities of bloody serum bathed the smooth fibrin free cut surface of the lung . . . We desire to emphasize the fact that the amounts of consolidated lung parenchyma was small as compared to the pneumonic consolidation quite regularly present in more protracted cases among civilians."

Dr. Thomas McCrae (7) remarks that edema of the lungs is one of the most striking complications among those of the respiratory tract. From the foregoing reports we can summarize a pathological entity, a vasomotor relaxation or as B. W. Richardson (8) puts it a pneumoparesis, leading to serum transudation terminating in an exudative capillary collapse. Then why not administer belladonna or atropine in the beginning. From the

literature at hand few have recognized the beneficial effects of atropine and many mention it as a matter of course, not specifying the time when it was administered, early or late in the disease, nor the dose.

Keeton and Cushman (9) say "that atropine relieved many patients of their cyanosis, and we believe increased the chances of recovery in those patients in whom it was used. The explanation of the beneficial effects of atropine in large doses as shown in the epidemic at Great Lakes Naval Training Station reported by Ridge (10) lies in the well known experiments of Auer (11) in which he shows that atropine prevents death in guineapigs subjected to an anaphylactic shock by preventing the stenosis of the bronchioles. . . . That it is of value in the beginning of pulmonary edema is a matter of clinical experience."

Strauss and Block (12) inform their readers that "cardiac stimulants such as digitalis" (dose, not given, nor time of its administration) "caffeine sodium benzoate by mouth or hypodermically were used with questionable value. Camphor in oil, pituitary solution in seven minim doses, atropine in 1/60 to 1/100 grain doses especially when edema of the lung was imminent did not seem to alter the course of the disease."

If atropine is used only when edema is imminent, or if digitalis or pituitrin is used only when the heart is failing, undoubtedly the results will be disappointing. Why wait for the beginning of the pulmonary edema to check the permeability of the capillaries of the lungs to stop the outward flow of fluid from the blood? When we get the physical signs of moist râles (what we call edema) the balance of outward pressure has already been disturbed; the capillary walls have been damaged long before we recognize clinically this pathological phenomenon.

S. Solis-Cohen and others have proved the value of the early administration of digitalis in pneumonia. According to their teaching, and as proved by the electrocardiograph, digitalis should be administered in moderate doses as soon as the diagnosis of pneumonia is made, not waiting for the heart to refuse to work and then trying, too late, to support it with digitalis. Many cannot see the value of digitalis on account of its slow action. It takes from two to three days to digitalize the heart. When the patient is once under the influence of digitalis you can either increase or decrease the dose according to conditions present. The physiological effect of atropine, it is true, unlike that of digitalis, is very prompt, especially by hypodermic use; but its elimination is also very quick, in about two hours, according to some investigators. When there is an edema already present it is quickly followed by an exudative capillary collapse similar to heart failure. We may or may not then succeed in restoring the capillary circulation in the alveoli and bronchioles. But we can do much to prevent their collapse by using atropine at the right time—which is early.

The value of the modern therapeutic application of digitalis is appreciated thoroughly in the study of their cases by Synnot and Clark (13) stating

that "digitalis is begun early and given in full doses for forty-eight hours. It is then discontinued or reduced to one or two doses a day after the heart muscle is digitalized." . . . The same observers say, however, "in pulmonary edema belladonna or atropine did not prove of any value." . . . The administration of digitalis they emphasize was begun early to digitalize the heart; while for the administration of atropine they waited until they had a frank case of pulmonary edema. If pneumonia patients were atropinized early as the heart muscles are digitalized, pulmonary edemas would be very few in comparison.

S. Solis-Cohen in his monograph on the definite treatment of pneumonia (14) concludes: "In warfare no sane general restricts himself to infantry, artillery, or cavalry or to a particular type of cannon. Each arm, each force is employed where and when it can do most good, and if the first choice is not at hand, another is used. Should a sane physician then restrict himself to a single class or type of therapeutic agents in his battle with the Goths and Huns of the microscopic world?"

I think we can add another cannon to fight the high mortality rate of influenza pneumonia and that is belladonna or atropine administered early, from 1/150 to 1/100 grain of atropine or five to ten drops tincture belladonna to atropinize or belladonnize the system. Acting upon the principle "why wait until too late" I have treated all influenza cases with quinine hydrobromide or dihydrobromide right from the start:

R Quinine hydrobromide,gr. 5
or dihydrobromide, }

Three capsules night and morning with a glass of hot tea and whiskey (one tablespoonful), until temperature becomes normal. If temperature is high a capsule every three hours through the day disregarding the deafness or cinchonism symptoms. These are rare, however, especially when there is actual pneumonia. Usually in two days temperature drops. To children quinine was administered in suppositories of cocoa butter. The dose was regulated according to age; from three to five grains in one suppository every three hours, or two suppositories night and morning. Digitalis, atropine and cocaine were also used from the start.

R Pulv. digitalis,gr. 1
Atropine sulphate,grs. 1/100-1/150
Cocaine hydrochloride,gr. 1/2-1/4
Strychnine sulphate,gr. 1/30
One capsule four times a day.

To children digitalis and belladonna were administered in tincture form separately so as to be able to increase or decrease the dose as needed.

Alkaline drinks were given from the start.

R Liq. potass. citrate,6 oz.
One tablespoonful every two hours.

I am almost sure that among eight hundred cases or more of influenza in private practice many cases of pneumonia may have been checked in their incipency. In those patients in which pneumonia developed the symptoms were not alarming and they made prompt recoveries under the definite treatment of S. Solis-Cohen, that is, adding to the

quinine the systematic use of pituitrin in one c. c. doses every three hours, more or less, to keep up systolic pressure and prevent tympanitis, and increasing the digitalis according to the indication of the diastolic pressure and respiratory rate. At the same time in among about one hundred and twenty cases of clinically pronounced pneumonia from the first visit thus treated, eight patients died, including two who were moribund when I was first called to see them.

SUMMARY.

1. The definite treatment of S. Solis-Cohen in my experience produced the lowest mortality.

2. Atropine should be administered early to atropinize the system.

3. Influenza patients in the present epidemic should be treated as pneumonia patients from the start.

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1531 NORTH SIXTH STREET.

ARTHRITIS OF THE KNEE JOINT.

Following Fissure Fractures of the Tibia.

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In this paper I shall consider the joint reactions complicating fractures of the tibia having a special anatomical type. The missile hits the bone some distance from the knee, while fissures starting from the focus of penetration extend along the tibial shaft to the articular surfaces. A reaction occurs in the joint, often ending in an infectious arthritis and modifies the clinical evolution so that a special line of treatment is indicated. On account of their anatomical form, the importance of detecting the joint lesion at an early date, as well as the considerations which result for the treatment of their peculiar evolution, these fractures merit a careful study and as a contribution to the subject I shall report a few cases.

Fissure fractures of the tibia involving the knee joint are relatively infrequent and out of a total of

3,000 cases collected during the war only three typical cases were found, while joint wounds with fracture of the tibia are much more common. Among the fractures involving the tibia in its upper third, it can be said that in about ten per cent. fissures extend to the knee joint. It is much more common to find superficial erosions of the tibial crest, tunneling of the bone, penetration of the missile without fissuring and smashing of the bone with fissures extending to the knee. It is probable that the causation of a given anatomical type of fracture is governed by the nature of the missile, its size and momentum at the time of penetration, but precise data are wanting in this respect. However, it may be admitted in a general way that rifle bullets cause, according to the distance at which they are fired, tunneling of the bone or fractures by splintering.

Bursting of small shells result in penetration of the bone without much damage at the entrance wound and the shell fragments often remain embedded in the spongy tissue or in contact with the compact structures of the tibial epiphysis. I have been able to find a certain number of cases of this kind. I have found that small bits of grenade having a considerable initial velocity which rapidly decreases, at short range, go directly through the epiphysis. As to fractures with fissuring, it would seem according to my personal observation, that they more ordinarily result from missiles of medium size. All things considered, I do not believe that the size or velocity of the projectile have a distinct bearing on a given anatomical type of fracture. The anatomical make up of the bone seems to me to be the principal reason for the formation of fissures extending to the joint.

The upper end of the tibia develops from two points of ossification, the principal one appears at birth and an accessory one destined to form the anterior tuberosity which appears after the age of twelve. The epiphysis unites to the body of the bone between the ages of eighteen and twenty-four; the line of union being slightly irregular is situated one and a half centimetres below the tibial plateau. The tuberosity becomes united to the diaphysis toward the age of twenty-five.

In structure, the tibia may be considered as having the shape of a hat represented by the epiphysis and composed of spongy tissue, supported by the tibial shaft forming a cylinder of compact tissue which encloses a structure of vertical trabeculae. The anterior tuberosity supports the thin cylindrical layer of compact tissue in front. This structure explains fairly well the tendency to fissuring of the bone in a vertical direction at the level of the diaphysis and the tendency to shattering at the level of the epiphysis.

It is not impossible that the cartilage of conjunction plays an important part in limiting the upward extension of the fissures by interrupting the anatomical continuity between the diaphysis and epiphysis, between the shaft and the crest. The age of the subject should enter into account in the anatomical shape of the fracture and fissure fractures involving the joint should be more common after the age of eighteen.

The point of penetration of the missile in the bone may be some distance from the joint interline. In Case II the missile, entering at the antero-internal aspect of the tibia six centimetres below the interline became embedded under the articular surface of the external glenoid cavity. In Case I, the missile entered four centimetres below the interline and made its exit from the bone two centimetres from the interline, while in Case III, the shell splinter entered five centimetres from the joint, tunnelled through the bone and made its exit into the anteroexternal muscular space of the leg at about seven centimetres from the interline.

Let us first consider the bone lesions in the cases which are studied. The clinical notes are as follows: The patient entered the hospital in the morning with a penetrating wound on the antero-external aspect of the leg. Amputation was done at once for symptoms of gas gangrene of toxic type, the patient dying a few hours later.

The missile, the size of a pea, hit the tibia five centimetres below the articular interline, traveled through the spongy tissue and spent itself against the compact posterior aspect of the bone, remaining embedded in the fissure. At the point of exit were two vertical fissures one stopping exactly at the cartilage of conjunction. From the entrance orifice a long fissure started in a downward direction following the external aspect of the tibia. A second vertical fissure extended upward and split the articular cartilage of the glenoid cavity just in the region of the tibial spine.

It should be noted that posteriorly, where the epiphysis was not as yet united to the diaphysis, the fissure starting from the exit orifice stops just at the cartilage of conjunction, while in front where bone union has taken place, the fissure extends freely along the epiphysis. This supports the opinion, stated above, regarding the part played by the cartilage of conjunction.

In three other instances the missile, which was the size of a bean, traveled through the bone and remained embedded just under the skin. The entrance wound was on the external aspect of the tibia, four centimetres below the articular interline. It was quite regularly oval in shape. Two vertical fissures started off, one pointing downward to the extent of twelve centimetres, the other toward the articular surface which it did not attain. The exit wound, which was larger, was two centimetres below the interline at the antero-internal aspect of the bone and measured twenty centimetres in length. Two large fissures joined each other near the middle of the articular surface, breaking off a wedge shaped piece in the external glenoid cavity; then the fissure continued onward through the tibial spine and external glenoid cavity.

In another series the missile entered on the internal surface of the left tibia six centimetres below the interline and struck the tibial plateau at the level of the external glenoid cavity, producing a vertical fissure in three fragments, splitting the joint surface in the form of a T, while a second stellate fissure was produced on the joint surface of the external glenoid cavity.

In two of my cases I was able to study the

lesions of a confirmed arthritis and to verify on the fresh specimen the fissures as represented in the drawings of the dried preparations. The lesions were those of an ordinary infectious arthritis, but the joint surfaces had a blackish look, a gangrenous appearance, with grayish fungous masses, an odor of infection and thickening of the synovial. Fissuring of the encrusting cartilage is only apparent in the case of large fissures, but an attentive examination must be made to detect the finer fissures in the cartilage which correspond with the larger fissures in the adjacent bone. The fluid contained in the joint is at the beginning pure blood. For several days the fluid remains so and toward the fifth or sixth day it becomes purulent.

There are few clinical signs at first that indicate fissuring into the knee joint in these common cases of fractures of the tibia from projectiles and it is only the arthritis which quickly develops that imparts a clinical peculiarity to these fractures. It may very well be that fissures into the joint exist without giving rise to an arthritis, but it is difficult to prove this. The joint complication changes the symptomatology of the fracture in two clinical types. In the first the joint collection is contemporary with the fracture and forms during the first few hours following the receipt of the trauma. In the second type the fluid in the joint collects slowly in the days following the trauma. This is the late type.

Clinically, it seems legitimate to make the following distinction. Early arthritis is symptomatic of broad fissuring and joint damage. The collection is usually infected from the start and the fracture undergoes the evolution of a joint fracture. Late arthritis is symptomatic of fine fissuring. The joint fluid is not absolutely infected from the start although secondary infection is bound to occur. This is the most perfect type of fracture with joint fissuring.

CASE I. represents a fracture of the upper end of the tibia with an important intraarticular fluid collection. In itself, the fracture offered no special characteristic. However, the early collection coincided with much destruction of bone and a fracture high up on the tibia in the immediate neighborhood of the knee joint. The intraarticular fluid was present a few hours after the injury was received; the knee was distended and puncture revealed pure blood. In this case there was an important symptomatic sign indicating a large fissure because by pressing the knee in order to determine the importance of the intraarticular collection, blood was forced out through the entrance and exit wounds caused by the missile.

In cases where the joint fluid is late in appearing nothing indicates at first that there is an intraarticular fissure fracture. The fluid collects slowly and it is only at about the fourth day, or even later that its presence is noted. At this time it is still pure blood and it is possible that it will remain such for some time without becoming purulent if the traumatic focus in the bone has been sufficiently disinfected at the start. But I am of the opinion that joint suppuration is bound to occur in the end. In cases where the intraarticular fluid is late in

appearing the fracture focus is usually situated lower down than in fractures with early arthritis and there is nothing in the appearance of the lesion which would lead one to suspect fissuring. However, already by the evening of the first day a systematic examination of the knee will lead one to suspect fissuring into the joint. Thus in Case III, regardless of the normal shape of the knee, a distinct patellar shock could be felt and transverse pressure over the articular interline provoked intense pain. The latter sign has appeared to be symptomatic of joint fissuring and should always be sought.

Injection of the joint, coming from the fracture focus, overshadows the symptoms properly belonging to the fracture and the arthritis of the knee changes the prognosis of the wound. An early appearing hemarthrosis must be considered infected from the start and arthritis of the knee is fatal. It is not impossible that late intraarticular collections may be aseptic and remain so for a certain time if the fracture focus is itself aseptic. These are cases where as in Case III, the patient received early treatment and the fracture focus rendered thoroughly aseptic. But such fortunate circumstances are uncommon and, therefore it may be laid down in principle that: Every intraarticular fluid collection, occurring upon the occasion of a fracture of the upper part of the tibia from a missile, should be considered as doomed to infection.

Among the cases that I have seen, there was in Case I a fracture with broad joint fissuring and the joint fluid was already present on the first day. Puncture performed on the first day revealed pure blood, while another done on the fifth day withdrew an absolutely purulent fluid. In Case II the fracture was accompanied by a late fluid collection, which appeared on the fourth day and when withdrawn on the following day it was found to be hemopurulent. There is, therefore, no difference between the dates at which infection of the fluid became clinically manifest.

A suppurating arthritis of the knee makes itself evident by changes arising in the patient's general condition which, in the simple cases, indicates purulent transformation of the fluid. The temperature goes up in successive oscillations from 98.6° to 102° F. or more, while the pulse follows suit.

Even after arthrotomy, performed when the first symptoms of sepsis appear, it rarely happens that things go on smoothly. Purulent tracts develop and travel down the calf by means of the serous bursa of the internal gastrocnemius. For that matter, suppurative processes of the calf are not always arthritic and I have seen a case of articular fracture of the tibia in which infection of the calf occurred directly through a fissure on the posterior aspect of the tibia. But these purulent tracts are not in themselves a cause of any notable interference with the evolution and yet the prognosis remains a serious matter even after arthrotomy. This is because of a septicemic state which, according to the case, is to be attributed to two essential factors, namely, 1, the absorption of septic matter from the greatly changed articular surfaces, and 2, an osteomyelitis in the focus of the fracture.

Absorption from the articular surfaces is a factor of considerable gravity. Examination of the parts after amputation showed that the joint surfaces of the tibia were greatly involved. The articular cartilage was red, thin, friable and detached, resting a blackened bone surface. Grayish colored fungous masses were organized in the synovia and assumed a gangrenous aspect in the neighborhood of the infected osseous focus.

Osteomyelitis is practically sure to occur in fracture foci of the upper end of the tibia. Composed as it is of spongy tissue this structure is usually pathologically changed by the passage of the missile through it and a gangrenous type of osteomyelitis develops, when the projectile is not removed, in the fracture focus. A continued septic absorption ensues, even when the condition of the joint improves, so that the osteomyelitis finally demands an amputation sooner or later.

The picture of the evolution of these fissure fractures is unquestionably sombre and still in the cases known to us the wound has followed this progress. Therefore, I think it can be said that fissure fractures of the tibia involving the knee joint generally end in suppurating arthritis of this joint. Oftentimes, regardless of an arthrotomy, the phenomena of absorption taking place in the joint or those due to osteomyelitis in the fracture focus, maintain a septicemic state which will ultimately necessitate amputation at the thigh.

Every joint collection, appearing immediately after or within a few days, in cases of fracture of the upper end of the tibia due to a missile, even when the latter has involved the bone some little distance from the knee joint, should be looked upon as symptomatic of fissuring into the joint and as bound to develop infection.

Once a suppurating arthritis of the knee has taken place the gravity of these fractures, even after arthrotomy, is considerable. In early intra-articular collections the fracture focus must be sterilized by curettage, of the pulpy mass of infected bone, by the removal of the missile and other foreign bodies and the use of ordinary antiseptics. The articular infection is to be dealt with by arthrotomy without delay. Resection of the knee is not indicated in such cases and removal of detached bone pieces in the joint is alone permissible.

When the joint collection appears late in the progress of the case and puncture shows that the blood contained in the joint is absolutely sterile on culture media, the fluid may be removed by puncture followed by washing out the joint with ether but in all other circumstances, arthrotomy must be done. Only too often, regardless of this treatment, a septicemic state occurs and amputation at the thigh must be resorted to as a life saving measure.

Auricular Flutter and Its Treatment.—Jonathan Meakins (*Canadian Medical Association Journal*, July, 1919) says that the treatment consists of the use of digitalis in large doses until auricular fibrillation occurs, when, if the digitalis is stopped, the tendency is for the normal rhythm to return.

IRIDECTOMY AND CONJUNCTIVOPLASTY IN AN UNUSUAL, OLD TRAUMA TO THE EYE.*

By S. MOSKOWITZ, M. D.,
New York.

Chief of Clinic, Eye Department, Mt. Sinai Dispensary; Assistant
Eye Department, Post-Graduate Hospital.

CASE I.—The patient H. N., aged twenty-one, male, Russian, consulted me on May 3, 1915, for the removal of a scar, in the right eye, the result of an injury sustained at the age of eight. Examination O. D. vision, fingers seen poorly at a distance of six inches in very clear transmitted light. Light perception good. O. S. vision 20/40. The right eye (Fig. 1) showed an oblique scar on the superior temporal side of the cornea of the right eye, beginning two mm. above the cornea going down through it, as a thick raised scar of white, extending outward and downward one mm. away from the cornea. The iris had no pupillary opening and was completely drawn up, toward and into the scar forming an anterior synechia. By oblique illumination a slit hole representing the former pupil, could be seen parallel to scar one half mm. below it. The tension of the eye was normal. By the instillation of atropine into the eye, the slitlike pupil widened somewhat, and the patient was able

day inspected, cleansed, and a drop of atropine instilled. Second day V. O. D. 20/100. Three days later the patient was discharged to return two weeks later for the removal of the scar. Two weeks later patient returned, and was tested for refraction.

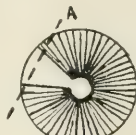


FIG. 3.

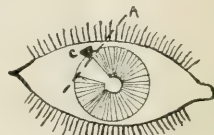


FIG. 4.

V. O. D. 20/70 with — 2.50 cyl. X 180 = 20/30.
V. O. S. 20/40 with — .25—1 cyl. X 90 = 20/20.
This brought the vision almost up to normal.

One week later under local anesthesia at my office, the operation for improving the appearance of the scar was attempted. The scar was very noticeable on account of the contrast of a dark iris. I conceived a plan of doing a conjunctivoplastic operation, covering that sector of the cornea cut by the scar, which was not over one and one half mm. wide. This form of conjunctivoplasty has been advocated by Kuhnt, for other conditions than the one reported here. His method is described by Meller (1).

The method in this case was as follows: The sector cut off by the scar is to be covered, and therefore the scar and that section of the cornea was curetted, until level. Next a semilunar flap was made parallel and close to the corneal margin three mm. wide and about eight mm. long (Fig. 4a). The conjunctiva adjoining the flap was undercut for about four mm. and a small area of conjunctiva was excised (about three mm. wide and five mm. long) in advance of the flap, as shown in Fig. 4a. The flap was shifted into the now exposed area and covering the curetted surface of the cornea, sutured, in this position by one suture in the end of the flap and proximal conjunctiva, and two sutures at the outer sides of the flap to the proximal conjunctiva. (Fig. 4b). Both eyes were bandaged for twenty-four hours, and then only the operated eye bandaged for three more days, and then the sutures were removed. The result was good. Patient seen on April 25, 1916, and his condition was satisfac-



FIG. 1.

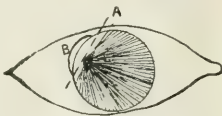


FIG. 2.

to see fingers clearly at a distance of one foot in any light.

Operation was advised, but postponed by the patient for some time; however, he returned in January, 1916. From the description and different tests made in this case one could be reasonably sure of improving the sight by an optical iridectomy. On January 11, 1916, I operated upon the patient at the St. Marks Hospital, in the following manner: After the usual cleansing preparations, and the instillation of a five per cent. solution of cocaine every two minutes, until perfect anesthesia was obtained (in this case six drops), with the addition of several drops of adrenalin and solution of atropine one per cent., one drop, a keratome incision was made at one mm. away from the sclerocorneal margin, as indicated in Fig. 2.

The anterior synechia was cut through with DeWeckers's scissors, which was followed by a rather broad iridectomy. The iris immediately relapsed into a position similar to normal with its coloboma in the region of the scar (Fig. 3). At this time the patient volunteered the statement that he saw very much better. Very little pain was experienced, except for an instant during the severance of iris tissue, and the patient winced for a second. The eye was bandaged, and on the following

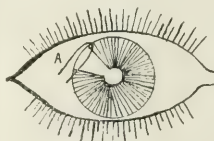


FIG. 4a.

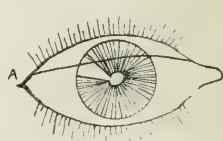


FIG. 4b.

tory, the transplantation serving two purposes, that of eliminating the scar and lessening the coloboma defect following iridectomy.

REFERENCES.

MELLER: Textbook, p. 234.
193 SECOND AVENUE.

*Case presented at the Clinical Society of Gouverneur Hospital, out patient department.

CHILDBIRTH.

By P. A. KANE, M. D.,
Chicago.

Mothers of wild animals through their instinctive and inherent knowledge have developed to the highest degree the faculty of bringing forth their young. Their greatest solicitude at all times is, of course, the obtaining of food and propagating the race. Mothers of the human family might well take lesson from their cunning. No lessons can be learned from the domestic animals as they are under the domination of human ignorance. Let us take as an example, the lioness and kindred animals. When her hour of delivery arrives she is well prepared. Her couch is chosen in the darkest jungle and if possible, a sheltered cave. The average man thinks this is for the protection of her young against other animals. This is not true, as she and her mate are sufficiently capable and well fortified to protect them against all and any kind of attack. They do not know of any physical danger.

The dark jungle is chosen for two specific reasons: even, warm temperature and darkness. She knows that the best possible conditions prevail for her young when the surrounding atmosphere is warm and always uniform. There no sudden gust of wind can penetrate to chill the young. They come from a place of very high and even temperature and human intelligence should be able to understand this much better than animal instinct that the best place for the newly born is in a similar environment for some time after birth. A newborn child should not be exposed to any condition where there is likely to be a sudden chilling of the body. A child leaving a constant temperature of 100° F. should not be born in a room at a temperature of 80°. This low temperature, although not felt acutely by the child on account of lack of terminal nerve feelings, is nevertheless detrimental to its well being. If you wish to demonstrate the difference in temperature put your hands in water of 100° F. and keep them there until thoroughly saturated and then put them immediately into water of 80° and it will give your entire body a chill. Your hands alone will do this to your whole body. How much worse then it must be to the newly born because this chilling involves its whole and extremely tender body.

The darkness of the jungle is chosen also for a specific purpose. All animals are born without the power of sight. When nature imbued eyes with the power of vision, she made them to see in a surrounding environment of a green ground floor, green, dark, dense, shady trees and a blue sky. All of that condition left to us today is a blue sky. Mothers of wild animals go into the dark jungle to protect the eyesight of their newly born. They are kept in that shade until the vision is well developed and matured. Their instinctive power of seeing in the dark is here fully developed and when the eyes are matured for this purpose they are then gradually led out into the intense light of the sun.

A child should be born in a room with a high temperature to preserve its tender body from a sudden chilling and also that the air it takes into its ex-

ceedingly delicate lungs will not do injury. It should be brought forth and kept for some time—at least until it receives the power of vision—in a dark room. This latter is of even more importance than the former. It is vastly important today, much more so than in ages past. Eyes were originally given the power of vision in dark, shady, green surroundings; today there is no such place. All is light and whiteness and for that reason babies should be kept in darkness.

The birth room as recommended by our doctors must be light and airy. This makes it most cheerful for the mother; and only the mother is considered in the matter. But what a crime against the newborn. Light and airy means sudden cooling drafts and white sunlight. The mother should not be considered in the matter; nature has in many of her typical, specific productions sacrificed the parent. In nature the new life is of the first importance. The welfare of the child should be the primary consideration. It should be born in a room painted green with green shades on the windows and those kept pulled down. The room should have only one door with the windows kept closed, or if opened for ventilation should have heavy screens in the openings to stop all possibilities of a draught. The child should be kept in this room for months, no handling should be allowed except for cleanliness and feeding. If our eyes were developed under these circumstances there would not be such a promiscuous wearing of glasses as we see today.

1926 CONGRESS STREET.

X Ray Localization of Foreign Bodies.—Sinclair Tousey (*International Journal of Surgery*, May, 1919) presents a method for the localization of foreign bodies which consists of a lead mark fastened to the chin where it is in contact with the plate: facilities for making two exposures with the tube at a measured distance from the plate and displaced at a measured distance after the first exposure and eighth inch mesh wire netting laid upon the plate during the exposure and therefore radiographed upon it. The lead may be left on the skin or replaced by a mark. If it is not in contact with the plate the image will be double. In some cases it is best to make both exposures upon the same plate. The plates must be changed as for stereoscopic plates—the patient or the netting must remain stationary. If the pictures are upon two plates some particular part of the lead marker is taken as zero and the longitude of some particular part of the foreign body is noted in each picture. If one is taken as so many subdivisions to the right and the other a certain number to the left the displacement is the sum of these two numbers, but if both are on the same side of the zero meridian the displacement is found by subtracting the smaller from the larger number. For the head or trunk or thigh, the anticathode is twenty-one inches from the plate and is displaced three inches after the first exposure. For the arm, hand, leg or foot the distance is fourteen inches and the displacement is two inches. The method may also be used for calculi.

Editorial Notes and Comments

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THE DEGENERATIVE DISEASES.

As the pathology of the degenerative cardiovascular renal diseases becomes more and more known their etiology is gradually narrowing down to two most prominent factors, namely, infection and fatigue. Either one of these, including the various chemical and metabolic intoxications, will be found at the bottom of any of these pathological conditions, and thus the problem of combatting the spread of these diseases that exact a heavy toll in lives and resources really resolves itself in the prevention of infectious diseases and the removal of fatigue. Our advance during the last fifty years in the knowledge of infectious diseases has resulted in their gradual diminution as causes of death, so that in the first fifteen to eighteen years of life the mortality of these diseases has been halved (E. B. Fink, *American Journal of Public Health*, February, 1919.) But on the other hand there has been a gradual rise in mortality above forty-three, while the age group of forty-five gives a greater mortality now than ten years ago. It is of great significance that the organic heart diseases and endocarditis give the greatest mortality, namely at the rate of 156.2 to the 100,000, followed by tuberculosis (all forms) with a rate of 145.8, while nephritis occupies fourth place with 104.7 to the 100,000. These are very impressive figures, and they become the more significant by comparison with the chronic degenerative diseases which caused in the same year five times as many deaths as typhoid, measles, scarlet fever, whooping cough and

diphtheria combined, and almost 25,000 more deaths than pulmonary tuberculosis and pneumonia combined, while the deaths from Bright's disease exceed in number those from all forms of pneumonia. We may add here that these figures will undergo a radical change in the statistics for 1918 and 1919. The statistical data for New York city for 1914 give for persons of fifteen years and over organic heart disease as 17.9 per cent. of all deaths, nephritis as 9.4 per cent., and all degenerative diseases, including cerebral hemorrhage and apoplexy, make about thirty per cent. of the entire mortality. Pulmonary tuberculosis caused fewer deaths than organic heart disease, the total number being 2,597, as compared with 9,616 of the latter, or sixteen per cent. against 17.9 per cent. Another important point to remember is that the greatest mortality from degenerative diseases occurs two age periods later than that of pulmonary tuberculosis, the figures of the one being as it were complementary to the other; from a purely economic standpoint the loss from tuberculosis is greater than that from degenerative diseases.

Among the infections as causative agencies of cardiovascular renal diseases syphilis stands pre-eminent in early middle life, while among the non-specific causes focal infections occupy a very prominent place. It is a trite assertion indeed that acute infectious diseases are frequently accompanied by damage to either the endocardium or the myocardium or both, so that frequent attacks of the various infections are bound sooner or later to leave deleterious traces on the vascular system—a matter of special significance when occurring at the middle period of life when the normal degenerative changes in the system take place. The bacteria of acute infections reach the various tissues by way of the vascular system and cause the principal damage to the arterioles, thus interfering with the blood supply and affecting the oxidizing capacity of the tissues, which in turn brings about a condition of acidosis; chronic acidosis leads to degenerative changes in the vascular system and the kidneys.

The exigencies of modern life are largely responsible for the other etiological factor of chronic degenerative diseases, namely, fatigue; this acts principally by lowering the blood and tissue resistance to infectious diseases. This lowering of resistance is also explained on the basis of acidosis, as metabolism is evidently at its maximum efficiency when the acid base equilibrium is normal, and any disturbance produces conditions favorable to bacterial infection. Chronic fatigue is also held responsible

for premature senile changes in the vascular system, and consequently in the entire body as a whole.

As a matter of prophylaxis it cannot be too strongly impressed on the profession (and on the lay public) that to prevent or at least delay the appearance of degenerative cardiovascular renal diseases it is imperative to keep all patients with acute fevers in bed during the febrile period; in such a comparatively widespread disease as tonsillitis care should also be taken in guarding against cardiac complications during the period of convalescence. The epidemic of influenza, with its manifold and variegated complications and sequelæ, furnishes a particularly strong object lesson in the effects of an acute infection on the cardiovascular renal system. Nor is there any doubt in the minds of those who had a considerable number of patients under their care that too early return to normal habits of life, frequently against the advice of the attending physician, was responsible for complications which might have been prevented with proper rest in bed and avoidance of fatigue.

THE HUMANITY THAT SHOULD BE IN EDUCATION.

Sir J. G. Frazer remarks of an ancient Sumerian city, important enough once and long enough in existence to have had written records of its life, that even its name vanishes from history from about the year 2100 B. C. That is about four thousand years ago and this statement is enough to make us catch our mental breath and hold it while we think of a city whose venerable history was over and gone so long ago, while other cities were being built to pass in their turn over the surface of time. And yet Sir William Osler says in his recent presidential address before the classical association at Oxford [The Old Humanities and the New Science, *British Medical Journal*, July 5, 1919] that in the history of the world we must look upon Egypt and Babylon as merely our contemporaries. It seems that it must be so. The dead, he says, can never die. They only pass and reappear in an "invariableness in this ever turning world." Even the buried city has since delivered up its living records through the archeologist.

Therefore, Sir William Osler pleads with the learned men in Oxford and calls upon his own profession to admit into their serious consideration, into their courses of study, a comprehension of humanity which would prepare men and women to go on with the process of human life and its endless research into the meaning and capacity lying within and without itself. The need of in-

dividual psychology, of individual understanding of possibilities, capabilities, dynamic trends and the hindrances to these, is the pressing need of the present time, and it is making itself felt chiefly in the broad fields of therapy and prevention of mental disease and inefficiency. The background of rich variation of human thought and endeavor in a unity, an "invariableness," which includes all ages, is the only solid and at the same time richly fruitful background on which such individual freedom and power can develop.

Osler warns against the constricted concepts into which learning has fallen, scientific learning as well as the "classics" already far longer covered with dust. Yet both, while they have erred in closing themselves into their specialties, have been concealing what is really human within themselves by losing touch with the "humanities." The latter are the realization that the world has always been full of nothing in the way of human history but men and women who were thinking and feeling and living even while they speculated and investigated and discovered, or even while they covered over what had been found and done. Aristotle has been an almost mythical, lifeless figure ticketed by a few dates and set into a crystallized conception of the Athenian history in which he lived. Perhaps he is only a roll of dusty manuscripts scarcely endowed with any vitality even when transposed to the printed pages of a modern book. It has barely been conceived, much less made the teaching of the classroom, that he was a living, breathing man, who loved and worked and investigated, whose actual touch with biology and natural history colored all his philosophical thought and directed all his interests. The study of the history of evolution has taken little or no account of the modern and progressive type of thought in the writings of the Latin Lucretius. He contemplated life in its flux as modern schools have forgotten to consider it. Such teaching has passed from our modern schools. In them overspecialization has lost all sense of proportion. Each branch of science or of letters has become too complete a thing in itself and we "have got into backwaters, far from the main stream."

From this Osler summons us forth. The cry has recently been heard on every hand, over against the cry also for more concentration, more practical specialization, more utilitarian narrowness and loss of sense of proportion which is today the overwhelming tendency in education. Against these such a practical man of science and man of vital affairs lifts up his voice of protest. He believes and believes vitally in the intercommunion and connection

of the various studies and interests, not in an impossible encompassing of all branches of learning by any human individual or by any one classroom of teaching. Not that is his meaning but the infusing of all study with these humanities, the practical and scholarly recognition that there is a main stream of such humanity in which all endeavor. For in it all individual thinking and research of the past have lain and in it history comes sweeping forward no matter from what buried city of the past, to prove itself only the same unvariable yet ever changing human interest and activity which we share today.

ERYTHEMA NODOSUM IN SYPHILIS.

In giving the first complete description of the nodosites observed in the subcutaneous connective tissue in syphilis, Mauriac considered them specific in nature and showed that they belonged to the same class of lesions as gummata. The eruption is preceded and accompanied by febrile phenomena: headache, insomnia, gastric disturbances, and exceedingly sharp pains in the limbs. In all of the cases observed by Mauriac the recovery was rapid under specific treatment. He goes on to show the striking similarity of these luetic erythematous nodosites to the erythema nodosum of an entirely different origin. In addition to the intradermic effusions of erythema nodosum, subdermic tumors or patches are always found in the subcutaneous tissues, which are free and movable. Occasionally these patches are slightly adherent to the deeper layers of the integument and do not move freely. Some of the nodules reach this state after having formed a typical erythema nodosum tumor.

This frequent coincidence of the typical erythema nodosum intradermic lesions with small tumors, which are at first freely movable and then gradually form adhesions with the deeper layers of the skin and which may be regarded as gummata, is of great importance from the point of view of etiology and pathogenesis of these lesions. De Beurmanny and Claude are partisans of Mauriac's theory. They are of the opinion that all of the intermediaries which exist between the superficial papulonodular erythematous and the subcutaneous effusions are of a gummatous nature. The only mark of distinction is that while the lesions are identical in nature they are different in intensity. Therefore, they admit that under the influence of syphilis, a morbid process may be produced, varying in intensity according to circumstances. Mercuse, who has made a microscopical study of three cases of erythema nodosum in secondary syphilis, has found that the lesions are syphilitic and arise from the

subcutaneous veins. Both clinically and pathologically there is a great similarity between these and certain nodular tuberculides which the researches of Philippson have shown to be, most probably, of venous origin. On the other hand Hoffmann has demonstrated that erythema nodosum occurs in cases of varix in the female and histological examinations have led him to maintain that the etiological factor is one of a luetic thrombophlebitis without any trace of necrosis.

More recently, Scherber has recorded a case of erythema nodosum occurring in syphilis while at the same time the patient presented clinical evidences of tuberculosis. Microscopical examination of a nonulcerated nodule showed an inflammatory process beginning in the subcutaneous blood vessels, especially the arteries. The inflammation was localized mainly in the adventitious tissues and had produced a granular tissue, without necrosis, extending along the vessels and around the sudoriparous glands. It involved the skin producing subcutaneous nodules. The sebaceous tissue with its vessels was also included in the process, and in certain areas was almost completely replaced by granular tissue. The conclusion of these findings is that all subcutaneous infiltrations similar to ordinary gummata are probably of a hematogenous origin, while the phlebitis is the first pathological phase. The lesions evolve toward complete absorption and to softening and ulceration. The only useful treatment is antisyphilitic.

THE MILK SITUATION AND THE PHYSICIAN.

Milk is an essential food. It is vital to the health of children. Inability to procure milk in European countries during the war caused the death of thousands of babies. In some countries milk was scarce, in others it could not be had because of the disorganization in channels of distribution. War was not content with the graves it filled from among the combatants—here too it demanded its legions. But that was war!

It may be asked why physicians should concern themselves with the price of milk or of any other commodity. Surely this is invading the field of commerce, and if wrongs have been committed and excessive profits levied the lawmakers of the land will soon set things right. Unfortunately, this is not only a question of profits. It is a question of lives. While we are waiting for tedious adjustments, the dollars are being carefully counted, the pursestrings drawn taut, the health of a goodly

proportion of children is being undermined, and babies are dying. This is where the interest of the physician begins and ends. His mission is to protect health and in so doing he is fulfilling his duty to the profession and to humanity. In recent years we have come to realize more clearly the rôle that undernourishment plays as a causative factor in disease and in the enfeeblement of the race. At times when problems of this kind have reached an acute stage where they cannot be left in the hands of individuals and are put before lawmaking bodies, medical men are consulted as a matter of courtesy or policy. Generally they are ignored.

When a person is in danger of perishing in a burning building, the financial cost of saving his life is not discussed or thought of. We should not now stop and discuss the price of and profit from milk. This is a vital question. Physicians should not wait until they are asked to find out experimentally how long a baby can live without milk, but they should make every effort within their power to see that the babies secure enough milk of the best quality obtainable. Many European governments, realizing the danger to the nation of a milk scarcity, took over the distribution of milk. This policy is still in force and will remain so until conditions have become completely adjusted. Will it come to that in our country? We who sacrificed so much for the sake of world democracy cannot let our children die for the want of milk when it is only a question of dollars. Surely medical men, who are the guardians of the public health, cannot allow this to go on without a protest.

LESSONS FROM WAR MEDICINE.

A question frequently debated is, "How valuable are the lessons which can be learned from a study of war surgery? How much that is applicable to civil medicine can the physician get from this experience?"

Many physicians feel that they have not the time to give to a study of war medicine, and indeed the contributions of former wars to civil practice have been meagre. During this war, however, conditions were not the same. The duration of the war, the number of men involved, the need for intensive study, and the imperative necessity of saving men on account of their new value as fighting or working units, all were factors in making progress. A certain amount of this can be applied to civil medicine. Discoveries have been made in every branch of medicine and surgery. Many are yet unrecorded because medical men were working under such stress that they did not have the opportunity to

write up their findings, but after a short breathing space a new impetus will be given to medical war literature.

The first thought in regard to work done during the war is of the treatment of infected wounds. We do not stop to consider the progress made in the study of shock, in the new uses for physical methods of colored lights, mechanotherapy, electrotherapy, massage, reconstructive wound healing, new discoveries in the treatment of nervous and metabolic disorders, the simplification of the treatment of burns, and the various new uses found for the x ray. Not only have new discoveries been made but methods have been standardized and the value of the procedures established.

LOOKING BACKWARD.

In attempting an inventory of medical achievement it is interesting to try and estimate whether the progress of medicine has maintained the pace established in other fields by civilization. The answer usually given is that in this science the advance has been systematic, progressive, and in spite of the opposition to innovations by reactionaries, comfortable in their protective dogmas. Instances are cited of specific remedies discovered, of new methods devised in surgery, the innovations of x ray, radium, and other therapeutic agents unknown a century ago; in the use of new methods in psychology as an aid in diagnosing obscure mental ailments by prying loose the hidden secrets of the subconscious; in the conquering of the insect borne diseases, such as malaria and typhus, . . . vaccines . . . antitoxins. Truly the progress has been great, greater in some branches than in others. There is one thing that has been done by the medical profession which is seldom considered, and that is, the placing of all these discoveries and the skill of the most highly trained medical men at the disposal of the people who are unable to pay fees. The feeling of helplessness and terror of the poor who were unable to secure medical or surgical attendance because of their poverty caused them as much pain and misery as the diseases from which they were suffering. Voltaire in *Candide* gives us the story of the philosopher Pangloss, suffering from syphilis, with the knowledge of his disease, and when told that he would be cured complains bitterly saying, "Alas how can I? I have not a farthing . . . and all over the globe there is no letting of blood or taking a glister, without paying . . ." Were Voltaire writing today he would find no paucity of material for his vitriolic pen and keen mind, but he would in truth be unable to criticize medical standards and conditions so sharply as he did in those not too far distant years. Here at least in serving the people, and in doing its share to lighten the burden of the poor, by the assurance of medical attention when they are attacked by diseases, whether or not they can afford a fee, has medicine more than held its own in the progress of civilization.

News Items.

New Orleans Quarantine Station.—Congressman O'Connor has introduced a bill appropriating \$750,000 for the erection and equipment of a quarantine station at New Orleans.

New Hospital for New York.—Application has been made for the incorporation of the St. Bartholomew's Hospital and Clinic for the Alimentary Canal. The clinic is to be conducted at 215 East Forty-second Street.

Poliomyelitis in Illinois.—Several cases of poliomyelitis have been reported in Putnam, Bureau, and LaSalle counties, Illinois. Dr. Charles E. Crawford has been sent by the State department of health to take charge of the situation.

Sixty-eight Per Cent. of Wounded to Be Trained.—The Federal Board for Vocational Education has made contracts for training 146,931 of the 213,447 American soldiers wounded in France. Of these 99,887 have been surveyed by vocational advisers and 5,878 already placed in training.

Church Organizes Medical Board.—The Methodist Episcopal Church has established a medical department under the direction of the board of foreign missions to guard the health of its missionary workers. Dr. J. G. Vaughan, formerly of Nanchang, China, is executive secretary of the department.

Doctor Taylor to Deliver Lane Lectures.—Dr. Alonzo E. Taylor, professor of physiological chemistry at the University of Pennsylvania, will deliver the Lane medical lectures which are held biennially at the Stanford University Medical School. The dates have not been definitely decided on, but will be about December 12, 1919.

American Children Underfed.—A statement issued by the Children's Bureau of the Department of Labor asserts that from three to six million American children are not getting enough to eat because their parents can not afford to buy sufficient food. From fifteen to twenty-five per cent. of school children are said to be insufficiently fed.

Gift to St. Luke's Hospital.—St. Luke's Hospital will receive \$600,548 from the estate of William H. White, of Cold Spring Harbor, Long Island. Other bequests in the will are: Staten Island Hospital, \$40,000; St. John's Hospital of Brooklyn, \$20,000; Nassau Hospital, Mineola, \$10,000; Huntington Hospital, Huntington, L. I., \$25,000.

Hospital Returned by Government.—The buildings of the Philadelphia General Hospital, which were leased by the government during the latter months of the war as a reconstruction hospital for wounded soldiers and sailors, have been returned. During its tenure the government installed considerable hospital equipment which becomes the property of the municipality.

Former Medical Officers Organize.—Ex-medical officers of the army residing in southwest Missouri met in July to form a permanent organization. The following officers were elected: President, Dr. William A. Delzell, of Springfield; vice president, Dr. Louis M. Edens, of Cabool; secretary, Dr. Horace A. Lowe, of Springfield; treasurer, Dr. James H. Fulbright, of Springfield.

Poliomyelitis in Baltimore.—Four cases of poliomyelitis, all in children, have been reported to the Baltimore health department within the week ending July 26, 1919.

Medical Home Fund.—In the first few days of its campaign the Medical Society of the District of Columbia raised \$50,000 toward its fund of \$90,000 for the erection of a home.

War Cross to Doctor Foster.—The Italian War Cross for Merit awarded to Captain Hamilton K. Foster, deceased, New Rochelle, N. Y., was presented to his father, Dr. Matthias Lanckton Foster, New Rochelle, N. Y.

Public Health Officers Organize.—Health officers who took the course under Dr. Frederick W. Sears at Syracuse University recently organized the Central New York Public Health Association, with a charter membership of sixty-two.

Propose Hospital Inquiry.—A resolution has been introduced in Congress calling for an immediate investigation by the House Military Committee to determine whether soldiers suffering from shell shock are quartered in hospitals with the criminally insane.

Polish-American Girls for Relief Work.—Twenty Polish-American girls who have been trained in dietetics, family rehabilitation, care of children, and first aid are on the way to Poland to continue the child welfare work begun by the American relief administration.

Hahnemann Hospital to Be Rebuilt.—Hahnemann Hospital is to be built anew on Fifth Avenue, just north of Mount Sinai Hospital, an entire block having been bought as a site for the institution. For more than half a century it has been situated at Park Avenue and Sixty-seventh Street.

Appropriation for Study of Influenza.—The committee on scientific research of the American Medical Association has made an appropriation for a study of the epidemiology and bacteriology of influenza which will be under the direction of Professor Edwin O. Jordan, of the University of Chicago.

To Purchase Baltimore Quarantine Station.—The Treasury Department has formally recommended to Congress the purchase from the municipal government of the Baltimore Quarantine Station for the United States Health Service. It is understood the city will spend the money, \$176,775, in extension of its public hospital service.

Jacobi Memorial Hospital.—An Abraham Jacobi Memorial Hospital is being planned by a committee of which Dr. S. Robert Schultz is executive director. The hospital will be erected in the Washington Heights section of New York because of the lack of hospital facilities in that locality. An active campaign to obtain the necessary funds will be commenced in November.

To Raise Funds for Women's Medical College.—Plans are being formulated for a campaign to raise funds for the Women's Medical College of Pennsylvania, according to a statement issued by Dr. Martha Tracy, dean of the college. The campaign will be conducted entirely by women. The money will be expended for extensions and developments and for the erection of a new residence hall for students and nurses.

American Hospital for Havana.—Plans are under way for the erection of an American hospital in Havana. The approximate cost will be \$300,000, of which \$150,000 is already available.

Influenza in India.—Statistics of influenza in India, as reported in the bulletin of the International Office of Public Hygiene, Paris, show 4,933,132 estimated deaths in a population of 238,527,635, a rate of 20.7 deaths in 1,000 of population.

Paris University to Have Athletic Ground.—The general association of Paris students and the athletic section of the Paris University Club have instituted a campaign for funds for an athletic stadium after the manner of American and English universities.

A Trial of the Eight Hour Day in Paris Hospitals.—An eight hour day for attendants will be given a trial in one of the larger hospitals in Paris, with a view to its adoption in all Paris hospitals, if it proves practicable. Such a reform would affect more than 12,500 persons.

Spanish Institute of Nepiology.—An institute of nepiology has been founded in Babastro, Spain, by Professor Martinez Vargas, of Barcelona, pediatricist and dean of the faculty. The institute has for its aim the combating of infant mortality and the prevention of depopulation.

Typhus Train Handles 20,000 Persons.—About 20,000 men have been handled by the personnel of the Red Cross typhus train operating in Siberia. These men were bathed, their heads clipped, clothing disinfected, and in many cases they received underwear and medical treatment. The largest number handled in any one day was 999.

Peking Union Medical College.—The Peking Union Medical College, China, will open in October. A four years' course in medicine and an additional year of special work in hospitals or laboratories will be given. A school offering a three years' preparatory premedical course has been in existence since September, 1917. The college will be coeducational.

Red Cross Aids French Babies.—During the eighteen months of its existence the American Red Cross children's bureau has directly aided 250,000 French children. It established or maintained seventeen hospitals, sixty-nine dispensaries, nine convalescent homes, six creches, and seven miscellaneous institutions. Four of the hospitals will be continued permanently under French direction.

Personal.—Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, was elected a fellow of the Royal Society of London at a meeting held on June 28th.

Major Harry Gross, Medical Corps, United States Army, formerly professor of surgery at the Maryland Medical College, has returned to Baltimore from overseas service.

Dr. Etta Gray, of Los Angeles, has sailed for a year's duty in France and Serbia with the American Women's Hospital Service. Doctor Gray will look over the ground for the purpose of establishing a chain of hospitals in Serbia.

Dr. Charles Herrman has returned to New York and will resume the practice of medicine at his new address, 76 West Eighty-sixth Street, specializing, as heretofore, in diseases of children.

Pelham Bay Park Not to House Drug Addicts.—Owing to the opposition of residents in that section of the Bronx, the city administration of New York has decided not to establish a hospital for drug addicts on the site of the naval training station at Pelham Bay Park. Instead the drug victims will be treated at Sea View Hospital, a city institution, at Castleton Corners, S. I. Sea View at present houses tuberculosis patients who will probably be transferred to some other institution.

Permanent Surgical Exhibit Planned.—Plans are being made for a permanent exhibit of the achievements of modern surgery at Fort McHenry Hospital. A temporary exhibit of the work done has attracted thousands of visitors to the Medical and Chirurgical Building, Baltimore. Colonel J. H. McHenry, chief of the general surgical work at the hospital, is reported as being heartily in favor of the plan. There are now more than 1900 surgical cases, to say nothing of the hundreds of medical cases, at the hospital, which is the largest army hospital post in the country.

Lehigh Valley Medical Association.—The following officers were elected at the annual meeting of the Lehigh Valley Medical Association held July 24th at the Delaware Water Gap: President, Dr. Jacob A. Trexler, of Lehighton; first vice-president, Dr. Samuel P. Mengel, of Wilkes-Barre; second vice-president, Dr. Harry C. Fisler, of Easton; third vice-president, Dr. Frederick A. Fetherolf, of Allentown; fourth vice-president, Dr. James M. Reese, of Philipsburg, N. J.; secretary, Dr. Alexander Armstrong, of White Haven; assistant secretary, Dr. Roger P. Batchelor, of Palmerton, and treasurer, Dr. David H. Keller, of Bangor.

Civil Service Examinations.—The Civil Service Commission of the State of New York will hold examinations August 30th for the following positions: Superintendent, county tuberculosis hospitals; men and women; salaries vary in different counties from \$1,000 to \$3,500 and maintenance. Assistant physician, regular or homeopathic, State and county institutions; men and women; salary \$1,200, increasing \$100 each year to \$1,600 with maintenance. Assistant medical officer, department of the health officer of the port of New York; men only; salary \$1,500 and maintenance. Assistant surgeon, Soldiers' and Sailors' Home, Bath, N. Y.; men only; \$1,560 and maintenance. Bacteriologist, division of laboratories and research, State Department of Health; men only; \$2,000 to \$2,500.

United States Army Surgeons in Serbia.—Eighteen surgeons and physicians of the United States Army Medical and Sanitary Corps are reported to have aided the Red Cross Commission in relief work in Serbia. The medical work of the commission has been under the direction of Lieutenant Colonel Edgar E. Hume, of Frankfort, Ky. Major Edward Stuart repaired and established hospitals in Belgrade and fought typhus there; Captain Fred C. Davis fought typhus at Shabats; Captain Herman Hundling directed relief and dispensary work at Pirot; Lieutenant D. L. Austin established a bacteriological laboratory at Monastir; Captain Morris R. Bradner, Lieutenant Bernard M. Krug, and Lieutenant William B. Aten established a hospital, orphanage, and dispensary at Prisrend.

Drug Regulations Modified.—A press dispatch from Washington states that Commissioner Roper has issued instructions to collectors of internal revenue whereby persons suffering from incurable diseases and aged persons addicted for many years may obtain drugs on prescription by a reputable physician that the drug is needed to maintain life. Previous instructions had been that persons prescribing, selling, or obtaining drugs merely to satisfy the craving of an addict should be regarded as violating the law. Collectors were warned by Mr. Roper to exercise every reasonable precaution to prevent the aged and infirm from becoming the innocent means whereby unauthorized persons might engage in illicit narcotic traffic.

Children Exhibited at County Fair.—Jackson County, Kansas, is going to give prizes for children along with the shorthorns, Jerseys, and other local products at the county fair this fall. All children up to fourteen years of age will be weighed and measured and those up to three years will be given thorough physical examinations as well. Mothers of undernourished children will be given advice on proper feeding by a physician or dietitian. This is only a beginning. Next year a prize will be given to the child who makes the greatest improvement physically during the year, and the children's building may be enlarged to a permanent child welfare centre.

Promotions in Medical Corps, U. S. N. R. F.—For the first time in the history of the United States Navy medical reserve officers have been ranked higher than lieutenant commander. The report of the navy board on selection, which has been approved, recommends the following officers of the Medical Corps, U. S. Naval Reserve Force, for promotion:

To commander in Class 1: Cary Devall Langhorne, George Blaine Crow, Arnold Leon Jacoby.

Commander, in Class 2: George Tully Vaughan, Morris Booth Miller, David Sweeney Hillis, John Crowell McEvitt, Thomas B. W. Leland, Joseph Howard Hines, John Aloysius Lee, John James Collins, Charles Anthony Costello, Cleveland Cady Kimball, James Alfred Henderson, Robert Duval Jones, Fred John Patton, Wallace John Herriman, David Gorham Eldridge.

Commander, in Class 4: William Seaman Bainbridge, Robert Crier LeConte, William Baret Brinsmade, Stanley Stillman, Eugene Floyd DuBois, Rea Smith, John Chalmers DaCosta, Milton Joseph Rosenau, George Gorgas Ross, Albion Walter Hewlett, Hobart Amory Hare, Robert Battey Greenough, Judson Daland, James Eli Talley, Edward Milton Foote, Paul Adin Lewis, Guy Cochran, Verne Adams Dodd, Edgerton Lafayette Crispin, John Aloysius McGlinn, LeRoy Goddard Crandon, Harold Denman Meeker, Nelson Henry Clark, Halsey DeWolf, Charles W. Moots, George Arnold Matteson, James Taylor Hanan, Francis Joseph Dever, Frank Cousins Gregg, Clifford Elmore Henry, Porter Bruce Brockway, Clinton C. Tyrrell, Frederick Obadiah Williams, Harvey Mitchell Righter, Zachray Thomas Scott, William Curtis Newton, William Henry Areson.

NEW YORK ASSOCIATION FOR MEDICAL EDUCATION.

The proposal of a small group of physicians, surgeons, and medical teachers of New York to establish a central clearing house for medical education has so favorably impressed their colleagues that what has been for years past a dream and a hope has now become an accomplished fact. The medical profession has developed within itself an active organization to stimulate and expand medical education for students and graduates of medicine in the interest of and ultimate better service to the public. With a committee on education that embraces the deans of the four undergraduate medical schools and representatives of the graduate teaching institutions and with all the principal institutions for medical teaching and service, and those devoted to disease prevention and health protection, represented on the Board of Trustees; the best results of cooperation and coordination are certain to be achieved.

The Association for Medical Education is organized to offer opportunity to teachers and workers in the medical sciences, to participate in the consideration and direction of all matters affecting medical education. It also offers a medium through which the unsurpassed clinical material and research facilities of this metropolitan area may be made available to all students and graduates of medicine from our own or other countries.

It is felt by the incorporators that the City of New York is under obligations to assemble and provide resources for the teaching of medicine, in its broadest terms, in a manner compatible with the city's position as an international port and traffic centre. Furthermore the profession feels keenly its duty to pay fitting tribute to the services and contributions of the many leaders of medicine and its allied sciences who have honored this city by their work in healing the sick and controlling disease.

No one medical school or group of special interests, hospitals, laboratories or individuals can command sufficient support to assume the representation or direction of an undertaking in which the entire profession and the public have so large a stake. The spontaneous and immediate support given to the association's plans by the whole medical profession of New York city is a guarantee of the representative and democratic character of the undertaking. To accomplish the purposes of the association, a corporate membership of 300 active workers in the practice of medical sciences was selected and from this body a board of trustees, twenty-seven in number, has been duly elected. General members from the profession at large are provided for in the constitution and will soon be requested to take an active share in the deliberations of the association. Among the incorporators are many who are not at present engaged in teaching, as well as members of the faculties of medical schools and of the attending staffs of both private and public hospitals. A finance committee has already obtained, within the profession, sufficient funds to provide for the immediate establishment and permanent maintenance of a bureau of information and correspondence at the New York Aca-

demey of Medicine, 17 West Forty-third street. Reliable data concerning all the facilities which are now or can be made available for teaching purposes will be assembled here; and from this office information concerning the details of courses, dates, fees, qualifications demanded, attendance requirements, etc., will be issued by bulletins and letters. This activity of the Association for Medical Education will be supplementary to the excellent work already well established, and which has been of such great value, by the bureau of clinical information of the Society for the Advancement of Clinical Study.

A committee on education has been most carefully selected and is now organized to fulfill its difficult functions in a spirit of fairness and firmness. It will be the duty of this committee to prepare plans and standards that shall insure a permanent improvement in the character of medical teaching in New York city; to keep themselves informed concerning and to pass upon the qualifications of teachers and the character of the courses they offer to graduate students of medicine, and to observe and regulate the manner in which engagements are met by those offering courses under the auspices of the association.

In order that the work outlined by the association shall receive active and sustained consideration, an executive secretary has been engaged to devote his entire time to the development of the project. For this position the executive committee has selected Dr. Henry O. Reik, of Baltimore, recently lieutenant colonel in the Medical Corps, United States Army and commanding officer of Base Hospital No. 67, American Expeditionary Forces; formerly associate in ophthalmology and otology (1900 to 1912) at the Johns Hopkins University Medical School, and secretary-treasurer of the International Otolological Congress of 1909 to 1912.

The active cooperation of the public health committee of the Academy of Medicine was promptly offered to the association and a study of the dispensary and hospital teaching facilities of the city has been undertaken by its permanent staff.

What has been a gain to one school or hospital has often heretofore resulted in a loss or injury to the interests of another, and it has seemed essential for the uniform development of all branches of medical science, in every medical school, that a generous provision of funds be actively sought and then so distributed, according to plans matured and agreed to by the association, as to serve the best interests of all institutions and of the public. In forwarding so ambitious a scheme, there must be tactful education of the expectant recipient, the prospective donor, and the medical profession as well, in the possibilities or the benefits and the urgency of present needs. A medical education foundation to meet demonstrated needs, to insure adequate provision for research, teaching, practical training, and progressive reeducation of the practitioner, can be made to yield results in safeguarding health and the salvaging of sick and maimed, out of all proportion to the investment. Confidence in the generosity of a well informed public is a fundamental faith of the present day, a faith that has never been betrayed. Special pains will be

taken to avoid interference with any other solicitations now being made and with the sources of benefactions now reached by the various colleges and hospitals in the city.

Looking to the comfort and welfare of visiting physicians and surgeons, the association contemplates establishing a central residence or meeting place with provision for social life on lines similar to those developing in London and Paris in anticipation of the need of such professional homes for visiting Americans and Colonials. Nor will efforts be spared to obtain close coordination with similar associations of physicians in other cities, under the general central auspices of the council of education of the American Medical Association. One of the privileges of the New York association will be to see that those seeking opportunities in clinical, laboratory or field work which may be better provided elsewhere than in the metropolitan area of New York shall be promptly directed to the best teachers and best facilities wherever they are to be found in this country or in Canada. Cooperation with the committees in London and Paris which are organizing the medical resources of England and France for the benefit of visitors from the Americas will be favored, and this may prove to be one means to return in part the courtesies and assistance the American medical officers received without stint during service overseas.

Though New York possesses, to an even greater degree than those cities, most of the elements that made Berlin and Vienna world medical centres, it has not been previously prepared to supply the demands of postgraduate students. Furthermore, a broad distribution from this storehouse of accumulated scientific knowledge that might and should be applied to the prevention of disease and the healing of the sick has not previously received anywhere in this country its fair share of attention from the genius of American organization and liberality. This association now desires through proper organization and the procurement of employment of an efficient endowment to foster such use of this possessed knowledge and facilities as will result in widespread benefit to the whole country.

Officers of New York Association for Medical Education: President, Wendell C. Phillips, 40 West Forty-seventh Street, New York; first vice-president, George David Stewart, 417 Park Avenue, New York; second vice-president, Glentworth R. Butler, 226 Gates Avenue, Brooklyn; secretary, Haven Emerson, 120 East Sixty-second Street, New York; treasurer, Arthur F. Chase, 393 West End Avenue, New York.

The association is now in the process of incorporation under the laws of the State of New York, and the following is the list of those trustees who have already accepted their election: Samuel A. Brown, William Francis Campbell, Rufus I. Cole, William Darrach, Charles N. Dowd, Charles A. Elsberg, James Ewing, John A. Hartwell, Otto V. Huffman, George W. Kosmak, Adrian V. S. Lambert, Emanuel Libman, James Alexander Miller, Walter L. Niles, William H. Park, Charles H. Peck, Eugene H. Pool, Thomas W. Salmon, Frederick Tilney, George Gray Ward, Jr., Herman M. Biggs, Lewis A. Conner, William H. Bishop.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

DIETETICS IN DISTURBANCES OF METABOLISM.*

Carbohydrate Feeding Simplified.

BY ROBERT HUGH ROSE, M. D.,
New York.

By analyzing a sample diet, the writer has developed certain points which render carbohydrate feeding easy of comprehension. Facility in prescribing this portion of the diet will naturally follow.

CARBOHYDRATES CLASSIFIED.

The carbohydrates are divided into two classes: High content carbohydrates, comprising those from 100 per cent. to twenty-two per cent., and some between twenty-two per cent. and ten per cent.; low content carbohydrates, comprising those below ten per cent. and some between twenty-two per cent. and ten per cent. The overlapping of these two classes requires explanation. Some articles between twenty-two and ten per cent. contain a greater number of calories to the usual serving than others, and therefore it is more practicable to place them in the high content group. For example, thickened soup (ten per cent. carbohydrate), furnishing from 200 to 250 calories to the helping, is placed in the higher group, while banana (twenty-two per cent. carbohydrate), furnishing an average of a 100 calories to the helping, is placed in the lower group. The following table gives a fairly comprehensive list of these two groups.

TABLE I.

High content carbohydrates.	Percentage sugar and starch.	Low content carbohydrates.	Percentage sugar and starch.
Sugar	100	Bananas	22
Honey	80	Apples	14
Cereals (dry)	80	Pears	14
Dried figs, dates, and raisins	76	Peas	14
Crackers	71	Lima beans	14
Jelly	70	Parsnips	13
Sponge cake	65	Oranges	11
Bread (all kinds)	50	Squash	10
Sweet potato	42	Peaches	10
Apple sauce	34	Gooseberries	10
Puddings	39	Carrots	8
Ice cream	27	Beets	7.4
Almonds	25	Strawberries	7
Custard	22	Cabbage	5
Irish potato	21	Cauliflower	5
Baked beans	16.6	Onions	5
Corn (canned)	18	Celery	3.3
Cereals (moist)	17	Lettuce	3
Macaroni	16	Spinach	2.6
Soup (thickened)	10	Asparagus	2.2
		String beans	1.9
		Clear soups	1.1

It may surprise some to find the Irish potato so low in the list of carbohydrate foods. With twenty-one per cent. carbohydrates it has less than half the content of bread. However, this represents fairly well its nutritive value, because a medium sized potato furnishes approximately the caloric value of a thick slice of bread, both being considered without butter. The bread with butter is equivalent to twice this caloric value, and is seldom eaten without it. If butter or cream is added to the potato its caloric value is increased in like pro-

portion. Potatoes may be eaten with clear gravy, which does not give them as great a value. But the important difference is that most people eat two or three slices of bread at a meal, while the second helping of potatoes is less frequent. When the food for the twenty-four hours is considered anywhere from six to nine slices of bread are taken, but not more than two or three potatoes.

Another surprise may be to find the carbohydrate value of macaroni given as only sixteen per cent. In fact this was once called to my attention by a physician who thought it might be an error. This figure is for the cooked macaroni which absorbs a large amount of water. Of course this water does not remove any carbohydrates from the macaroni, but it greatly increases the bulk and thereby lessens the percentage of carbohydrates to the weight. The same is true of cereals, the carbohydrate content of which, given for the moist form, is seventeen per cent. We know how much cooking adds to the bulk of these, from the tales we have heard of first attempts to cook rice, in which the uninitiated use so large a quantity that in cooking, it swells and overflows the utensil. Even oatmeal, which absorbs far less water than rice, will furnish two moderate helpings to the cup of uncooked cereal.

The fruits, with the exception of dried figs, dates and raisins, are placed in the lower class. Although they contain almost as high a percentage of carbohydrates as the cooked cereals, they furnish only seventy-five to a hundred calories to a portion, and are so filling that one is not apt to obtain from them over one hundred calories of nutrition at a time. Such articles as lettuce, spinach, asparagus and string beans are extremely low in carbohydrates. Their value is chiefly in the minerals and roughage which they supply.

CARBOHYDRATE CONTENT OF SAMPLE DIET.

The following is the same sample maintenance diet which was given in the article on proteins, but the analysis here deals with carbohydrates alone.

TABLE II.
SAMPLE MAINTENANCE DIET.

	Grams. Carbohydrates—		Calories.
	High.	Low.	
Breakfast:			
Fats—			
Butter, one ball or one third ounce ..	..	..	80
Cream, thin, four tablespoonfuls ..	..	2	..
High content carbohydrates—			
Cereal	26	..	100
Bread, two slices, 4 x 4 x 1/2 inches ..	28	..	140
Sugar, two teaspoonfuls	10	..	66
Low content carbohydrates—			
Orange .....	..	15	70
Coffee .....	..	No value.	..
Breakfast totals:			
High content carbohydrates	62	..	..
Low content carbohydrates .....	..	17	..
Calories .....	..	..	59
Luncheon:			
Proteins—			
Eggs, two .....	..	..	160
Fats—			
Olive oil, two teaspoonfuls .....	..	..	80
Butter, one ball .....	..	..	74
High content carbohydrates—			
Bread, two slices	26	..	140
Macaroni, two tablespoonfuls	8	..	50
Sugar, two teaspoonfuls	16	..	66

*The second article of a series on this subject.

	Grams.		Calories.
	Carbohydrates.	Low.	
Low content carbohydrates—			
Lettuce, one half head.....	2.8	18	
Fruit, apple.....	17	73	
Luncheon totals:			
High content carbohydrates.....	5	11	
Low content carbohydrates.....	19.8	11	
Calories.....			603
Dinner:			
Proteins—			
Meat, three tenths pound, 5 x 3 x 1/4.....			450
Fats—			
Butter, one half ball.....			40
Cream, two tablespoonfuls.....			60
High content carbohydrates—			
Soup, thickened.....	24	106	
Bread, one slice.....	13	50	
Potato, medium sized.....	2	60	
Sugar, one teaspoonful.....	8	33	
Low content carbohydrates.....	17.8	11	
Squash, two tablespoonfuls.....			40
Peas, two tablespoonfuls.....			80
Apple, one.....	17	75	
Dinner totals:			
High content carbohydrates.....	65	11	
Low content carbohydrates.....	35	11	
Calories.....			1,098
Day's totals:			
High content carbohydrates.....	177	11	
Low content carbohydrates.....	11.8	11	
Calories.....			2,337

PROPORTION OF CALORIES OBTAINED FROM CARBOHYDRATES.

The accompanying analysis shows that 177 grams of carbohydrates are obtained from the high content, and 71.8 grams from the low content group. It shows that 905 calories are obtained from the low content carbohydrates, and 358 from the low; i. e., 1,263 calories from both classes combined. This is fifty-four per cent. of the day's food requirements.

VALUE OF CARBOHYDRATE FACTOR IN MANIPULATING DIETARIES.

It is an important fact that so great a percentage of the day's fuel comes from the high content carbohydrates. The knowledge of this may prove of considerable value to the physician for the purpose of increasing the nutrition of the undernourished, or decreasing it for those who are overweight. It is also useful in the diet of diabetics and nephritics.

PATIENT'S DIET SHOULD BE BROUGHT TO NORMAL.

Another feature of dietetics which should be emphasized is that in considering our patients we should always try to bring their diets to as near the normal as possible. In order to do so it is necessary to inquire in detail what they eat for breakfast, lunch and dinner, and ascertain whether either their taste or their environment has led them to favor too much of certain classes of food. Having investigated their manner of eating in this way and bearing in mind the analysis of the sample diet described, we can then reduce the quantities of certain articles of which they are ingesting excessively, and substitute other foods of which they are taking insufficient amounts.

A CASE IN POINT.

To illustrate this point, I might instance a patient who recently came into my care, one whose weight was practically normal, not changing from year to year, and who suffered from headache and a slight increase of blood pressure, yet showed no organic heart or kidney disease. Investigation of her usual dietetic habits showed a diet which was sufficient, yet not excessive in caloric value, but which contained about twice as much meat as should be eaten, with a corresponding deficiency in

the high content carbohydrate factor. It was possible to bring her diet to within the normal field by following the principles just mentioned.

The previous article of the writer dealt with the protein factor in diet through a similar analysis. An illustration of the use of the principles discussed in these two papers in prescribing diet for a patient may be of interest. A patient said that he had an excellent appetite and ate a large amount of food. He was very thin and suffered from lassitude and headaches. In order to increase his weight and at the same time reduce the quantity of proteins which he was ingesting, meat (including chicken and fish) was entirely withdrawn from the diet. Sufficient protein was supplied by milk and cheese and the carbohydrate element was greatly increased. The result of this change was a relief from headaches and a gradual increase in weight. This can be explained as follows. Meat requires four or five hours to digest and satisfies the appetite for a longer period of time than milk or the high content carbohydrate foods. When meat was withdrawn the excellent appetite which this patient possessed impelled him to eat regularly a great deal more of the carbohydrate foods because the stomach was not engaged in the more difficult and slower task of digesting large quantities of meat.

OVERNUTRITION AND UNDERNUTRITION.

The physician will often encounter patients who are growing stout because they are fond of high content carbohydrate foods. An investigation of their habits will reveal the cause, and the facts presented in this paper show how to reduce the quantity of this part of the diet and substitute the low content carbohydrates. It is easy in such cases to reduce the high content carbohydrates fifty per cent. or more. On the other hand, in cases of undernutrition or in cases of extreme activity, in which it is desired to add to the nutrition supplied, the high content carbohydrates may be increased a hundred per cent. or more. A glance at the table of carbohydrate foods will show that this refers to sugar, honey, cereals, bread stuffs, pancakes, cake, jam, macaroni, potatoes, and starchy desserts.

HIGH CONTENT CARBOHYDRATE REQUIREMENTS.

Reference to the sample diet gives the information that the following amounts of the important carbohydrates are consumed daily; five teaspoons of sugar, five slices of bread, one helping of thickened soup, one potato, two tablespoons of macaroni, one helping of cereal. It shows that two articles of high content carbohydrates besides sugar, i. e., cereal and bread, are taken for breakfast; two for lunch, bread and macaroni; and three for dinner, thickened soup, bread and potatoes. Since three of these articles are the average for dinner, if five or six are taken, such for example as thickened soup, bread, sweet and Irish potatoes, macaroni and a starchy dessert, weight is bound to increase unduly. If, on the other hand, less of these high content carbohydrates are consumed than is given in this maintenance diet, loss of weight or undernutrition is equally certain.

40 EAST FORTY-FIRST STREET.

The Treatment of Wounds.—Antoine Depage (*Annals of Surgery*, June, 1919) asserts that the great majority of war wounds were infected. The wounds were incised, the bloody effusion and contused and lacerated tissues removed. As an adjunct to this surgical intervention the surfaces were cauterized by the use of thermocautery, superheated air or some chemical. These methods were discarded on account of their violent action. After January, 1915, débridement and épluchage were followed at the Ambulance de l'Océan, with primary suture in favorable cases and secondary suture in others. Then Dakin and Carrel devised a fluid which could be used for the disinfection of wounds but did not injure the tissues. Two points of importance in the use of this solution are: 1. The solution must be freshly prepared every day. 2. It must be carefully tested as to its reaction and only used when absolutely neutral. The method in which the solution is employed is an essential point. The various steps are as follows:

1. When the patient is admitted the injured region is shaved and carefully washed with a neutral solution of oleate of soda.

2. Débridement and épluchage of the wound immediately thereafter.

3. Introduction of Carrel tubes to the bottom of the wound so as to permit irrigation of the entire wound surface.

4. Application of petrolatum to the surrounding skin surface to prevent irritation.

5. Dressing with compresses of absorbent material.

6. When the patient is returned to bed the Carrel tubes are connected with the receptacle containing the Dakin solution and irrigation is carried out every two hours.

7. The dressings are renewed every day and in the course of each one of them, careful lavage of the wound is made with oleate of soda. Concretions must not be allowed to remain upon the skin about the wound, for these hide colonies of microbes.

The value of this treatment can only be known under bacteriological control which consists in the regular determination of the abundance of the microorganisms in the wound exudates. This is done by making a smear and the number of organisms to the microscopic field are counted. This is repeated every two days. Tracings are made of the microbic strength. These resemble temperature charts. The infected wounds are made sterile in from six to eight days. In infected fractures the line descends after from fifteen days to a month. Where a sequestrum was present it had to be removed before the wound could be made sterile. The presence of the gas bacillus did not alter the curve but in cases of staphylococcus infection the zero point was arrived at slowly.

The bacteriological evolution of wounds may be considered in three periods:

1. The period of acute infection, in which the microbes were numerous and presented a maximum degree of virulence.

2. The period of attenuated infection, during which the curve followed a descending course and

corresponded to an attenuation of the microbian virulence.

3. The period of sterilization, which is shown when a line horizontal with zero is indicated.

These three periods according to Govaerts correspond to the three periods of organic reaction of the tissues.

1. During the period of acute infection, when only polymorphonuclear elements are present in the wound.

2. The polymorphonuclear elements disappear and mononuclear elements become more numerous. At the end of this period macrophagi begin to appear.

3. In the course of the period of sterilization macrophagi exist in the preparation.

It was found that at the time of suture it was necessary to take into account the quality of the organisms present as well as the quality and from this viewpoint were recognized:

1. Wounds slightly infected by ordinary microbes cannot be sutured without danger and with every chance of success.

2. The presence of staphylococci did not contraindicate suture.

3. The perfringens remained enclosed in the wounds only a very short time, but as long as they were present it was dangerous to suture.

4. A wound should not be sutured where there was the slightest doubt of streptococcic infection.

The complete microbic chart, as proposed by Levaditi, of the Pasteur Institute, was adopted.

The conclusions as to suture up to the present moment were as follows:

1. Wounds feebly infected from the first day with ordinary microbes may be sutured at the second examination which only yields one microbe to the field.

2. Wounds strongly infected by ordinary microbes may be sutured when there is one microbe in four fields.

3. Wounds containing streptococci should not be sutured but should be thoroughly treated by the Carrel method until the streptococci disappeared.

Streptococcic vaccination was of great service here. The work of Levaditi proved this. Immediate primary suture may be made from four to five days after débridement. Delayed primary suture is the same as primary suture done later. Suture may be made while the wound is granulating if sterilization is assured. Secondary suture necessitates the refreshing of the wound surfaces. Primary suture, when the wounds are sufficiently sterile, may be resorted to especially:

1. In wounds of joints and in wounds of serous cavities.

2. In wounds of the cranium, of the face, and of the hand and foot.

3. In superficial wounds of the soft parts without comminution.

Secondary suture is indicated in wounds where there is extensive destruction of tissue or where infection develops. It offers great security but delays healing and does not give perfect anatomical results.

Diet during the Puerperium.—M. Pierce Rucker (*Virginia Medical Monthly*, May, 1919) maintains that the diet advised for the puerperal woman in the average textbook on obstetrics is irrational. One should bear in mind that the milk flow is largely influenced by the diet, and can be largely controlled at will by the character of food given, and especially by the amount of fluid allowed. Certain articles of food are partly excreted in the milk, or modify in a manner prejudicial to the infant—especially acid fruits and vegetables with a decided flavor such as cabbage, turnips, carrots, and sweet potatoes. Both the old method of starving the puerpera for the first week and the newer procedure of forced feeding—which means forced liquids—are cruel and unnecessary. Under the latter procedure the breasts become greatly engorged and very painful, expert nursing becoming necessary for their relief. A more rational plan is to place the patient at once on a general diet and then modify it according to the behavior of the breasts. If the milk proves inadequate, the fluids can easily be augmented or the patient even placed on a liquid diet. The general diet obviates the loss of weight so common in former times, as well as the more recent painful breasts. It is more pleasant for the patient, allowing her a greater variety of food, and is less constipating, an occasional enema being usually all that is required. Since the author adopted this plan of feeding, several years ago, no patient has had engorged, painful breasts. The milk flow has been more gradual in onset, but longer sustained. In most cases it has been abundant, even in highly nervous, frail women. The overabundance of milk often followed by agalactia because of inability of the infant to empty the breasts, was never met with.

The New Methods of Treatment in Influenza.

—G. Lyon (*Presse médicale*, May 1, 1919) notes that severe influenza consists essentially of a septicemia, with or without perceptible pulmonary localization. Among the new plans of treatment advocated, administration of urotropin has seemed to the author somewhat effectual, provided the intravenous route is used. It is, furthermore, harmless. As for the colloid metal preparations, their detractors at present seem more numerous than their advocates. Cases undoubtedly occur in which injection of electargol is promptly followed by defervescence, but it is hard to exclude the possibility of a mere coincidence. In a few cases, administration of tin colobiose by the author seemed to him to bring initiate defervescence. Antipneumococcic serum, injected at the onset of lung complications, has seemed to give favorable results, but it is not always possible to affirm from the start the pneumococcic nature of these complications. Opinions differ widely concerning the efficacy of the serum in established pneumonia, and frequent, severe serum reactions have been ascribed to it. The fixation abscess, recently much used, has seemed to the author the most reliable of the newly suggested treatments. He attributes recovery of three desperate cases of double bronchopneumonia to their use. The abscess is thought either to attract to itself the infectious agents or to awaken an internal leucocytosis

which enhances phagocytic defence. This procedure is adapted especially for severe cases of either the septicemic type, without lung involvement, or of pulmonary type, with lobar or bronchopneumonia. As soon as the alarming symptoms appear, 1.5 to two mls of oil of turpentine should be injected subcutaneously. Early administration increases the chances of success. At times the reaction is intense, with severe pain and widespread edema and redness, which yield to moist dressings. Usually the reaction is moderate; fluctuation begins in two or three days and becomes distinct in four or five. At this time the abscess should be incised, with aseptic precautions since the contained pus is sterile. Sometimes there is no reaction, a mere inflammatory nodule appearing, without abscess formation. This indicates a seriously impaired general condition; yet if the injection is repeated, either elsewhere or at the same spot (Paillard), an abscess can invariably be brought on.

X Ray Treatment of Nonmalignant Laryngeal Vegetations.—A. L. Gray (*Virginia Medical Monthly*, May, 1919), on the basis of personal experience in five cases, believes benefit or complete cure may be confidently expected from the use of x rays in simple papillomatous vegetations of the larynx. The first patient treated had remained entirely well for two years when she died from another cause. In the second case the patient was treated with equal success, while the last patient dealt with has already been free from all evidence of recurrence for nearly two years, recent examination of the larynx revealing no trace of the vegetation. Each of the patients treated has been either entirely relieved, as shown by laryngoscopic examination, or so nearly cured that the family deemed further treatment unnecessary and a final direct examination was not made.

Vaccine Treatment in Filarial Lymphangitis.—F. G. Rose (*Journal of Tropical Medicine and Hygiene*, May 1, 1919) states that in British Guiana the larvæ of mosquitoes by which filariasis is conveyed can be obtained from any of the vats in which rain water is collected for domestic use, and that apparently the disease cannot be eradicated until these receptacles are abolished and a pipe borne water supply provided. Meanwhile, filarial lymphangitis, lymphadenitis, lymphocele, chyluria, etc., are extremely common. Having demonstrated a streptococcus in some of these lesions, Rose has been experimenting with a streptococcic vaccine, and finds that the most effective plan is to administer a series of three injections, the first consisting of 100,000,000 dead cocci and the next two of 200,000,000, at intervals of two weeks. In long standing cases the doses may be doubled. Sixty persons have been given injections more than six months before the time of writing. Of nineteen treated over a year previously, nine have had no recurrences, while among the remaining ten the attacks have been milder in character. Of thirty somewhat more recent cases, none has had a single attack since the treatment. Of the remaining eleven, two were free of attacks for over a year, six had been treated only six months before and had no recurrences, while three could not be traced.

Miscellany from Home and Foreign Journals

Hemolytic Method of Estimating the Activity of the Gastric Juice.—M. Loeper and M. Binet (*Presse médicale*, May 1, 1919) point out that the gastric juice is strongly hemolytic, not through a physical, osmotic influence, but by virtue of its digesting principles. The rapidity of hemolysis is proportional to the digestive power of the gastric juice. The hemolysis is due chiefly to the free hydrochloric acid, but this action is reinforced by the activity of the pepsin itself. The authors' procedure in testing gastric juice consists in taking ten drops of human blood and washing it three times with saline solution, each washing being followed by centrifugation. Two drops of the residuum are then mixed in small test tubes with one in four and one in ten dilutions of gastric juice with saline solution, and the tubes placed in the incubator. Hemolysis is shown by dissolution of the sediment, transparency of the fluid, and a red currant coloration which passes rather rapidly into black. The hemolysis may occur within a few minutes, in half an hour, or not at all. The one in ten dilution is useful more especially for very active specimens of gastric juice. Normal juice, containing one gram of acid to the litre, induces hemolysis in the one in four tube in fifteen minutes. An overactive gastric juice induces hemolysis in three minutes, while an inactive juice fails to induce it in three quarters of an hour. In cancer cases no hemolysis occurs, while in hyperchlorhydria and ulcer hemolysis is intense. Any juice which causes hemolysis in five minutes is overactive. The method is advantageous in being simple, in dealing directly with living substances, and in estimating the combined activity of both acid and pepsin.

The Hemostatic Mechanism of the Human Uterus.—H. Keiffer (*Bulletin de l'Académie de médecine*, May 13, 1919), in a previous paper had demonstrated the complete anatomical and functional independence of the helicine arteries of the uterus from the surrounding muscle tissue, these vessels always showing a circular cross section and being separated from the muscle by a thick zone of connective tissue. He now points out that the veins in the uterus are provided with a musculoconnective layer and present a variable and unique form of construction. Examining such a vessel over a certain distance, one finds a sphincteric region, an ampullar region, a bulbar or obturating bulb region, and a narrow region passing into continuity with the remainder of the vessel. Each of these regions has a separate type of musculature related to its special function and springing from the uterine wall at more or less distant points. Some muscle bundles are almost circular, exerting concentric torsion, others are obliquely tangential, exerting torsion in sling fashion; there are also longitudinal bundles, causing direct shortening, and short perpendicular bundles, producing a dilator action. Both small arterioles and veins pass into the walls of these larger vein-like channels. The structure of the latter is such that they constitute a species of venous hearts scattered along the course of the principal intra-

uterine veins. They occur particularly in the so-called vascular portion of the uterine wall, interpolated in the return circulation between the veins of the mucous membrane—including the placental zone—and the main venous trunks. The vein hearts probably act in a cycle adapted to the peristaltic function of the uterus, but especially during menstruation and parturition. The cycle seems to comprise successive stages of dilatation, closure, maximal erectile contraction, expression of blood, and negative pressure. These stages doubtless play a definite rôle in such conditions of the uterus as tetanus, relaxation, paralysis, and hemorrhage. Upon normal functioning of the vessels described, highly differentiated in the higher mammals, uterine hemostatics are, in all likelihood, entirely dependent.

Neurocirculatory Asthenia (Soldiers' Heart).—John H. Carroll (*American Journal of the Medical Sciences*, July, 1919) found two striking facts apparent when the reports on soldiers' heart in the American draft army became available: that the condition was not an uncommon symptom complex of civilian youths, much intensified by the conditions attending the early stages of the draft, and that the etiology of these cases did not altogether agree with the etiological factors believed to be responsible for the cases developing on active service. His studies lead him to the following conclusions:

1. That some types of hyperthyroidism are analogous to the entity neurocirculatory asthenia and their pathogenesis is probably identical, the phenomena being attributable to a hyperexcitability of the opposing sets of fibres of the autonomic nervous system.
2. That in both conditions the syndrome develops in individuals in whom there is a hyperirritability of one or other sets of fibres in the autonomic system. Hence, constitutional predisposition due to inherited sympathetic or vagotonic instability is a factor in the causation on a sound basis.
3. That nervous and emotional strain is the immediate cause, precipitating the syndrome in susceptible individuals.
4. That in the cause of susceptibility (acquired instability of the autonomic nervous system) infection plays a predominant rôle and the susceptibility in such cases may be accepted as indicating a chronicity of the infection with constant or frequent outpourings of the infective agent.
5. That there is a certain rationale for believing that this instability in the autonomic nervous system lies in the element of anaphylaxis in disease in the predilection of anaphylatoxin for the parasympathetic system.
6. That there is some evidence that deficiencies of calcium in the diet may have played a part in the causation of some of the phenomena and that the higher plane of inorganic metabolism in the organism may have shared with adrenin increase the responsibility in causation of the thyroid hyperplasia and hyperthyroidism among the soldiers.

Headache as a Symptom.—J. G. Jones (*Journal of the Indiana State Medical Association*, June 15, 1919) urges that headache is a very important, frequent, and often neglected symptom, the sources of which are legion. To detect the source is very difficult and requires a systematic investigation according to a definite plan. The following scheme he finds simple and workable. First he analyzes the character of the pain into: 1, Sharp, lancinating, paroxysmal (neuralgic origin); 2, throbbing (unilateral hemicranial migraine); 3, dull diffused (gastrointestinal and infectious diseases); 4, binding (neurotic); 5, burning, soreache (rheumatism and anemia).

Next the location of the pains with the possibilities from which may be deduced the probabilities. 1, Frontal (anemia, neurotic, nephritis, frontal sinus, periostitis, eye strain, glaucoma, iritis, nasopharynx, and lithemia); 2, vertex (anemia, hysteria, neurasthenia, epilepsy, and pelvic diseases); 3, occipital and cervical (neurasthenia, cerebellar lesion, epilepsy, adenoids, uterine disease, eye, ear, and pelvic, meningitis, neuralgia, spinal irritation); 4, parietal aural (eye, ear, teeth, maxillary and temporal bone, periostitis of syphilitic origin); 5, eyeball (migraine, neuralgia, fifth cranial, coryza disease of anterior eye structures, paralysis, iris, and ciliary apparatus). Frequent sources are 1, toxic—alcohol, tobacco, lead, mercury; 2, constitutional—nephritic, rheumatism, gout, lithemia.

Then he starts a process of exclusion. First errors of refraction and imbalances of the ocular muscles are corrected; here is found the cause of from twenty to forty per cent. of the cases of chronic headache. The ear, nose, and throat are then investigated, and complete urine, blood, and pelvic examinations are made, the personal and family history having been obtained and a physical examination made on the first visit. If the cause is not yet located the gastric contents are examined. Occasionally there will still remain an etiological doubt that may be settled by a therapeutic test, such as a dose of epsom salts for congestive pains, dry heat locally for neuralgia regulation, and hygiene for run down neurotics. Acute headaches are caused most frequently by gastrointestinal disturbances; chronic ones by neurasthenia and general debility from imperfect hygiene.

Operative Procedures for Congenital Pyloric Stenosis.—W. Lowndes Peple (*Virginia Medical Monthly*, May, 1919) urges greater attention to this condition on the part of the practitioner, in order that more cases may be submitted for operation, and unnecessary deaths from scalded inanition or marasmus avoided. The trouble usually begins from the second to the fourth week of life, and is generally gradual in onset. The infant, not otherwise ill, exhibits persistent vomiting after feeding. Distinct peristaltic waves can be seen over the stomach. The stools diminish in size and frequency, and often stop for days at a time, or permanently. Finally, a small, hard mass of about the size and shape of an olive, can be felt in the pyloric region. In the radical treatment of these cases, posterior gastroenterostomy has served a use-

ful purpose, but it is apparently about to be supplanted by the simpler Rammstedt procedure of partial pyloroplasty. The author performed these operations in two cases, with recovery in both. He recommends a thorough gastric lavage before the operation, to rid the stomach of curds and mucus that would otherwise be passed into the empty intestine as soon as the obstruction had been removed, become rapidly absorbed and induce intoxication; the procedure also serves partly to empty the stomach of gas, making it easier to handle. Again, acetone poisoning should be guarded against by the giving of alkalis before operation and of alkalis and sugar immediately after it; this precaution is doubly important in such cases because the patients are already starved and doubtless all have acetone and diacetic acid intoxication. A case of death through hemophilia after a Rammstedt operation showed the necessity of preparatory estimation of the coagulation time in every case, with institution of proper prophylactic measures when indicated. Having found operations on babies on the ordinary large operating table inconvenient in various ways, the author now uses a special small wooden table, twenty-eight inches long, ten inches wide and eight inches high, fastened to the ordinary table. A drawer beneath the small table is provided for hot water bags, and a head piece, dropping back at any desired angle, serves likewise as a screen to keep the anesthetist well out of the way. The height of the small table raises the surface of the child's abdomen to about the level of that of an adult.

X Rays in the War.—J. D. Morgan (*International Journal of Surgery*, May, 1919) states that in the beginning it was difficult to get adequate supplies. During the first year the only x ray work was done at base hospitals, later apparatus was mounted on motor lorries and examinations carried out at advanced posts. The greater part of the work was the examination of fractures and localization of foreign bodies. At first bone fragments were removed, later only those which were detached from the periosteum. Bone grafts were frequently used but seldom united on account of sepsis. Metal plates and wire also met with the same drawbacks. In many cases it was necessary to wait months before the methods were successful. Many new types of fractures caused new splints to be devised. The American surgeons were the first in this field. It was found that metal fragments were easily localized by two right angle plates or stereoscopic plates. Where they were lodged adjacent to some vital structure more accurate measurements were required. Most of these methods were founded upon triangulation. They generally suffered from being, 1, too complicated, requiring too much time; 2, danger to the operator from overexposure; 3, unreliable, giving more or less false depth with the following factors: a, The difficulty of getting the patient in exactly the same position in both the x ray room and in the operating room; b, the relaxation of the tissues of the patient when he was under an anesthetic; c, the altered relation of the soft parts after they were incised; d, the possibility of the piece of metal being moved by digital manipulation during operation. The various tele-

phone probes and the electrovibrator of Bergonié were often of great assistance in these cases. The x ray was frequently of value in revealing the presence, extent and situation of gas, in cases of gas gangrene.

Bony spurs due to traumatic osteomyelitis in suppurating amputation stumps formed a large class of cases seen in the English base hospitals. Few surgeons had any personal experience with these prior to the war. In regard to these the following points are to be considered:

1. There had never been such a series of stumps for observation.

2. They had never been so systematically x rayed in civilian practice.

3. The almost universally septic condition of the wounds.

4. The long distances which the patients were obliged to travel and the difficulties of dressings during this period.

It is considered that these spurs were the result of bone formation from a long continued septic condition especially of the periosteum. It was frequently necessary to resort to reamputation to remove these spurs.

Gangrenous Balanitis.—Clyde F. Ross (*Virginia Medical Monthly*, May, 1919) recognized a case of this disease through dark field examination of the local secretions. As in Vincent's angina or gangrenous stomatitis, the condition is due to co-existence of a fusiform bacillus and a spirochete. The latter is distinguished from the syphilitic spirochete principally through its extreme mobility and rapid progress across the dark field. The organisms are anaerobic, and the greatest predisposing cause is a long, tight foreskin, excluding the air. They may have been transferred from the mouth, which is their normal habitat. The author's patient, aged forty-seven, had noticed a small, white ulcer on the glans, which by the next day had enlarged to the size of a dime, and by the third day to that of a quarter. At the time of Ross's examination, pain was so severe as to require morphine and the patient felt weak and exhausted. The prepuce was long, edematous, and slightly inflamed, with a thin, profuse, offensive discharge. There was some inflammation of the dorsal lymphatics of the penis. Retraction of the prepuce revealed a grayish black area on the glans. Under hot antiseptic applications the disease was not arrested, the patient returning next day with extension of the lesion back under the skin into the shaft of the penis, great pain, exhaustion, and a temperature of 100.8°. Treatment was now changed to thorough retraction of the prepuce, exposure of the lesion to the air, and frequent bathing with two per cent. hydrogen peroxide solution, to inhibit the anaerobic bacteria present. Improvement began at once and recovery followed, although the gangrene had extended into the urethra, leaving a urinary fistula. Not all cases of gangrenous balanitis are of such severity, most of them so resembling chancroid that a diagnosis of the latter condition is usually made. Dark field examination for the spirochete and fusiform organism must be relied on in ascertaining the nature of the lesion.

Delayed Infection or Irritation and Concomitant Metabolic Errors.—William A. Lurie (*Boston Medical and Surgical Journal*, July 3, 1919) says that in the acute stage of an infection there is a sudden call made upon the forces of the organism for protection; if the vitality is sufficient, the process is overcome and a wall of protection is formed about it. If such an infection is overcome, but not healed, there remains a constant call upon the body to continue the protection, there may be an apparent return to health, but some metabolic disturbance persists. This is what he means by a delayed infection. The conclusions drawn by him from a study of cases of this nature are: That delayed infection has not been recognized until it developed to the point termed focal infection; that delayed infection produces serious metabolic errors, in the alteration of the function of the various so-called ductless glands; that a lowering of the resistance of the body opens the way to greater activity for such delayed infections; and that the eradication of the infectious focus, long dormant, must be accomplished before a perfect metabolism can be established; that prime among the sources of delayed infection is the extraction of teeth, without the resection of alveolar tissue allowing the development of dead space which remains infected; that the errors of metabolism may result from toxic substances not necessarily of bacterial origin; that long continued irritation, infection, or altered function produces pathological conditions; that the treatment of such conditions by symptoms and not by the cure of the exciting cause of metabolic error is only causing a further delay in the eradication of an infection, which ultimately may be discovered as an established focus, somewhere; that pyorrhœa alveolaris is more truly alveolitis dentalis, or perhaps, more correctly, alveolitis maxillo-dentalis.

Focal Infection and Chronic Urticaria.—Hugh MacKay (*Canadian Medical Association Journal*, July, 1919) reports three cases of chronic urticaria which slowly progressed to cure after removal of foci of infection situated in the tonsils or the teeth, followed by injections of an autogenous vaccine prepared from the microorganisms found in these foci. He thinks that these infections are usually from multiple foci, and generally in the buccal cavity. Where the teeth are the source of trouble, information furnished by the x ray is indispensable to a proper appreciation of the pathological state. Operative intervention must be thorough; sliphod methods invite failure. Exacerbations in the efflorescence have frequently been observed immediately after the removal of septic foci. In recent infections the removal of the focus alone has been followed by a symptomatic cure. In chronic cases the vaccines appear to be of service in hastening resolution and building up immunity; they should be given with caution as anaphylactic phenomena are specially prone to appear in the victims of this disorder. In urticaria an interval of from three to six months should be allowed after removal of foci before a symptomatic cure may be confidently looked for and the maximum amount of benefit derived.

Proceedings of National and Local Societies

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-fourth Annual Meeting Held at Atlantic City, N. J., June 14, 16, and 17, 1919.

The President, Dr. FRANKLIN H. MARTIN, of Chicago, in the Chair.

Uterine Myomata with Some of the Complications Seen in Practice.—Dr. EDWARD E. MONTGOMERY, of Philadelphia, said that myomata were prone to complications which make the diagnosis and prognosis difficult. Among the complications were nutritive disturbances. The enlarged and irregularly developed uterus, to accommodate itself to the contour of the pelvis, rotated on its vertical axis, obstructing the return of blood through the veins, while the more rigid arteries continued to deliver the current. Edema and partial or complete necrosis might follow. Pregnancy might lead to such rapid growth of the tumor as to necessitate immediate resort to surgery. A subserous growth with pregnancy might be pressed between the developing uterus and the bony or parietal wall, arresting its circulation. On the right side, it simulated appendicitis. In one case it caused abortion and subsequently necessitated hysterectomy. Myomata encroaching on the uterine canal increased the danger of infection. Tubal infection, ovarian hematoma, pyuria, and sacculated kidney were sometimes among the complications.

Toxic Effect of Fibroid Tumors of the Uterus.—Dr. R. R. HUGGINS, of Pittsburgh, Pa., said that in the absence of other symptoms, it had been suggested that the absorption of toxins incident to the growth of fibroid tumors might account for certain changes in the heart muscles, which undoubtedly occurred in a great proportion of cases. The final proof of this theory remained for the chemist to determine, but in the meantime it was important that clinicians did not overlook certain changes which under other circumstances were commonly accepted as due to toxic products. The frequency of nervous symptoms, often mild in character but not infrequently severe, the relatively large number of cases of infection of the kidney secondary even to small fibroids, where there could be no question about the absence of pressure upon the ureter or other causes, all pointed strongly in favor of such theories. Since Kaspreiz in the year 1881 first called attention to the frequency of weakness in the cardiac muscles associated with uterine myomata, many articles had been written by gynecologists and surgeons on the subject. It was the consensus of opinion that heart changes were present in from forty to fifty per cent. of the cases. This had been learned often from sad experience and there could be no doubt that the severity of the disturbance to heart action in some of these cases during and following operation was secondary only to that which occurred in thyroid disease. In earlier years paralysis of the heart was given as the cause of death after autopsy revealed no other excuse.

Fleck made a study of 325 cases and found

either functional or organic changes in 40.8 per cent. of the patients. In every instance where an autopsy was made definite cardiac changes were found, such as fatty degeneration, brown atrophy, etc. He did not believe the heart changes were due to loss of blood because out of 133 cases in which there had been no hemorrhage cardiac changes were present in 34.6 per cent. Winter insisted that an etiological relationship between myoma and heart disease had not been proved, and that the heart was influenced only by the secondary anemia due to the hemorrhage which was caused by the myoma. He admitted, however, that in a series of 266 cases, where a minute study of the heart had been made, sixty per cent. of the patients showed a myoma heart. Such change in the heart muscle was not infrequently recognized by men of large experience.

The Origin of the Intrapelvic Treatment of the Stump after Supravaginal Hysterectomy for Fibroid Tumor of the Uterus.—Dr. J. RIDDLE GOFFE, of New York, referred to the hopeless attitude of the profession in the latter part of the century toward the surgical treatment of fibroid tumors. He said that all surgical procedures had been improved by the introduction of antiseptic and aseptic methods. Fibroids had demanded an improved method of procedure, a new technic. He spoke of the discoverer of this new treatment, of how it was brought to its present high state of perfection, and the part played by himself in its achievements. On May 29, 1898, Doctor Goffe performed his first operation at St. Elizabeth's Hospital by an original method, which, he said, was frequently incorrectly credited in literature to Baer, of Philadelphia. This method embraced new, untried features and met all the requirements of a masterful procedure. First, it solved the problem of dropping the pedicle and closing the abdominal incision without drainage; second, it covered all raw surfaces; third, it fastened the infundibulopelvic and round ligaments to the stump, thus giving support to the pelvic diaphragm; and fourth, it restored the organs to their normal position and relations in the pelvis, where they could function normally, disposing of the traumatic tissue with the nicety of a plastic operation.

A Study of Frozen Sections of the Pelvis with a Description of an Operation for Pelvic Prolapse.—Dr. ALFRED BAKER SPALDING, of San Francisco, stated that the pelvis of a thirty-two year old woman, nullipara, was cut by frozen section into four segments. The surfaces of the segments were photographed and the pelvic fascia outlined. The uterus could be seen hung as in a swing by the paracervical tissue which was intimately attached to the pelvic fascia, the arcus tendineus of which gave strong support to the bladder, vagina, and rectum. The levator ani muscles and fascia supported from below and brought toward the symphysis the lower part of the vagina and rectum. This operation had been done

only during the past few months, the immediate results of which had been very satisfactory. The operation consisted in dissecting free the fascia in the anterior vaginal wall to the arcus tendineus and overlapping as described by Rawls. Amputation of the cervix was made together with placing on either side of the cervix two deep sutures to control hemorrhage. The peritoneum was opened below the bladder and a subtotal vaginal hysterectomy was done, attaching the cervical stump to the sacrouterine and severed broad ligaments. The round ligaments were drawn through the cervical canal and sutured on the vaginal surface. With rectal prolapse the rectum was supported by operations described heretofore by Ward, Studdiford, and others. Emphasis was laid on the value of preserving the paracervical tissue by means of a subtotal vaginal hysterectomy and of supporting the cervix by drawing the round ligaments through the cervical canal.

The Hairpin as a Foreign Body in the Female Bladder.—Dr. WALTER P. MANTON, of Detroit, Mich., gave a brief history of the development of the hairpin, its abuse, its comparative frequency as a foreign body introduced into the female bladder, and reported an unusual case under observation for a period of more than ten years. He also gave a report of the autopsy and pathological findings.

A Unique Diffuse Uterine Tumor.—Dr. DE WITT B. CASLER, of Baltimore, stated that a pan-hysterectomy and a right salpingoophorectomy were done for a supposed myoma of the uterus in a patient thirty-nine years of age, following a metrorrhagia of one year. The gross specimen was found to have a large reddish polyp filling the cavity, while the walls of the uterus had a peculiar appearance, small comedolike masses standing out prominently above the cut surface on pressure. Sections showed an almost total absence of uterine gland, but fingerlike masses of interglandular stroma dividing the uterine muscle into a fine mesh-work were seen extending as far as the peritoneal surface. Following this, there was a history of regular menstruation lasting one day each month for four years, when at a second operation a cystic tumor of the left ovary was removed. This was found to contain many reddish polypi resembling in appearance the uterine specimen previously removed and to be made up almost entirely of uterine tissue, glands, stroma, and normal appearing uterine mucous membrane.

Elective Cæsarean Section.—Dr. EDWARD P. DAVIS, of Philadelphia, stated that the increase in the indications for Cæsarean section made it necessary to clearly define the indications, especially in the field of elective operation. Elective operation was justifiable only when conditions present were such that any other procedure would be much more dangerous for mother and child. To make this decision, extensive experience in obstetrics was necessary. Elective section could not be a frequent operation. It was justified in physiological incompetence for labor, in some abnormal positions and presentations, in cases of repeated overgrowth of the child, and in cases where previous labors had been dangerous.

The Treatment of Certain Cases of Placenta Prævia by Conservative Measures.—Dr. GEORGE W. KOSMAK, of New York, said that since the perfection in methods of performing the abdominal Cæsarean section, this method had been widely advocated as one of the most satisfactory means of relieving the condition of placenta prævia and in a limited class of cases it was undoubtedly of value. The older procedure involving the Braxton-Hicks version, with perforation of the placenta and the use of the fetal thigh as a tampon, hardly seemed a fair procedure in view of the certainties attending the classical Cæsarean section and was becoming generally discarded except as a measure of emergency. The primary danger to the mother from hemorrhage and shock and the secondary risks from sepsis and embolism had been the deciding factors in adopting any method of treatment, and all deliveries by the vaginal route were overshadowed by these possibilities. In primiparæ presenting a rigid and only slightly dilated cervix and the probability of a central placenta prævia with the child at or near term and still in good condition, because the amount of bleeding had not been extreme, there was no question but that abdominal Cæsarean section offered the best method of delivery for both mother and fetus. It would be found, however, that the large majority of cases were outside of this group, that we were dealing not with central implantations of the placenta but those in which only a portion of this organ impinged upon the region of the internal os or the lower uterine segment, so that hemorrhage of any extent resulted only after the cervix had become thoroughly softened and was dilating. Nevertheless, even in this group the amount of bleeding might be sudden and excessive, especially as the lower uterine segment in multiparæ, in whom we most often found this abnormality, was thoroughly softened and separated easily from the placenta.

As the first consideration in any given case was to stop the hemorrhage, the vaginal pack might seem to offer a ready solution, especially as its application was usually an emergency one. Unfortunately we found that in many patients admitted to our hospitals in whom this procedure had been resorted to, the blood saturated the substance of the gauze or absorbent cotton ordinarily employed and allowed for the collection of large clots above the packing without control of the hemorrhage. The pack, moreover, acted as a stimulus to uterine contractions and as the membranes were often unruptured the presenting part was not satisfactorily forced down against the bleeding area in order that it might act as a check on it.

The use of the elastic bag in place of the gauze pack had been widely advocated and unquestionably good results had followed its employment. The usual procedure directed the insertion of the bag through the ruptured bag of membranes or through the mass of the placenta, with or without traction on it to insure compression. In criticizing the mechanics of this procedure attention must be called to the fact that such compression of the bleeding area in the lower uterine segment was necessarily indirect, because the soft placental mass

remained interposed between the bag and the uterine wall and more or less continuous bleeding, even if only slight, was usually present. In the attempt to introduce the bag it had been his experience, at least, that considerable bleeding might result from this effort because of the undue placental separation brought about by it. He also found that unless strong labor pains were induced, the bag was not firmly held against the placenta unless traction was applied and if the latter was not carefully guarded a sudden laceration or rupture of the lower uterine segment might take place.

In view of the shortcomings and the desire for a possibly more satisfactory method of treatment along these lines, what modification of such method could be advocated as a substitute? It must be borne in mind that it was essential to bring about gradual dilatation of the cervix without laceration, to reduce the possibility of hemorrhage as much as possible, to avoid septic infection and, of course, to deliver a living child.

Control of the hemorrhage during the process of dilatation remained the important indication and this he believed could be more effectively made by the extraovular introduction of the bag than by any other means. His attention was first called to this method by its description in the textbook brought out by Dr. E. B. Cragin shortly before his death. In reading this description he was struck by the good results to which Doctor Cragin laid claim for the method, and while at first skeptical of its value he soon afterward began to employ it. Although not an infallible procedure, he believed that a thorough trial would convince every one of its practicability and value in the majority of cases. It was for this reason that he had ventured a preliminary report on the procedure in the expectation of publishing a more complete study at a later date. He had become impressed with the fact that as an emergency measure it was much superior to the intraovular introduction of the bag because less harm was done by hospital interns, for example, than if the perforation of the placenta with a Braxton-Hicks version or intraovular introduction of the bag was carried out. As soon as a diagnosis was made, no further manipulations were necessary in attempting to enter the amniotic cavity and the bag might be introduced through the os alone very much more quickly.

A résumé of the cases of placenta prævia taken from the records of the New York Lying-In Hospital from June, 1904, to December 31, 1918, showed a total of 534 cases. Among them there were recorded seventy-five deaths of mothers (fourteen per cent.) and 105 deaths of children after delivery. A total of 223 stillbirths was recorded, making a total fetal mortality of 328 or sixty-two per cent. These patients were treated by a variety of methods other than the extraovular bag insertion. While this was rather an alarming proportion of both maternity and fetal deaths, the fact must be borne in mind that a great many of these patients were sent in by outside physicians after various methods of treatment had been employed and usually considerable hemorrhage had resulted.

The personal cases previously referred to were but three examples of about ten consecutive cases of placenta prævia which he had observed with the extraovular bag method. Although insufficient in number to permit of general conclusions, they had impressed him with the value of the procedure, and in calling attention to a method which had not been very extensively used and was purely obstetrical in character, it was with the hope that it might be given a more extensive trial by others. It seemed particularly adapted to multiparæ with moderately softened cervixes, was readily applied, did not of itself cause additional bleeding, reduced the necessity for extensive manipulations, was free from shock and was safer and more efficient for emergency use.

The Pelvic Articulations during Pregnancy, Labor, and the Puerperium: An X Ray Study.—Dr. FRANK W. LYNCH, of San Francisco, stated that his study had developed from observations in an effort to use the x ray for diagnostic aid in gynecology and obstetrics, as well as from interest in a case of rupture of the symphysis during labor which came under his care three years later, in which the patient showed marked symptoms in her second pregnancy; and by the great number of sacroiliac slips seen in his service in spite of proper correcting. Since he was not aware of a similar series of x ray studies of pelvic articulations, he was presenting some of his cases. It was difficult to arrive at conclusions because of the constant chance of error in deductions from the x ray plate. Only one woman studied had had marked widening of the symphysis during pregnancy, with a return to normal limits when seen fifteen months later. It appeared, however, as if the widening of the sacroiliac spaces occurred very frequently.

Lantern Slide Demonstration of an Early Human Ovum in Situ in the Act of Aborting.—Dr. J. WHITRIDGE WILLIAMS, of Baltimore, said that the pregnancy was found in a uterus removed on account of multiple myomata forty-two days after the last period, and fourteen days after the non-occurrence of the next expected period. Instead of finding an early example of normal implantation, the ovum was found to be abnormal, some of the villi were the seat of hydatidiform change, and all traces of an embryo were lacking. The decidua capsularis was ruptured and the egg was in the act of being extruded. The demonstration of serial sections showed the mechanism by which early abortions occurred.

The Nutrition of the Fetus.—Dr. J. MORRIS SLEMONS, of New Haven, Conn., stated that the nutrition of the fetus involved two factors, namely, the peculiar activity of its own organs and the supply of food they received. The first was the more fascinating and also the more difficult of study because the isolation of the fetus baffled the most ingenious experimenters. In the absence of specific knowledge regarding the intermediary fetal metabolism, our nearest approach to the facts was to accept its analogy with adult nutritional processes; and yet in doing so one was conscious of not being logical, for the unusual prominence of certain organs, as the thymus gland, intimated the exist-

ence of radical differences between the metabolism of the immature organism and that of the adult.

The second factor in the nutrition of the fetus dealing with the origin and the variety of materials incorporated in its body had been brought within range of direct observation, and certain familiar deductions therefrom had a practical application. There was no diet specifically adapted to the state of pregnancy; the prospective mother might exercise the same freedom as any one else in the selection of food. She should select what would agree with her and avoid that which she could not digest and assimilate. Personal experience in the main must guide every one as to what to eat and most women followed the dictates of appetite after they became pregnant as safely as they did before.

In a practical sense the quantity of the mother's food was more influential than its quality. Popular opinion held that during pregnancy the mother "should eat for two." This doctrine was erroneous. A diet which had previously been ample would likewise be sufficient throughout pregnancy, and it was not unimportant to emphasize this view, which had the unqualified support of painstaking, scientific investigation, because overeating during pregnancy was much more likely to provoke discomfort than insufficient nourishment. On the other hand, there could be no justification for measures intended to restrict the growth of the fetus, for when rigidly carried out they tended to weaken the mother. She might be careful, in other words, to avoid overgrowth of the fetus but she should not adopt a diet so limited as to interfere with normal development. So long as the mother's health was properly maintained, no thought needed to be given as to what the size of the fetus was likely to be. At present, provided the physician determined by a thorough preliminary examination whether there existed any disproportion between the size of the fetus and the capacity of the mother's pelvis, he was qualified to decide what the appropriate treatment should be in order to bring pregnancy to a successful termination.

Premature Separation of the Normally Implanted Placenta.—Dr. ARTHUR H. MORSE, of New Haven, Conn., stated that ligation of the uterine veins in pregnant rabbits reproduced lesions in the uterus identical with those in women suffering from premature separation of the placenta. Similar lesions in rabbits would result from constriction of the vessels when the uterine horn was rotated. Premature separation of the placenta in women also probably depended on an acute disturbance of the uterine circulation.

Value of Repeated Small Blood Transfusions in Blood Stream Infections.—Dr. JOHN OSBORN POLAK, of Brooklyn, read a paper on this subject in which he drew the following conclusions: 1. After the bacteria have gained entrance to the blood stream, the cellular elements of the blood are rapidly destroyed. The heart, liver, spleen, and kidneys show definite pathology, and acidosis develops. 2. Small repeated blood transfusions increase the cellular elements, stimulate resistance, raise the blood pressure, and hence add to the natural defense.

Age Distribution and Age Incidence in Cancer of the Uterus.—Dr. REUBEN PETERSON, of Ann Arbor, Mich., drew the following conclusions: 1. The maximum age distribution in 500 cases of cancer of the uterus is at the age period of forty to forty-five. 2. Between the ages of thirty-five and sixty-five eighty-two per cent. of uterine cancer occurs. 3. The young female is not immune to cancer since seven of 500 cases or 1.4 per cent. occurred between the ages of twenty and twenty-five. 4. Uterine carcinoma below the age of twenty is exceedingly rare but it does occur in an appreciable percentage of cases between twenty and twenty-five. 5. The cervix was the seat of the disease in six out of seven cases occurring between twenty and twenty-five. 6. Maximum number of cases of carcinoma of the cervix is to be found in age period forty to forty-five. 7. In the present series fundal carcinoma was found in an unusually large percentage of cases, ninety-four out of 500 or 18.8 per cent. 8. Maximum number of cases of adenocarcinoma of the fundus is to be found in women between fifty-five and sixty, fifteen years later than in squamous cell of the cervix which is forty to forty-five. 9. Adenocarcinoma of the fundus is not a disease of early life, there being in the present series only three patients out of ninety-four below the age of thirty-five. 10. From the analysis of this series and from the statistics of other writers it is fair to assume that from ten to fifteen per cent. of uterine carcinoma is located in the fundus. 11. A large proportion of the 500 cases of uterine cancer was squamous cell carcinoma of the cervix, 369 in all. 12. In contradistinction to carcinoma of the fundus 23.5 per cent. of squamous cell carcinoma of the cervix is found in patients under forty. 13. Practically fifty per cent. of the 369 cases of squamous cell carcinoma of the cervix occurred between the ages of forty and fifty-five. 14. Adenocarcinoma of the cervix is much more rare than the two other forms, thirty-seven out of 500 cases. 15. The maximum number of cases occurs in the age period of forty to forty-five. 16. Between twenty and forty years of age there were thirty per cent. of the thirty-seven cases of adenocarcinoma of the cervix. 17. The age incidence of carcinoma of the uterus at different age periods is determined by the following:

Ratio for age period N—

$$\frac{\text{percentage of carcinoma for age period N}}{\text{percentage of population for age period N}}$$

18. The maximum age incidence for carcinoma of the uterus is at age period fifty-five to sixty; it declines rapidly from this age period to the period seventy to seventy-five. 19. The greatest age incidence for adenocarcinoma of the fundus is the same as that of cancer of the uterus as a whole, age period fifty-five to sixty. 20. The highest carcinoma incidence in carcinoma located in the cervix, in squamous cell carcinoma of the cervix and in adenocarcinoma of the cervix is at age period fifty to fifty-five. 21. After each age period of greatest carcinoma incidence is reached there is a sharp decrease in incidence demonstrating the incorrectness of the statement that the age incidence of carcinoma increases with the age period.

Radium Treatment of Uterine Cancer.—Dr. HAROLD BAILEY, of New York, stated that in practically all cases in which there had been a complete radiation of the local lesion, and the lymphatic and other involved tissue in the parametrium, the patients passed through a period of improvement. In all but the more advanced conditions this improvement consisted of a disappearance of the ulceration, a lessening or entire disappearance of the discharge, a gain in weight, and general improvement in health. Undoubtedly their lives were lengthened. A number had some slight degree of rectal irritation, beginning a week or ten days after the treatment, and lasting two or three weeks. A few had a fibrosis of the pelvic connective tissue, especially at the bases of the broad and uterosacral ligaments. Where this bridge of tissue constricted the rectum to any marked degree a fistula would form above and communicate with the vault of the vagina. As mentioned by Burnam, when this did occur all pain was relieved and the patient gained at once and, in his opinion, did not have nearly as unhappy and as miserable a life as might be expected.

After a longer or shorter time of well being following the treatment, many of the patients had further development of cancerous tissue behind the vault of the vagina. In the effort to save these patients that had a retrogression after six or eight months, he had pushed the radium treatment of the parametrium, both by vaginal and by surface radiation, to the highest limits of safety, and had thereby caused in many who appeared to be free from cancer, various types of pelvic sclerosis, both mild and severe. He had felt that it was wise to recede somewhat from the massive dose given by the bomb applicator. This dose now was actually in the neighborhood of three fourths of the maximum, the dose in 1917 being about one half the maximum. The method in use permitted of the entire treatment being given in a forty-eight hour period, and with only moderate discomfort to the patient. The local slough and signs of irritation in the vault of the vagina, seen so frequently in using the older method, were now lacking in most of the cases.

The most spectacular results in the entire series were those of the fourth Wertheim operations, which followed a month after the radiation. In three of these, no cancer cells were found in the uteri or parametrial tissue that was removed; and in the fourth case only a few markedly hydropic and degenerated cancer cells were present in the parametrium. It must be admitted that in these cases, at least, the radium caused the tumor cells to disappear even more thoroughly than ablation could have removed them. If such results could be looked forward to with any degree of regularity, then the very reason for the operation would cease to exist. It should be a simple problem to settle for all time the relative merits of these procedures. Twenty-five consecutive cases, well controlled, would show how dependable were the results of this type of radiation. Without the removal of the uterus in some such number of cases with a plan carefully followed, there would always be uncer-

tainty; for even in this series, where there was every reason to believe that the patient would be restored to health, after a year he found that one was dead, and two had massive involvement of their pelves that were apparently cancerous. The question at issue was not the cure, but whether radiation would cause the permanent disappearance of cancer cells from a region as wide in its limits as that area that would be removed by the most complete hysterectomy of the Wertheim type. From the results in the uterine body cancers, it would appear to be necessary to remove the uterus after a preliminary radiation, or where this was inadvisable to radiate the entire pelvis as completely as was done with a cervical tumor.

The results in the recurrent cancer following a hysterectomy were very promising. It should be understood that it was as important to radiate these patients immediately after operation, as it was to operate early in the course of the disease. Taking only the years up to 1918, in twenty-six per cent. of the recurrent cancer cases the patients were still living; in fifty-nine per cent. of this type of the year 1918 the patients were still living. Of course, this number would drop tremendously during the next year; and it only illustrated the point mentioned above, that so many of the patients have a temporary improvement and retrogression. Over sixty per cent. of the patients treated prophylactically against the return of the tumor following a hysterectomy, were still free of the disease, but as most of these were treated in 1918, a year or two more must pass before any conclusions might be drawn. So great had been the palliation from the radium that it might be said that in no case of uterine cancer did the patient receive proper treatment without thorough radiation of the tissues of the pelvis.

Tumors of the Bladder in Women.—Dr. HOWARD A. KELLY, of Baltimore, gave a brief historical review of the subject, recalling the days when it was not uncommon for the specialist to examine the bladder by boring his finger in through the urethra, an act followed commonly by incontinence. With the cystoscope all this became changed. The speaker insisted on the great advantages of the open air cystoscope in diagnosis and treatment. Its simplicity was in its favor and there was no murky medium to be changed, and with one instrument it was possible to sweep rapidly over all the walls of the bladder and note every lesion. He then spoke of the importance of utilizing the natural landmarks as well as an artificial division into hemispheres, easily adopted from the viewpoint of the internal orifice of the urethra. With these landmarks and using the end of the speculum as a measure, the first step was to plot out all areas of disease and note them on a simple chart. This gave plan and precision to the treatment. Malignancy in bladder tumors was not always to be determined from the microscopic standpoint. Some tumors which were classified as malignant by the pathologist were clinically benign and vice versa. An ulcerated and infiltrated base was the clinical test of malignancy.

The treatment was occasionally by excision, but

as a rule by fulguration and radium. Fulguration did well in some cases but often failed. Radium was applied in the form of emanation on the end of a sound, introduced and applied directly to the growth through the open cystoscope or held a little away from it. A proper dose was 250 milligram hours over an area two by two cm. a month. If one used 1,000 milligrams, then this meant a total application of fifteen minutes, and if this was divided up into four treatments as seemed best, then each treatment lasted only about four or five minutes. In this way many cases had apparently been cured, including even those which were malignant and infiltrative.

A Study of Bladder Function.—Dr. ARTHUR H. CURTIS, of Chicago, drew the following conclusions. 1. Failure to catheterize the paralyzed bladder is followed (in rabbits at least) by backpressure of urine which is exceedingly destructive to kidney tissue. Associated urinary tract infection is frequent. 2. Irregularly performed catheterization for retention of urine is unsatisfactory. Patients so treated are subjected to such dangers as accompany passage of the catheter and, at the same time, are rendered liable to accumulations of infected stagnant urine. 3. Carefully managed catheterization of the bladder which fails to empty spontaneously yields excellent results; the catheter should be regularly passed often enough to prevent vesical distention, and its use must be persisted in until daily tests show that residual urine is no longer present.

(To be concluded.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Formulaire thérapeutique des maladies du tube digestif.
Par Docteur L. PROX. Paris: Maloine et Fils, 1919. Pp. 110.

The author has managed to collect in this small volume a number of prescriptions, affirming that he has presented only those which he personally has found distinctly beneficial to his patients. Dietetic or physiotherapeutic methods have evidently not met with his approval, as they are not used to any great extent. There is little new or interesting in either the formulary or the ideas for handling patients with disorders of the digestive tract.

A Laboratory Manual for Elementary Zoology. By L. H. HYMAN, Department of Zoology, University of Chicago. Chicago: The University of Chicago Press, 1919. Pp. xv-150.

This manual was prepared as a textbook for the University of Chicago, and while it undoubtedly follows in a general way the courses in zoology as given in other universities, its greatest usefulness will be in the place where it was originally used. Inasmuch as the manual has been issued for general use, it would seem that some of the strictly local directions might have been omitted. As regards directions to students, the author follows

certain kindergarten methods the efficacy of which is now doubted even for kindergartens—he presupposes that the student is utterly devoid of intelligence. If so, why attempt to teach him zoology?

A Manual of Gynecology. By JOHN COOKE HIRST, M. D., Associate in Obstetrics, University of Pennsylvania; Obstetrician and Gynecologist to the Philadelphia General Hospital; Gynecologist to Mt. Sinai Hospital; Fellow of the College of Physicians, Philadelphia, etc. Illustrated. Philadelphia and London: W. B. Saunders Company, 1918. Pp. 466.

Doctor Hirst's record as a teacher of gynecology preceded the publication of this small manual by many years. Doubtless insistent demands from students and practitioners encouraged the author to bring out this book. It is remarkably complete and covers all of the latest phases and findings in gynecology, including a chapter on the endocrine system in relation to gynecology. The illustrations and charts are more thorough than those usually found in manuals of this type. A more valuable book could not be found for the student and it also supplies a convenient topical reference book for the general practitioner.

Births, Marriages and Deaths.

Died.

ABBOTT.—In Bristol, Pa., on Sunday, July 27th, Dr. Charles Conrad Abbott, aged seventy-six years.

BARLOW.—In Walker, Minn., on Monday, July 14th, Dr. Bryan Barlow, of Fort Wayne, Ind., aged thirty years.

BARNEY.—In Boston, Mass., on Wednesday, June 25th, Dr. Willis Oliver Barney, Medical Corps, U. S. Naval Reserve Force, aged thirty-one years.

BLACKLEDGE.—In Kingsburg, Cal., on Thursday, July 17th, Dr. Lindley N. Blackledge, of Orosi, Cal., aged fifty-nine years.

BURNHAM.—In Denver, Colo., on Saturday, July 19th, Dr. Norman G. Burnham, aged ninety years.

FRAZEE.—In Atlantic City, N. J., on Friday, July 25th, Dr. Charles E. Frazee, of Jersey City, N. J., aged fifty years.

GILMAN.—In Brookline, Mass., on Wednesday, July 16th, Dr. Charles L. Gilman, of Boston., aged sixty-three years.

GOOD.—In Reading, Pa., on Friday, July 25th, Dr. Franklin H. Good, aged sixty-four years.

GRAHAM.—In Henderson, Ky., on Monday, July 14th, Dr. Cyrus B. Graham, aged fifty-six years.

HOUSER.—In Lincoln, Ill., on Wednesday, July 2d, Dr. William W. Houser, aged eighty-two years.

LANOUE.—In Ghent, Minn., on Tuesday, July 15th, Dr. Alphonse Lanoue, aged forty-nine years.

LEMON.—In Washington, D. C., on Monday, July 21st, Dr. Hanson T. A. Lemon, aged fifty years.

MEADE.—In Farallone, Cal., on Tuesday, July 1st, Dr. Samuel Wixon Meade, aged seventy years.

MYERS.—In Albany, N. Y., on Wednesday, July 30th, Dr. Fred C. Myers, aged thirty-seven years.

SCHULTZ.—In Owensboro, Ky., on Monday, July 14th, Dr. Z. H. Schultz, aged fifty-two years.

SHAW.—In New York, N. Y., on Saturday, August 2d, Dr. Frank E. Shaw, aged fifty-seven years.

STOW.—In Hilo, Hawaii, on Sunday, July 6th, Dr. Charles Lethbridge Stow, aged sixty-three years.

STUART.—In Winchester, Va., on Thursday, July 24th, Dr. Wilton R. Stuart, aged sixty-four years.

SWEENEY.—In Albany, N. Y., on Wednesday, July 20th, Dr. William P. Sweeney, of Saratoga Springs, N. Y., aged twenty-eight years.

WADE.—In Boston, Mass., on Wednesday, July 16th, Dr. Edric Allan Wade, of Lawrence, Mass., aged sixty-four years.

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Original Communications

THE MECHANISM AND PHYSIOLOGICAL ACTION OF MOTOR REEDUCATION.

By P. KOUINDJY, M. D.,
Paris, France,

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(Translated by Gregory Stragnell, M. D., former attending surgeon, Hôpital Auxiliaire No. 2 and No. 36, Paris, France.)

Motor reeducation, the reeducation of movements, muscular reeducation, and functional reeducation are identical terms indicating a group of exercises designed to reestablish the normal function of the various organs and to coordinate voluntary movements to a desired end. The adaptation can not be accomplished unless the relationship between conscious perception and the volition of the individual is unbroken. In the case of an individual in normal condition this relation is established by education. Consequently reeducation is a method of education when the individual is in a pathological condition. The object is to reestablish functions which have been altered either by a central affection or by peripheral lesions. In either case the execution of movements is subject to disorders which result in incoordinated movements. The object of motor reeducation is to correct the incoordination of these movements which have disturbed the harmony of the normal functions of the patient.

In order to understand better the mechanism of motor reeducation, it is necessary to comprehend thoroughly the mechanism of incoordination of movements in those who are affected, thus arriving at a more perfect understanding of the coordination of movements.

In addition to the movements of the vegetative system, the infant succeeds in executing various movements incidental to life by imitation or by impulse. The motions of sitting up, standing, taking steps, and walking are acquired gradually and after a greater or less period of time. We may consider that the infant is in complete possession of the voluntary movements at the end of its fifth year, the period at which the pyramidal fibres, which establish communication between the cortical and spinal centres, have completed their development. Up to this time we can see how the child is forced to adapt itself progressively to different conditions of life before the movements become automatic. By automatic movement is meant every

coordinated movement which does not require continued voluntary attention.

In general, appropriate training is required for the coordinated movement to become automatic. To play the piano or the violin, to fence, or to swim requires a certain period of preparation, for no matter what the intelligence of the person he must first of all adapt his motor centres to these specific exercises. He adapts them by progressively coordinating the sensitosensory impulses with the muscular contractions. More and more harmony is developed between the conscious perception and the volition. It is not enough to have a conscious knowledge of how to paint a picture or play a musical score; no matter how great the wish to execute them, a harmonious relation between the two functions of movement must be established. The only way to achieve this is by training, practice, and study. This aptitude varies from one individual to another according to the degree of intelligence and the value of the training.

When we examine the mechanism of movements we find that the motor manifestations always follow identical pathways in all living forms. They begin at the peripheral cells (the sensitosensory cells), follow a centripetal route, pass through the central motor cells, join the central motor cells, and from there by a centrifugal route reach the muscular cells. The muscular contraction transforms in a varying period of time the nervous dynamics.

According to Professor Pierret, these dynamic manifestations are clearly ascertained even in simple anatomical elements like the protozoa, the feelings and movements of which are due to physiochemical excitations from the centre. In animal forms with a more highly developed nervous system, like the hydra and medusa, the nervous element receives impressions and the motor element transforms them into movements. In other living forms which have a more complex structure the nervous system is definitely separated from the motor system: one finds centripetal nerve fibres, sensory and motor ganglia, and centrifugal nerve fibres. In vertebrates, the sensory-motor system being more highly developed, the motor manifestations follow more complicated pathways; here the coordination of movements is made complex by the multiplicity of sensory-motor centres and the connecting fibres which join them.

In order that the sensitosensory impulses may

coordinate the movements it is necessary, as Professor Raymond asserts, to have not only the will to excite these impulses and the consciousness to perform the motion but also the normal balance which should exist between volition and consciousness to execute the movement. Consequently for the movement to be executed in a coordinated fashion it is necessary for the harmony between will and consciousness to remain unbroken. If it is interfered with by a lesion of any sort, the movement becomes incoordinated. Incoordination of movement is thus the disturbance of normal balance between the two principal factors of coordination, volition and consciousness. In the pathological condition this can be overcome by a series of appropriate and duly repeated exercises. Motor education is in reality a logical series of gymnastics designed to reestablish the harmony which should exist between the conscious perception of the patient and his volition.

Brown-Séquard, Arnold, and other physiologists have shown that sensations of muscular contraction are transmitted to the nerve centres of the organism by nerve fibres, sensory as well as motor. From this it can be stated that the work done by a muscle is recorded upon the cerebral cell itself. The cortical cells keep a perfect record of muscular contractions and the region in which they are produced. Weir-Mitchell has demonstrated that electric stimulation at the site of old amputations causes muscular contractions which correspond to members amputated some time previously. In the neurological service we often find attacks of neuritis which localize in a surprising fashion the pain on the segment of a limb amputated months and even years ago. This is not a purely psychic phenomenon; it is also a physiopathological manifestation, for the localization of the pain corresponds anatomically to the area controlled by the incompletely degenerated sensory-motor centre.

On the other hand, the experiments of Sachs and François Franc have shown that in a muscle deprived of its anterior root fibres, stimulation of the centre produces reflexes identical with those obtained when the muscle is in a normal condition. It can be seen from this that muscular contractions alone may influence the sensory nerves of the muscles and transmit peripheral impressions to the cortical centres. The cerebral or medullary cells forming the centres of coordination are under the direct influence of the muscular contractions. By restoring these we should at the same time restore the function of the nerve cells on which depend the centres of movements.

It is possible that reeducational exercises instead of restoring the degenerated motor centre may establish a new centre at the site of the old one or near it; nevertheless the movement becomes coordinated and the patient is cured. Whether it is done through restoration of the degenerated centre or through the formation of a new centre, the result is the same. Motor reeducation results in restoring the transference of sensitatory impulses into motor manifestations and placing them under the influence of the central nervous system.

Every movement, however, is also dependent on

another factor—tonicity of the muscles. We know that normally the muscle is not in absolute repose: it is in a state called *tonus*. The *tonus* may be increased or diminished according to circumstances. Under pathological conditions it may even disappear, as in muscular atrophy. Through the play of antagonistic elements the *tonus* becomes stronger in contracted muscles and weaker in muscles which are in repose. So in a simple movement, as flexion of the forearm on the arm, the tonicity of the flexors is increased by the muscular contraction and the tonicity of the extensors is diminished by the play of the antagonist. This permits the movement to be executed gradually. In a case where the tonicity of antagonistic muscles is disturbed, the motion is performed too abruptly or jerkily. When the movement of flexion is performed abruptly, it is impossible for the extensors to modify the contraction of the flexors; when flexion is made in jerks, the control of the extensors is irregular and not firm.

In cases of muscular atrophy the tonicity of a muscle or a group of muscles governs the antagonists and the movement is either impossible or incomplete. The motor centre is conscious of this fault but is unable to correct it. It is then necessary, by appropriate means, to restore the function of the affected muscles by bringing proper nutrition to the muscular fibre. This may be achieved by methodical massage, by electrotherapy, or by other physical methods. It may also be achieved by reeducative exercises which are used in proportion as the muscular tonicity improves. These exercises progressively animate the injured muscle and gradually bring the muscular contraction under the control of the motor centre.

We have seen that the muscular stimulations are transmitted to the cortical centre by centripetal pathways. It therefore follows that if the muscular cell remains indifferent to peripheral impulses, the nerve cell itself remains indifferent to the impulses. The muscular fibre must perceive the impulses and transmit them to the centres of coordination. In other words, central perceptions cannot exist without peripheral perceptions. Muscular atrophy plays as important a part in the incoordination of movements as the change in the nerve cells.

Through motor reeducation we succeed in restoring if not the entire muscle, at least a portion. Hayem, Raymond, Philippe, and others have shown that histological sections of atrophied muscle present:

1. Islands of healthy muscle fibres slightly larger than normal muscle fibres.
2. Islands of healthy muscle fibres intermingled with fibres degenerated or on the way to degeneration.
3. Islands of fibres completely degenerated.

The physical agents, consisting of reeducational exercises, succeed in restoring the nutrition and function of healthy fibres in the muscles which are degenerating; as for the degenerated fibres, nothing can restore them again; they are dead and lost forever. We can now readily understand that a muscle may regain its normal functions without regaining its former size. Motor reeducation should

concern itself with activating the tonicity of a muscle or a group of muscles without regard to size; it should restore the muscle qualitatively and not quantitatively. We know that muscular force is characterized not by the size of the muscle but by the work it is able to do.

It would be superfluous to give examples showing that the mechanism of muscular reeducation has for its starting point the muscular tonicity which serves not only to produce the power necessary to execute a movement but also to control, through the intermediary cortical centre, the strength and the amplitude of the movement. The motions of a lever of any member upon the neighboring lever may be accomplished in different positions with varying amplitudes. When the forearm is flexed on the arm, we make the forearm describe an arc between 180° and 30° ; when the arm is circumducted we describe circles of 360° with a greater and greater radius. In addition we can perform the movements slowly, abruptly, with force, gradually, etc. All these different motions are accomplished under the control of the motor centres and the muscular sense. When the muscle is inferior with regard to its muscular tonicity, the muscular sense suffers from serious disorders and coordination becomes impossible. Moreover, it is impossible to separate control by the muscular sense from control by the sensory-motor centre. The two controls are mingled and form a single centre of coordination of movements.

A third factor which occupies an important place in the mechanism of motor reeducation is the psychic element of the individual. The importance of this element varies with the affection and the nervous condition of the patient. In its early stages motor reeducation was considered only a suggestive method. Many psychiatrists, and not the least able ones, still use motor reeducation as a means of suggestion for their patients, and a method bearing the name of psychotherapeutic reeducation has been evolved.

Undoubtedly motor reeducation, like all other therapeutic methods, exerts a suggestive influence upon patients. We all know the suggestive influence that our presence has on patients under treatment; sometimes it encourages them to resist the disease and become well. Can it be said that our presence alone cured them? Surely not. We can only use it as a rational therapeutic agent to activate the effect of our prescription. Motor reeducation acts in the same way: it influences the patient psychically because it offers him the certainty of real action, progressively improving his condition. By the proper doses of exercise we can prove to the patient that it is possible to foresee if not a complete cure at least an improvement; he regains confidence in life, he hopes, he sees his old condition return anew, and he perceives that he can be useful to his fellow men. Certainly it is suggestion, but a suggestion created entirely by the positive action of the exercises. Neither promises nor the verbal assurances usually employed can bring our patient to gain the ascendancy over himself; it is the psychic effect of a palpable betterment of his condition which gives the patient the

strength and perseverance to persist in the fight with the disease which has brought him low. Under these conditions the psychic effect of reeducation holds closely to the rational effects of the reeducative exercises, and we can conclude that reeducation is at the same time motor and psychotherapeutic.

From all of the preceding we see that the mechanism of motor reeducation includes at the same time the motor centre, the muscular tonicity, and the psychic element of the individual. By controlling these three factors we can succeed in establishing the physiological action of motor reeducation. Four theories seek to explain this effect. The first is that of our departed teacher, Professor Raymond.

Professor Raymond was the true promotor of motor reeducation, for it was due to his scientific authority that this method has taken its place in medical science. It was also due to him that the service for reeducation which we have directed for almost fifteen years was founded at the Charcot clinic of Salpêtrière. He stated that, "The education of the muscles in the sense of coordination is done under the direction and by the intermediate agency of the brain; it assumes that the cephalic functions, consciousness and will, which govern education are intact. Coordination can not be restored in the tabetic who presents mental disturbances." This last argument of our master is of prime importance, for it proves that the effect of reeducation is dependent on the intelligence of each individual.

The second theory is that of Professor Grasset, who asserts that reeducation promotes a medullary substitution for the activity of the cerebral centre. This eminent neurologist states: "As he has done from the beginning of his life, and this time at the instigation and under the careful direction of a physician, the tabetic relearns to make all his movements by using his brain, his superior psychic centres. As in the beginning of his life, this cerebral action develops a new system of active fibres, a new apparatus of conduction and coordination; with the aid of his brain he is thus able to remake the movements which had been lost; when sufficient progress has been made the brain, which has done everything and directed everything up to that point, can withdraw, at least now and then; the medullary substitution is reconstituted and the tabetic can recommence to move and walk automatically, without thinking about it each time." For this author coordination is not merely an encephalic function but especially a bulbomedullary function.

The third theory was laid down by Doctor Hirshberg after the ideas of Doctor Frenkel, of Hayden, who initiated reeducation for tabetics. It is based on the loss of musculoarticular sensibility by the patients. "The diminution of sensibility in a group of muscles," says Frenkel, "results in: ataxia, total anesthesia, paralysis." Hirshberg makes the incoordination of movements depend on changes in the musculoarticular sensibility. "Reasoned exercises frequently repeated," he says, "have for their aim the offsetting of disturbances of the musculoarticular sensibility of volition and

greater attention." These three theories show the encephalic conception of Professor Raymond, the encephalomedullary conception of Professor Grasset, and the sensory conception of Doctor Hirshberg regarding the coordination of movements.

These three theories taken separately are too narrow, and they have the fault of attempting to limit the action of motor reeducation to this or that anatomical region. In reality reeducation acts at the same time on the brain, on the conductivity of the fibres of the centre, and on the musculoarticular sensibility. This is our conception of the physiological action of reeducational exercises. It follows that motor reeducation produces its effect by a complex action, including in its field of influence all the organs which form the mechanism of the coordination of movements and which are found in the brain, the bulb, the centre, the centrifugal nerves, the centripetal nerves, the muscles, and the joints. In order that reeducation may accomplish all that is possible the brain centre must learn to command the desired movements within the same time that the centre becomes accustomed to transmit the orders to the peripheral organs with rhythmic succession, so that the muscles succeed in executing the movements with the synergy and harmony of coordinated movements. We may conclude that motor reeducation aims to restore the function of the various parts of the sensorimotor tract over which pass the impulses of the coordinated movement. If one of these parts undergoes an irreparable change, reeducation seeks to establish a new compensatory pathway so that the movement may be executed according to all the rules of coordination. At times supplementary pathways are made use of so that a movement may be performed through the intermediary or more or less distant motor centres. Thus in a number of affections reeducation is applied to muscles in which the contraction does not correspond directly to the movement indicated. This action of the supplemental muscles, which has been brought out in our study of infantile paralysis (1), proves that reeducative exercises act not upon a single muscle or a single group of muscles but on all the muscles which participate in movement. We are often obliged to draw out from the musculature of a patient the greatest possible effect and to reeducate a series of muscles which may contribute indirectly to produce a given movement. Under these conditions we obtain an incorrect movement which may be corrected later. Owing to the reeducation of the supplemental muscles this method has given the most encouraging results in the crippled and disabled, the end results giving movements that are almost normal. This supplemental musculature, an approximate table of which has been outlined in the above mentioned work, permits some patients to walk more easily and makes work possible for others.

In including in motor reeducation the supplemental muscles we have only followed nature herself. "The most extended and complex movements," says J. Beclard in his text on human physiology, "are the movements of the whole, that is the movements of locomotion by which men and ani-

mals spontaneously change their relationship with surrounding bodies and move about in their environment." In addition movements of individuals assume a tremendously diverse character, depending upon their anatomical constitution and upon their professional aptitudes. Even among individuals in the same category we find motions bearing the stamp of their daily habits, their style of dress, their training in sports, in educative exercises, etc. In his work on the human attitude in the quaternary epoch, M. Manouvrier asserts that the stooping walk of mountaineers, of the rural population, etc., may be explained, as in the case of our ancestors, by the conditions of their daily life, by the inequalities of the soil, on which they could not walk otherwise. The reeducator is obliged to take into account all of the variations of physiological movement and to adjust his exercises so that the coordinated movement does not exceed the physiological movement of the individual in harmony with the natural conditions of his daily life.

From what has been stated we may conclude that from the viewpoint of physiological action, motor reeducation presents a complete mechanism which exerts its action over the entire group of conducting pathways, designed to coordinate movements altered by a lesion. This end is achieved by action upon the cortical motor centres, the medullary centres, and the muscular fibre. Moreover it enables muscular restoration to be achieved as much from the functional as from the tonic standpoint, and it influences favorably the psychic element of the patient. It also has a favorable effect by its educative action on the supplemental muscles.

Taken in its entirety motor reeducation succeeds in restoring the coordination of movements, reestablishing the sensorimotor functions, and in inducing the physiological contraction of the muscles. This permits us to combat effectually the functional impotence and the resulting permanent disability of the patient.

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SOME EXPERIENCES IN AN EVACUATION HOSPITAL.

BY ELLSWORTH ELIOT, JR., M. D.,
New York.

A brief résumé of the conditions in which war surgery, as observed by the writer, was carried on is not without interest. The hospital consisted of a number of hastily erected wooden shacks, not communicating with one another, so that patients carried from the *triage* to the operating room and thence to the ward were exposed to the open air and often to inclement weather, while the stretcher bearers constantly left large amounts of mud wherever they passed. The x ray plant, to which all patients were exposed, was installed in a shack between the *triage* and the operating room, sharing that space with a shock ward capable of accommodating twenty patients. At one end of the oper-

ating room the sterilizers were placed, together with a stock of surgical supplies, and at the other end ten operating tables could be utilized simultaneously. During the day the light from side windows was fair, while at night an electric globe was placed over each table in such a way that, suspended from any part of two overhead wires which crossed like the letter X, it could be placed over either upper or lower extremity according to the site of operation. Even under the best conditions the light was inadequate and yet, during our busiest twenty-four hours with all the tables in use, over two hundred seriously wounded soldiers received treatment.

In this connection it is of interest to speak briefly of our anesthetists. Eighteen of the more intelligent of the enlisted personnel, who had had a partial or complete high school education, were given instruction in groups of six at the Allentown Hospital in both the theoretical and practical parts of this subject—in theory by the system of the old fashioned didactic lecture and quiz, and the knowledge so gained was illustrated practically by watching and commenting on the administration of the anesthetic in the hospital operating room. Although none of these men had ever been previously in a medical school or hospital it is gratifying to note that they gave anesthetics to over five thousand patients without an anesthetic fatality.

The system followed in this hospital differed somewhat from that in other evacuation and mobile hospitals in that each surgeon prior to evacuation dressed all patients on whom he had operated, the operation date and character of each dressing being duly tabulated on the respective field reports. This relieved considerably the tedium of twelve hours' consecutive duty in the operating room, a portion of the time either directly after or before meals being spent in attending to ward duties.

The number of surgeons, nurses, and corps men was totally inadequate, some wards containing fifty postoperative cases with only one nurse; but in this respect we were no worse off than many of our neighbors. The operating was done by our own teams, to which were added other teams temporarily assigned by headquarters for this special work, each team consisting of an operating surgeon, an assistant, a nurse, and an anesthetist. Iodine was used for preparation of the operative field, after preliminary examination, shaving, and cleansing in the *triage*, and each surgeon and nurse was allowed one sterile gown and gloves for each period between meals. Between operations the hands, with gloves unremoved, were scrubbed with soap and hot water and then immersed in alcohol, lysol, or a solution of bichloride of mercury. Only after operating in a seriously infected case of gas gangrene were the gloves changed and the hands thoroughly cleansed.

WOUND INFECTIONS.

These included, first, those commonly met with in peace with similar manifestations, notably the staphylococci and streptococci, and secondly, those rarely met with in peace, especially infections due to the gas bacillus. This, like other pathogenic

organisms, varies in its virulence, and therefore in its period of incubation. It generally attacks muscle tissue, which rapidly loses its viability and consequently both vascularity and contractility. Exceptionally, however, the intermuscular spaces are attacked, being gradually infiltrated with the infectious exudate, while the contiguous muscle is unchanged, this variety showing clinically a somewhat less degree of malignancy.

The well known local symptoms of gas bacillus infection need no comment. Only at the beginning could diagnosis be questionable. The constitutional symptoms pointed to a rapidly developing cardiac depression with apathy deepening into coma shortly before death. Patients suffered very little pain and frequently puffed a cigarette a short time before the end came. Gas bacillus infection in base hospitals was much more insidious in its invasion and consequently much less virulent in its course. It appeared either primarily in wounds which, because of their small size, had been overlooked, or in wounds in which devitalized tissue had not been sufficiently excised. The prognosis was very much more favorable than in the rapidly developing type, almost all patients recovering, while in the latter group, where the infection occurred in the arm or thigh, scarcely half were saved by amputation.

The treatment of simple wounds uncomplicated by fracture was either conservative or radical. The former method was practised in through and through wounds, the result of machine gun bullets, even though they traversed important joints. On the other hand, in wounds caused by high explosive fragments, in which the deeper muscular layers were extensively torn and in which the x ray showed the lodgment of one or more foreign bodies, débridement was practised with as wide excision of the devitalized tissue as was compatible with the maintenance of the circulation and the motor nerve supply of the extremity. Removal of all devitalized tissue in the absence of infectious agents would justify immediate closure of the wound. The determination of the line of demarcation between the living and the dead is difficult, however, while the danger of the retention of pathogenic organisms in the wound, especially in the presence of previous infection, can rarely be obviated. Primary closure, therefore, is contraindicated and the open method is decidedly the method of choice. A Carrel-Dakin dressing gave satisfactory results, especially in cases of advancing infection, although, owing to paucity of nurses, it was applied as a wet dressing and not in the manner in which its authors recommend.

VASCULAR INJURIES

The clinical features and treatment of vascular injuries, especially in the lower extremity, proved most interesting. As in civil surgery, the viability of the leg was least frequently impaired in cases of a torn superficial femoral artery. On the other hand, not a single instance of the saving of an extremity after damage to the popliteal artery was observed. At least one half the cases in which the posterior tibial artery was torn resulted in amputa-

tion. Wounds of all arteries were usually associated with wounds of their accompanying veins. The factors determining gangrene in these cases, beside the cutting off of the main vascular supply, were chiefly the destruction of considerable part of the collateral circulation through the laceration of contiguous tissues, and the subsequent infection. Even in civil surgery the danger of gangrene after division or ligation of a popliteal artery has been long recognized, although infection is avoided by aseptic precautions and interference with the collateral circulation is minimized by making a small incision. In the case of the posterior tibial artery, especially in its upper part, the associated destruction of the collateral circulation was extensive, especially as a considerable segment of the artery was usually torn, with corresponding impairment of its branches of distribution, on the integrity of which the establishment of adequate collateral circulation largely depended. With the onset of infection the inflammatory exudate imprisoned under the soleus, unyielding because of its attachment to the bone on either side and to the tendinous arch between, subjects the deep intermuscular plane together with its vascular structures to extensive compression and still further diminishes the blood supply of the extremity.

In all of these cases, the initial hemorrhage has either stopped spontaneously or has been checked by the tourniquet and it is only after the exposure and dislodgment of the associated hematoma by which the torn vessel is invested that a sudden renewal of the hemorrhage takes place. Exploration of the wound, after the patient has been anesthetized, should therefore be made only after the tourniquet is *in situ* and ready to be tightened, for the infiltration of the tissue planes with blood makes the recognition and seizure of the torn vessel or vessels a difficult matter, requiring a bloodless field. Unaffected by the clot and easily recognized, the accompanying nerve, either popliteal or posterior tibial, if still intact, proves a most satisfactory guide to the torn vessel and emphasizes the importance of always keeping in mind the neurovascular relations.

The exposure of the torn vessels in the popliteal space, owing to their relatively superficial position, is more simple than the exposure of the posterior tibials, especially where they are deeply seated in the upper part of the calf. In this location, satisfactory exposure of these vascular structures is best made by a linear division in the median line of both the gastrocnemius and soleus muscles.

Conservatism, after satisfactory hemostasis, should be practised whenever possible in all of these cases, a primary amputation being justified only in unquestioned circulatory destruction. Secondary amputation should be done without delay with the first indication of incipient gangrene, which, in our observation, usually proved to be a reddish discoloration extending rapidly upward and not a change of surface temperature as textbooks and teachers of surgery so strongly emphasized. Furthermore it is to be remarked that the line of demarcation did not usually attack all

structures in the same horizontal plane, for muscle tissue became necrotic on a much higher level than the skin.

The contrast between the time and type of amputation in war and civil surgery must be emphasized. While in civil practice amputation is ordinarily done shortly after the injury has been received, in war conditions the greater and more persistent associated shock, the continued loss of blood, the prolonged exposure and consequent lack of nourishment, and ultimately the fatigue of an ambulance journey of considerable length, justify a delay until the shock has somewhat subsided, through rest and appropriate treatment.

The method of amputation has been extensively discussed. Many have advocated an amputation by the circular division of all the different layers in the same horizontal plane, the skin being ultimately brought over the end of the stump by extension with adhesive plaster—the so-called guillotine amputation. This is said to have the advantage of speed and to minimize the danger of a spreading infection along the deeper intermuscular planes. It has the disadvantage of healing, if at all, with a rounded cicatrix over the end of the stump, for the stretching of the skin by extension, just referred to, cannot be continued after the granulating area has become surrounded by a cicatricial rim. When this stage has been reached, healing by granulation is inevitable. A more satisfactory result, in that secondary amputation is obviated, is secured by utilizing a flap of skin and subcutaneous tissue of the necessary dimensions with circular division, at the base, of all muscle planes. This flap, if desired, can be turned upward like a cuff over the surface of the extremity, thereby permitting free unobstructed discharge; to be loosely replaced at the end of twenty-four hours without suture over the end of the stump, a longer interval predisposing to pressure necrosis around its base. In cases treated in this way wounds healed as quickly and sometimes more satisfactorily than after the customary method of suture with drainage as practised in civil surgery.

TRACTIONS.

Patients suffering from fractures of both upper and lower extremities were transported to the hospital with the fractured limbs in Thomas splints which were not removed until the patient was anesthetized, a routine method which gave general satisfaction. The wounded were placed on the operating table with the understanding that whatever was necessary should be done. Permission to amputate was never asked nor was there any discussion of the nature, extent, or danger of the proposed operation. There was only one instance of refusal to submit to operation, a man with a wound in the chest, and in this instance the recalcitrant patient was quickly removed from the table and placed in a ward. It was quite within military law to have forcibly compelled this patient to submit to anesthesia and operation but such a harsh measure was deemed unwise. After operation the fractured limbs were again placed in the Thomas splint, in which apparatus the patient was removed

to a base hospital where some form of Balkan extension frame was used.

JOINTS.

The conservative treatment of perforating wounds of joints was justified when it was reasonable to infer, as in the event of machine gun bullets, that the chances of infection were slight. In this group of cases, the inevitable distention of the joint with serohemorrhagic exudate was treated by immobilization, usually, in the case of the knee, with a Thomas splint. After three days, in the absence of symptoms of infection, the patient was evacuated. On the other hand, with the retention of a high explosive fragment or other foreign material in the joint cavity or articular extremity and in compound fractures and crushing injuries involving the joint, the articular cavity was freely exposed, the foreign body and bony fragments removed, and an attempt was made to destroy all infectious material by some powerful antiseptic, preferably ether. Whether the joint should then be closed, as in civil surgery after a suture of a fractured patella, or left more or less widely open in view of the possibility of subsequent infection, was a mooted subject. The majority advocated complete closure without drainage, stating that patients so treated usually remained free from infection until their evacuation to the rear. Many patients treated in this way, however, were later observed by the writer in base hospitals in whom infection had ultimately developed of a character so serious as to necessitate amputation. While only a more extensive experience can settle the proper method of treatment, much is to be said in favor of closing the joint without drainage but with an aperture in the sutured capsule of sufficient size to permit the exit of joint exudate which, if retained in the synovial cavity, would provide an excellent culture medium to which infectious organisms, if not already present, would find little difficulty in penetrating between the interstices of a tightly sutured capsule. In more extensive joint destructions primary amputation was done, although in border line cases an attempt was usually made to conserve the extremity.

Any discussion of the treatment of joint injuries, no matter how brief, would be incomplete without reference to the Willems method. This consists of active (never passive) motion of the affected joint begun after operation as soon as the patient has recovered from the effect of the anesthetic and continued at frequent intervals until the patient has become convalescent. In cases which remain free from infection, this form of treatment prevents joint stiffness and promotes early restoration of function. In cases which become infected, it facilitates, after drainage is established, the exit of the discharge from the synovial cavity, shortens the duration of the suppuration, obviates the constitutional symptoms of septic absorption, and usually insures freedom from total ankylosis or amputation. To carry out this method of treatment requires the undivided attention of a properly trained nurse. In our hospital the scarcity of nurses and the necessity of early evacuation prevented any attempt to treat patients by this method.

CENTRAL AND PERIPHERAL NERVOUS SYSTEM.

The treatment of compound fractures of the skull differed from the treatment of this condition in civil surgery only in being more radical. The depression was relieved, the loose fragments were removed, and if the dura showed increased tension with loss of pulsation, it was incised with a view of liberating and removing any imprisoned blood clot. Projectiles immediately beneath the skull or between the skull and the brain were removed, while those in the brain substance were removed, if at all, only after the evacuation of the patient to a base hospital where postoperative treatment could be more advantageously given without the necessity of an early transfer of the patient. Fissures of the skull, detected in the course of the examination of scalp wounds, were invariably trephined, and in the majority of cases a more extensively fractured inner table, compressing the brain, was found.

The prognosis in gunshot injuries of the skull depended upon the extent of the injury and the question of the introduction of infectious material. Patients in whom the injury consisted solely of fracture of the vault did well. In extensive injuries death resulted from laceration of brain tissue, from a septic meningitis, and in some instances from a distention of the ventricular cavity with blood. Whether compression from a large ventricular clot could be relieved by its removal through aspiration or puncture is debatable. Although no such attempt was made the suggested remedy might prove of value.

The operative treatment of wounds of the spinal cord was most disappointing. While theoretically division of either the right or left half of this structure should cause corresponding unilateral symptoms, the undivided portion was so damaged by the centrifugal pressure of the projectile and by the sudden increase of intraspinal pressure that the symptoms ordinarily associated with simple fracture dislocation of the spinal column, as observed in civil practice, were the rule. No benefit followed operation and no material improvement occurred in those patients who were treated conservatively in base hospitals.

Division of peripheral motor nerves was frequently observed, especially the great sciatic, external and internal popliteal, the musculospiral, the median, and the ulnar. An attempt to determine the presence and extent of this complication was made in the *triage* before the anesthetic was given. If present, the divided ends were identified and sutured as a part of the débridement and when possible were covered by muscle tissue. In some badly lacerated wounds the nerve was so extensively torn that the interval between the divided ends exceeded several inches, in which event no effort was made to approximate the ends by plastic operation until all infection had subsided.

The end results of suture of nerves as a part of the original débridement of the wound can now be stated with reasonable certainty. I have recently been told by a colleague that in nine cases so treated, in seven the return of function was well advanced. Unfortunately primary suture of divided nerves was generally neglected and in hun-

dreds of these patients secondary suture has been necessary under much less favorable conditions, which proper treatment at the beginning might have avoided.

It is of interest to call attention to a condition simulating the division of one or more frequently of several motor nerves, a condition which is probably due to paralysis of nerve function from the centrifugal force of a projectile which passes in close proximity to the nerve trunks without actually dividing or tearing them. In the absence of a wound in this group of cases there is no difficulty in excluding the possibility of nerve division. If, as is usually the case, there is a penetrating wound, the suspected nerves, when exposed in the course of the necessary débridement and removal of the foreign body, show no visible change. The prognosis in this group of cases is excellent, restoration of function taking place generally in the course of two or three months.

ABDOMEN.

Injuries of the abdomen, as in civil surgery, may be divided into two large groups, namely, those limited to the abdominal wall and those involving the peritoneal cavity with or without damage to a viscus. To distinguish between these two groups in war surgery frequently proved most difficult, for in wounds limited to the abdominal wall the modification of its respiratory movement and the extent and degree of the associated muscular rigidity in no wise differed from these same symptoms resulting from peritoneal irritation. Only by exploratory laparotomy, when the position of the wound and the location of the foreign body by fluoroscopic examination indicated perforation of the peritoneal cavity, was accurate diagnosis possible. In doubtful cases this procedure was always adopted as a part of the débridement of the more or less contused or lacerated tissues of the abdominal wall, as essential here as in similar wounds of the extremities. On opening the peritoneal cavity through a small incision, the presence of blood or gas was readily determined and if present the incision was immediately enlarged and if possible the exact lesion ascertained and treated.

Wounds involving the abdominal wall only, although obviously much less serious than those which penetrated the abdominal cavity, are not entirely free from danger. Several instances of such wounds were observed in which, notwithstanding satisfactory débridement, a rapid pulse and apathetic condition persisted until the death of the patient four or five days later. An autopsy in each instance showed no visible intraabdominal lesion. This same unfortunate termination was also occasionally observed in wounds of the chest wall with the difference that the transition from a usually highly favorable condition to one of complete collapse was as sudden as it was unanticipated. On autopsy no visible intrathoracic lesion could be demonstrated. This exceptional and unfortunate course was probably the result of some thoracic or abdominal nerve disturbance in both groups of cases.

The rapidity of the development of infection was such that in penetrating wounds of the intes-

tine recovery rarely ensued if operation was not done within fifteen hours after the receipt of the injury. If this interval was exceeded, patients who had not been operated upon occasionally recovered, with a fecal fistula which was subsequently closed at the base hospital. An interesting instance of this type of case was observed in a patient suffering from a penetrating wound of the descending colon. After a high temperature and a rapid pulse for twenty-four to forty-eight hours, a fecal fistula formed with rapid improvement in the patient's general condition, so that in ten days he was discharged to a base hospital for further observation. At least one half of the patients operated upon for intestinal perforation prior to the fifteenth hour recovered, especially if the character of the lesion was such as not to require excision of the damaged loop with anastomosis. In fatal cases, the progress of infection was so rapid that frequently the terminal distention was only moderately developed and occasionally even this indication of peristaltic paralysis was concealed by the contraction of the powerful abdominal muscles. In other cases, death occurred without any distention whatever, the bowels moving freely until the end.

Perforations in fixed portions of the large intestine were of special interest, especially when caused by wounds in the loin. In this particular type of case, the patient was asked whether he had passed gas from the rectum subsequent to the receipt of the injury. If perforation was present, gas would probably pass directly through the opening in the wall of the colon into the peritoneal cavity rather than downward into the rectum. The fact that no gas was passed by the rectum, however, proved of little diagnostic value, for gas might not be present or only in such small quantities as to remain in the colon though intact. Very frequently, also, the general condition of the patient was such as to preclude any observation whatever. Of much greater value was the condition of the colon when exposed in the course of the débridement of the wound of entrance in the loin. An inflated or elastic wall, especially if maintained on pressure, warranted the conclusion that the colon was intact. On the other hand, a collapsed or flaccid colon indicated perforation and an immediate careful search was made, if necessary through an enlarged or even an anterior incision, for the orifice of entry and exit. If the colon was intact and injury to some other abdominal organ was suspected, the peritoneum was opened on the outer aspect of the colon and if gas or blood escaped, further exploration was made through an enlarged or separate incision.

SOLID VISCERA.

Gunshot wounds of the solid viscera were occasionally observed although many patients must have succumbed quickly to this form of injury from hemorrhage. In these wounds the tearing character of the missile, together with the introduction of infectious material and the frequent simultaneous involvement of adjacent hollow and solid viscera, contributed to an unfavorable prognosis. The treatment of this group of patients differed in no essential from that ordinarily prac-

tised in civil surgery. In isolated rupture of the liver the hemorrhage was checked by approximation of the bleeding surfaces or by tampon. No opportunity was afforded to test the hemostatic value of omentum applied in the form of a tampon to the bleeding surface. Rupture of the spleen was treated by splenectomy and that of the kidney by nephrectomy, although in one instance of the latter injury the patient recovered without operation and still carries in the deep muscles of his back an irregular fragment of high explosive shell without discomfort. Conservative treatment, notwithstanding hematuria, was practised in this case because of the absence of any indication of serious loss of blood as well as the absence of any indication of peritoneal irritation. Wounds of the pancreas were rarely observed and were almost invariably associated with wounds of adjacent viscera. They were usually if not always fatal.

34 EAST SIXTY-SEVENTH STREET.

ON THE NATURE OF NEUROCIRCULATORY ASTHENIA.

BY ERNST P. BOAS, M. D.,
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Neurocirculatory asthenia, also known as effort syndrome, soldier's heart, or irritable heart, is a condition of interest as much to the practising physician as to the military surgeon. In this discussion I shall first describe the clinical picture as seen in soldiers, and then shall relate that to the clinical picture seen in civilians. In a study of the symptom complex it is essential to differentiate two groups of cases, the constitutional and the nonconstitutional. The former are patients whose symptoms antedate their muster into service, the latter, men in whom symptoms develop during active training or warfare. In the training camp we see with few exceptions only the constitutional cases, and it is these that I wish to discuss.

The term constitutional implies that the disorder is closely concerned with the makeup, or the body habit of the individual himself. This is precisely the case. Furthermore, this constitutional defect is in most instances a familial trait. In the vast majority of cases a family history of nervous disorder is obtainable. The patient will state that his mother or father, and a number of brothers and sisters are nervous. Rarely is there a history of insanity or epilepsy. When we inquire further as to what is meant by nervous we learn that the members in question of his family are unstable individuals who do not stand the stress of life well. They are excitable and irritable, they are exhausted and worn out by their everyday experiences, and unusual incidents are to them like great crises, which sap their nervous energies and leave them weak and trembling. Shakiness and tremor of the hands are common; fainting attacks, "heart trouble" and "nervous prostration" are of frequent occurrence.

All of these traits are reflected in the patient, and are brought to the fore by the rigors of training camp life. In addition to the signs and symptoms

of general nervous instability, cardiovascular symptoms are prominent. The soldier is usually admitted to the hospital for "heart trouble." His most common complaints are precordial pain and breathlessness on exertion. At night he is frequently troubled with precordial pain, and feels as though he cannot catch his breath, and must sit up or walk around. He sleeps poorly. Vertigo, on change of posture and on exertion, and headache, particularly after exercising, are common complaints. Fainting occurs less frequently. These symptoms are aggravated by hot weather and by direct sunlight. Objectively we find tachycardia, a diffuse beat of the heart on the chest wall, frequently a systolic murmur, and high systolic blood pressure. So it happens that these patients are usually referred to the cardiovascular specialist. Many of the papers written on the subject approach it from the point of view of a disorder of the cardiovascular system. This confuses the clinical picture and obscures the etiology of the condition. As a matter of fact, as I shall try to show, the cardiovascular syndrome is but one of several which these patients may exhibit.

The general symptomatology of patients with the cardiovascular syndrome has been described. Two types of individual stand out. First, the erethic type (1). In these patients vasomotor instability is most pronounced. Their cheeks are usually red, they flush easily, they have marked vertigo on change of posture and complain of frequent headaches. There is nothing characteristic about their build. This type of individual is greatly benefited by a tight abdominal binder. The second group may, for want of a better term, be called the splanchnoptotic type. They are men of spare habit, their complexion is sallow or pale, their chests are long and narrow, they have floating tenth ribs. In other words, they conform to what is often called the tuberculous habitus.

These soldiers not infrequently have gastrointestinal symptoms. In family history and in nervous symptomatology they correspond to the previous group. However, they are admitted to the hospital for gastrointestinal disorders. They complain of epigastric oppression after meals, belching, and vomiting. They may have spastic constipation. Questioning will always elicit typical cardiovascular symptoms, which have merely been thrust in the background by the dominating disturbance of stomach and intestine. I have as yet found no opportunity to study the functional disorder of the gastrointestinal tract in these patients. This is an important field for further study.

A typical extreme case of this type may be cited. A soldier was admitted to the hospital as a case of probable gastric ulcer. The chief symptoms were epigastric oppression and vomiting after the ingestion of all solids and liquids. The patient was placed on all the routine gastric treatments, including rectal feedings for five days, followed by a Lenharz diet, without any amelioration of the symptoms. He was transferred to the cardiovascular ward after about a month of such treatment. A careful history brought out all of the classical cardiovascular disturbances of neurocirculatory asthe-

nia in addition to the gastrointestinal symptoms. The patient in spite of his continuous vomiting was fairly well nourished. His pulse was rapid, his heart overactive. There was marked tremor of the hands and emotional instability. Slight exertion caused exaggeration of all the symptoms, as well as great fatigue. A very careful physical examination was made, after which the patient was assured that he had no organic disease. He was told that the control of his vomiting was in his own hands, and that he was expected to overcome it. Within a week, through persuasion, as well as through the use of military discipline, the gastrointestinal symptoms had disappeared; the tremor, breathlessness, tachycardia, and ready fatigue persisted, however.

Then there is the group of patients who are seen first by the psychiatrist. They are men with neurasthenia, psychasthenia, anxiety, neuroses, and sometimes with constitutional mental inferiority. These patients too usually present cardiovascular and sometimes gastrointestinal symptoms.

Least clearly defined is the respiratory group. In these patients extreme breathlessness is the predominating complaint. After insignificant exercise their respirations are forty, sixty or even eighty. At first sight they appear to labor under great distress. However, when their attention is distracted, when for instance they are asked to describe their trouble, they are able to employ long sentences without drawing a breath. They never exhibit cyanosis. In addition to polypnea these patients present the other signs and symptoms of neurocirculatory asthenia. Of course the cases do not always fall into one of the four large groups. There is a good deal of overlapping. Some symptoms of all four types are usually present in every patient; it is merely a question which dominate in each particular instance.

Before considering the bearing of these observations on the study of the etiology of neurocirculatory asthenia, it is necessary to consider briefly the theories at present under discussion. The theory that the symptoms are due to hyperthyroidism has been discussed in a previous paper (2). Frank hyperthyroid cases are excluded from the category of neurocirculatory asthenia by the definition of the condition. Most patients have had their symptoms for years. It seems improbable that a hyperthyroidism should have remained latent for so long a time without ever producing frank signs of Graves's disease. Moreover, we find no goitre hearts among these soldiers. The Goetsch test for hyperthyroidism, namely the subcutaneous injection of epinephrine, was tried in twenty-one consecutive cases. These will be reported in a subsequent communication. Six, or twenty-eight and six tenths per cent. of them, gave a positive reaction. I am not convinced that these six men have a latent hyperthyroidism, but granted that they have, there remain over two thirds of the cases with no evidence of hyperthyroidism. The same tests were carried out by Peabody and his associates at Lakewood, N. J. They found positive reactions in sixty per cent. of their series of sixty-five cases (3).

A popular hypothesis is that the symptoms are due to a toxemia. In support of this view is the

fact that most of the patients date the onset of their symptoms from some acute infection such as pneumonia or measles. The symptoms too resemble those of patients convalescing from acute infectious disease, as well as those of patients with incipient pulmonary tuberculosis. The facts as stated are only partly true. Careful inquiry will reveal in the vast majority of cases that some significant symptoms of the disorder existed before the onset of the acute infection, and that the latter served only to aggravate the symptoms, and to bring to light a latent defect. I believe that the same holds true in patients with early pulmonary tuberculosis who have cardiovascular symptoms. It will be recalled that many patients with neurocirculatory asthenia have what is called the tuberculous habitus. It is very probable that in such cases the tuberculosis is again only the exciting factor, exaggerating preexisting cardiovascular and nervous symptoms. A study should be made of the family histories and the previous histories of a series of such cases to establish this point.

Other infections show the same sequence. Thus I have observed a patient with uncinariasis and symptoms of neurocirculatory asthenia. After the hookworm infection had been eradicated, the soldier gained in strength and weight, but the fundamental neurocirculatory instability persisted. A history of rheumatic fever is more difficult of interpretation because of the known myocardial lesions occurring in this disease. Here again many soldiers will give a history of symptoms before the attack of rheumatic fever. In others, the symptoms occur some time after the infection; few show an apparent causal relationship. Myocardial lesions alone do not produce the symptoms of neurocirculatory asthenia. The functional capacity of the heart was tested according to Barringer's method (4) in a small series of cases, and was found to be normal (2). Musser (5) classed sixteen and three tenths of his cases as myocardial, using the failure of the pulse to return to normal within two minutes after exercise as his chief diagnostic criterion. I have not found this test to give an accurate index of myocardial involvement, nor even of the severity of the cases. Barringer too found this test unreliable.

Finally, it has been suggested that neurocirculatory asthenia is associated with an inherent neuropathic taint in the patient (5, 6, 7, 8, 9). This in my opinion approaches more closely the correct interpretation of the condition. Taking into consideration the family history and the personal history of the patient, as well as his general build and mental makeup, it becomes apparent that the constitutional type of neurocirculatory asthenia is but a manifestation of an inherent nervous instability, brought into sharp relief by the inability of the soldier to adjust himself mentally and physically to his rigorous military training.

Such in short is the picture of neurocirculatory asthenia as seen in the army. In what way does it differ from that seen in civilian practice? Why have we not paid more attention to this condition in the past? In almost all of the soldiers the symptoms dated back many years. It was only

when they were thrust into an environment in which they themselves were unable to regulate their lives that the symptoms became sufficiently accentuated to make them seek medical advice. Before their entry into the army they had always been able to follow the line of least resistance. They had held positions which demanded little physical exertion; they had quit work for a while when they had felt poorly, and so had managed to keep up. It had been more often worry or great emotional strain that had brought about a breakdown.

With a little care we shall discover many such cases among our patients. At present there is little that we can do for them except to regulate their lives, and to dominate them and so teach them selfcontrol. But it is important to recognize these different syndromes, to understand their common basis, so that we may elucidate many of the problems that still remain to be solved. The close relationship between neurocirculatory asthenia in adults and orthostatic albuminuria in children is again emphasized (2 and 9).

SUMMARY.

Among soldiers and civilians one frequently encounters persons with congenital, often hereditary nervous instability. This may manifest itself in different ways, giving what may be called a cardiovascular, a gastrointestinal, a mental, and a respiratory syndrome. These patients are unable to withstand unusual strains or stresses, be they physical or mental. In children one meets a similar condition in orthostatic albuminuria. It is essential to recognize the close interrelationship of these symptom complexes, and their occurrence in unstable individuals, who often conform to a distinct body type.

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808 WEST END AVENUE.

OBSERVATIONS ON GUNSHOT INJURIES OF THE HEAD.*

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(Concluded from page 234.)

Because of the earlier opinion that brain cases stood transportation poorly, we were allowed to keep our patients for a period of eight to ten days before evacuating them back to the rear. This retention period gave us an excellent opportunity to watch the result of our treatment, and to observe the clearing up of many preoperative neurological findings. Observations were made in a series of seventy-nine cases in which operation had been performed, of which records, more or less complete, were kept with the neurological and operative findings. While this series comprises cases of all degree; twenty-two were considered to be of a less serious nature, composed mostly of wounds which gave no neurological evidence of intracranial involvement and in which the operative investigation revealed nothing to indicate subdural involvement. Most of the remaining cases were of extensive brain lesions, associated with lacerations of venous

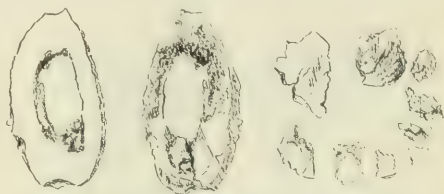


FIG. 11.—Bone block showing destruction of internal table with bone fragments removed from brain. There was no metallic foreign body in the brain, but these bone fragments were removed from a depth of five cm.

sinuses, combined lesions with frontal sinus, orbital or mastoid complications. Several were of brain abscess in which there had not been complete early operation. In this series there were thirteen fractures with intact dura, nine of which were complicated with either extradural or intradural hemorrhage producing compression symptoms of varying degree. Five deaths comprised the total mortality in this series as far as it has been possible to determine. One of these patients died from pneumonia two weeks after operation; one was lost during evacuation and could not be traced in either the evacuation or burial records but was recorded in my personal records as having died. One such patient recorded in my private records as probably being dead was found in the United States in good health. These results represent only the primary operative mortality, for at the present time the writer is unable to state whether any of these patients have subsequently died as a result of later complications. Reports of the final status in all cases have not yet been received. Judging from

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Treatment of Vincent's Angina.—Clement F. Theisen (*Albany Medical Annals*, July, 1919) finds that a strong solution of potassium chlorate, powdered alum, carbolic acid, glycerine and water is almost a specific in some cases. In very severe cases salvarsan both locally and intravenously is of great service, as is potassium iodide internally.

the reports we have on hand and from the many cases I have had the privilege of observing, I believe that the late complications following the complete operations we did at the front will not be numerous. In the examination of about two hundred such patients I have not observed a single brain abscess or cerebral hernia in any patient having had this complete early operation.

The following histories will serve to give some idea of the condition of these patients when received at the evacuation hospital and their subsequent progress:

CASE I.—Serial No. 40. H. C., sergeant 300th Infantry. Injured October 18, 1918; operated upon October 19th. Patient in a comatose condition; no history obtainable. Pulse 110. Pupils reacted to light, equal; nystagmus to right; did not move left leg or arm. Wounded in right parietal region; large bone defect; brain substance oozing. Operation was performed under local anesthesia, the scalp excised, and the skull injury removed *en bloc*; large dural laceration; much disorganized brain tissue extruded with many bone fragments. Several large fragments were removed from the lateral ventricle. Dichloramine-T was used; unable to completely close dura; scalp sutured. On October 21st general condition was good; reflexes $++$; Babinski —; hemiplegia, left extremities and lower face; speech defective as though mouth was full—paraphasia; able to answer some questions



FIG. 15.—Piece of shell which had penetrated helmet and lodged in skull.

2nd gave name and address of father; nystagmus to right. On October 24th pulse was eighty; some rigidity of the neck; no Kernig; cough; patient complained of pain in the chest; neurological findings the same. On October 26th general condition was good and neurological findings the same. Patient was evacuated to a base hospital.

The report from General Hospital No. 11, April 25, 1919, was as follows: "This patient is still in this hospital. He is about to leave on a thirty day furlough. Entered as a stretcher case on April 3, 1919, and had very little use of left arm or leg. He very rapidly improved so that at the present time he is able to walk two and one half miles without undue fatigue and during the past two days has played baseball. Examination on April 16th showed cranial defect in the right parietal region. Mental condition normal. Cyanosis of the left hand and edema of both feet. Motor weakness of the left arm. Sensory hypesthesia of the left arm. Coordination poor. Aphasia, none. Apraxia of the left arm. Astereognosis of the left arm. Reflexes increased in the left arm. Cranial nerves normal. Taste, however, is more acute on the left side of the tongue."

CASE II.—Serial No. 27. F. K., private, 309th Infantry. Injured October 15, 1918, at eleven a. m. Operated upon on October 16th at two p. m. History: After injury walked to dugout, became unconscious there, and remembered nothing until he found himself in the hospital. Wounded in right frontotemporal region, with several other

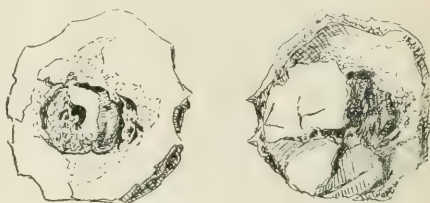


FIG. 16.—Piece of bullet lodged in skull.

wounds in back, thigh, and arm; left lower face involved; considerable weakness of left arm and leg; reflexes $++$, Babinski —; had epileptic seizure on operating table. Operated upon under local anesthesia; scalp excised and bone removed *en bloc*; disorganized brain and bone fragments removed from temporal lobe at depth of four cm.; dichloramine-T; dura closed; scalp sutured. General anesthesia given for débridement of left arm, which was fractured; from back, large foreign body was removed, scapula fractured and tract of eighteen inches which had odor of gas infection opened and cleaned. Débridement for large wound of thigh. On October 18th the general condition was good, although patient had four epileptic attacks during the night. On October 22d patient had only one attack occurring during air raid, and general condition was good. On October 24th sutures were removed; arm and leg stronger; face clear; mental condition good; no attacks for two days; evacuated to base. On December 14th patient was in good condition with no weakness of arm or leg and no epileptic attacks; being evacuated to United States. No subsequent report.

CASE III.—Serial No. 13. G. L., private, Company F, 308th Infantry. Injured October 2, 1918, at 7:20 a. m. Operated upon October 2d at ten p. m. Helmet not penetrated; patient semiconscious; pulse fifty-four, full, bounding; blood pressure 140; face badly swollen; left eye destroyed; motor and sensory examination unsatisfactory as

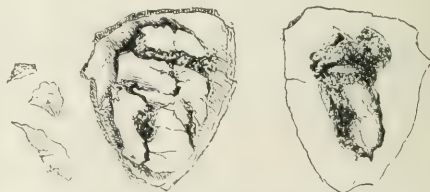


FIG. 17.—Extensive fragmentation of internal table with only three small pieces driven through dura.

patient was difficult to examine. X ray report: fracture frontal, temporal bone and orbit. Wounded in left frontal region; entrance above left zygoma; exit right frontal region. Operation performed

under local anesthesia; scalp wounds excised, uncovering left frontal region; bone shattered; both frontal sinuses destroyed; left orbital plate of frontal destroyed and fragments driven into orbit and eye; large hematoma removed from under both frontal lobes; both frontal lobes pulpy and disorganized; scalp sutured; dichloramine-T; left eye enucleated. On October 3d patient was comfortable; mental condition fair. On October 6th patient was missing, may have been evacuated; unable to find burial record; noted in personal records as dead. On April 25th, 1919, patient* was found in General Hospital No. 11 in good condition. Report from this hospital is as follows: "Admitted to General Hospital No. 11, January 18, 1919. Patient was a walking patient in good condition when he arrived. His examination showed mental condition normal. Cranial nerves negative except the second (absence of left eye). Sensory disturbances, none. Abnormal reflexes, none. Eye examination; vision, right 20/20, left absent. Upon admission patient had a very large defect in the left frontal region and absence of the left eye. Cranial defect was repaired by Major Frazier on February 20th with

could not be completely closed; scalp sutured. On October 29th general condition was good; mental condition improved, patient being able to recognize objects; gave address of father; some weakness of right arm and leg; nystagmus absent; reflexes ++; Babinski doubtful. On November 4th general condition was good; mental condition improving; neurological symptoms the same; evacuated to base.

This patient is still in General Hospital No. 11. He shows a large cranial defect in the left frontoparietal region. Mental condition normal. General brain symptoms, convulsions, etc., none. Motor, slight weakness of right arm. Sensory, none. Coordination, normal. Aphasia, none. Astereognosis, none. Tendon reflexes increased generally. Right cremasteric and right abdominal absent. Cranial nerves normal. Eye examination shows normal fields and fundi. Vision 20/20 each eye. Patient feels well and is able to engage in the usual activities such as playing ball, etc. Is scheduled for a cranioplasty when he returns from pass.

MECHANICAL AND PHYSIOLOGICAL CONSIDERATIONS IN TONSILLECTOMY.*

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This paper is based upon a dogmatic premise that though we have not learned the functions of the tonsil, its position at the gateway of the respiratory and digestive system is to enable it to perform a useful purpose. We have passed through a period of wholesale enucleations of the tonsils. Its undoubted guilt on many counts has been the stimulus, the little that we know of the definite physiology of the tonsil, with the occasional spectacular manifestations of morbidity, easily induce conclusions that the tonsil is of no value. One could readily draw the conclusion from the statements made by certain dogmatists that its only function in the organism is to invite disease.

We see in the tonsil in the early years of life a startling picture of developmental change. In normal children, in connection with the lingual tonsil and the nasopharyngeal adenoids, this pharyngeal ring of lymphatic structure is always of considerable size. Prominent in the early years, it undergoes a retrogressive change, but there remains always some lymphatic structure throughout the ring. The thought has come to me of the possible interrelation, either or both interactivation and interinhibition between this structure and the thymus and the thyroid in the early years of life particularly. How far this has been investigated, I do not know. Can we dare deny, then, that this pharyngeal lymphatic ring, over which pass all ingested liquid, solid or gaseous materials, does perform a vital function in the body economy?

When, however, the tonsil becomes diseased, it has a different significance and our aim is to regain health. The issue then arises whether, with the data that we have, it is advisable to totally eliminate the offending tonsil at the expense of its unknown physiological activity and of the mechanical effects

*Read before the North Branch Philadelphia County Medical Society, January 27, 1919.



FIG. 18.—External table showing only a small nick, with complete destruction of internal table. Bone fragments were removed from a depth of four cm. in the brain.

extremely satisfactory results. The entire supra-orbital ridge which previously was missing was replaced by a shell of bone taken from the parietal region, its margin being shaped so as to make a smooth even brow, hardly distinguishable from that on the normal side. The orbital roof, however, was not replaced."

CASE IV.—Series No. 57. T. K., corporal, 312th Infantry. Injured October 26, 1919. Operated upon October 27th. Patient comatose; unable to be aroused. Reflexes ++; Babinski—; eyes react to light—vertical nystagmus, slow, coarse; no history obtainable. X ray examination showed fracture of frontal bone. Large lacerated wound above left eye extending to junction of frontal and parietal bone. Operated upon under local anesthesia; scalp wound excised; large amount of brain substance oozing from skull lesion; bone removed *en bloc*; large dural laceration; several fragments of internal table removed from surface of brain; disorganized brain substance removed by catheter suction and irrigation; several bone fragments removed at a depth of five cm.; dichloramine-T; dura

of such an operation, *per se*; or to adopt a less radical measure. There has been accumulated a wealth of data from which it is possible today to draw some conclusions. That there is a reaction from the intensive total enucleation campaign of the past years can hardly be disputed. This raises the suspicion that the intelligent thinkers in our profession are meeting with experiences that are modifying their former positive opinions. Their experiences are pictured in the statistics that have been given us of series of cases of complete capsular enucleations.

Kenyon gives five per cent. as the proportion of patients who show practically no deformities of the pillars and soft palate. Other statistics offer as low as two per cent. In my own observation, this latter percentage is more nearly correct. It is of course accepted that the operation in a very large proportion of cases of diseased tonsils relieves the condition for which they were removed. It is equally certain that a number of patients complain of various discomforts in the throat and adjacent areas, which they attribute to the operation. A number show defective speech, while the injurious effects upon the singing voice in many cases is well recognized. These evil effects are understood when the mechanophysiological structures of the fauces is studied.

The human throat must be recognized as a marvelously organized structure to provide for nasal and oral respiration, deglutition, and the wide range of tone production, of which it is capable under human cerebral activation. The palatoglossus and the palatopharyngeus are muscular connections between the soft palate and the tongue and the lower areas of the pharynx. The elastic lymphatic tonsil has a trabecular framework of connective tissue which springs and is anchored to the tonsillar surface of the capsule. This capsule is loosely attached to the areolar tissue lying between it and the superior constrictor. The capsule and its adjacent tonsil are anchored along the free margin of the palatoglossus and the palatopharyngeus. It can be seen that the tonsil swings as an elastic bumper between the two pillar muscles, and by virtue of its looser attachment to the superior constrictor, permits an accommodation between these muscles necessary in their varying contractions.

It also serves to support and hold out the pillars in their advanced positions in the pharynx. The ablation of the tonsil and its capsule obliterates this function, the arches atrophy, dwindle into the lateral walls, widen the faucial space, lose their own direct function, and at the same time lessen their action upon the soft palate, the tongue and the larynx. It is only as these functions are compensated for by other tissues that the voice retains its quality. Even so, the throat tires more quickly than under normal conditions. It should be recognized in this connection that a person with hypertrophied or diseased tonsils is undoubtedly benefited in many ways by the complete capsular enucleation. Their speech is usually more clear than it was, but this should not blind us as to whether the improvement is only a proportionate one and not the best obtainable.

What then shall be done with a diseased tonsil or one which causes other illnesses? Naturally some interference must be exercised as we no longer have a normal throat. It is generally conceded that the crypts are the main factors in the inception of disease. All tonsils have crypts, and the crypts constantly show the presence of micro-organisms. There are no lymphatic glands in the body so constantly exposed to infection as the tonsils. The conclusion is inevitable that they must have a neutralizing and destructive effect upon the ever present organisms, else the throat would be never free from disease. It is when the crypts become diseased and their function lessened that infection occurs and operative interference must be considered.

The late Dr. Hudson Makuen, a recognized authority on voice physiology, condemned the indiscriminate removal of the tonsils. He advocated an effort to obliterate the crypts, and failing this, to remove the tonsil and capsule completely. Theoretically, the first proposition is good, but we all know how difficult it is to accomplish this result. Too frequently, with this procedure, the outlet of the crypt is sealed and the later condition is worse than the first. That he should have passed from this conservative to the ultraradical procedure has seemed to me illogical. It would be good reasoning, if it was impossible to preserve some tonsil and its capsule and at the same time render the crypts innocuous.

I have for some time advocated the retention of a shallow layer of tonsil and of course the capsule. Some crypts will remain, but they are shallow and usually return to health. Occasionally I have had to give them further attention, a wedge shaped piece removed from their length will suffice. The absence of the greater degree of unyielding cicatricial tissue that forms when the capsule is removed, has appealed to me. Scar tissue is as pernicious in the fauces as anywhere else in the body. Despite all that has been stated, I would not want to say that there are not some cases in which a complete enucleation is inadvisable. It is a plea for the skillful removal of the major portion of the tonsil in most cases and the removal of tonsil and capsule in a small minority.

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NEUROSYPHILIS.

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The history of syphilis of the nervous system began shortly after the first great epidemic of syphilis at the end of the fifteenth century. In 1834 Lallemand, conclusively proved that syphilitic involvement of the meninges and brain substance did occur. Two discoveries have increased our present knowledge of the pathology of syphilis of the nervous system; the first was a description of the gummatous character of specific processes by Virchow and the other was the involvement of the

cerebral arteries due to lues, described by Heubner. The discovery of the *Spirochetæ pallida* by Schaudinn in 1905, the discovery of the Wassermann reaction in 1909, and later the performance of the Wassermann reaction on the spinal fluid have increased our aids in the diagnosis of syphilis and have placed our treatment on a more scientific basis. Previous to 1910, the *Spirochetæ pallida* had been found only in the brain and spinal cord of syphilitic fetuses, but now the spirochetæ can be demonstrated in the brain of paretics and in the spinal cord of tabetics. It is now definitely known that all nervous manifestations of syphilitic origin are the result of either inflammatory or degenerative reactions due to the invasion of the *Spirochetæ pallida*, either in the cord, brain, coverings of the brain and cord, and bloodvessels supplying these parts.

FREQUENCY OF OCCURRENCE.

Nonne states that out of 5,649 nervous patients seen in his private practice from 1903 to 1907, he diagnosed syphilis of the nervous system eighty-eight times. Hjelmsen states that syphilis of the nervous system develops in from fifteen to twenty-five cases out of every 1,000 cases of syphilis. Reumont (1) states that in a series of 3,400 cases of syphilis, he found syphilis of the nervous system in 290. According to Fordyce (2) twenty-five per cent. of all syphilitics are candidates for nerve syphilis. Keyes, Jr., states that out of his 2,500 patients, 504 (twenty per cent.) were afflicted with syphilis of the nervous system, and of all the late lesions forty-two per cent. were of the nervous system. From these statistics we can readily see that syphilis of the nervous system is not of infrequent occurrence and occurs about twice as often as tumor of the brain and multiple sclerosis.

TIME OF OCCURRENCE.

Naunyn, from observation in forty-five cases of his own and 209 collected from the literature, came to the conclusion that syphilis of the nervous system appears most frequently in the first year after the infection. Examination of the cerebrospinal fluid in the early secondary stage by Wile and Stokes (3) showed some evidence of syphilitic invasion of the central nervous system in from sixty to seventy per cent. of cases at this period. This early invasion of the central nervous system may subside or many give rise to characteristic syphilitic involvement of the meninges, or of the arteries that result in the so-called cerebrospinal syphilis. According to Naunyn, almost fifty per cent. of all specific nervous affections occur within the first three years; from this period on, there is a gradual diminution in the frequency, from year to year. This statement has been confirmed by other observers.

I have seen a few patients with syphilis in whom nervous manifestations developed within six to eight months after their initial lesion. Brain syphilis may also appear very late. Bruns describes a case of a large brain gumma which developed forty years after the infection. Ten years after the initial lesion lues of the nervous system is fairly infrequent, according to Patrick and

Nonne. Tabes and paresis are peculiar both in their pathological characteristics in that they do not develop for at least three or four years after the infection of the individual. In general we may say that syphilis of the nervous system can develop in any stage of syphilis and that the tertiary stage is not by any means the favorite one.

PATHOLOGY OF SYPHILIS OF THE NERVOUS SYSTEM.

The pathological changes that occur in syphilis of the nervous system may be classified under four headings: 1, Meningeal neurosyphilis; 2, vascular neurosyphilis; 3, parenchymatous neurosyphilis and, 4, combinations of the first three (4) as: a, meningo-vascular neurosyphilis; b, meningoparenchymatous neurosyphilis; c, vasculoparenchymatous neurosyphilis, and d, meningovascularoparenchymatous neurosyphilis. Warthin in writing on the new pathology of syphilis (4) states that his experience leads him to believe that probably in every case of syphilis there will be present in the brain and cord the same scattered perivascular infiltrations of lymphocytes and plasma cells found in all other organs and tissues. Such infiltrations represent simply the local reaction to the presence of spirochetes; and their relation to paresis and tabes may be simply one of degree with reference to the number of infecting organisms, the degree of intoxication produced and the resulting destruction of nerve tissue and functional disturbance produced.

DIAGNOSIS.

Before instituting treatment for syphilis of the nervous system a complete history of the case should be taken, a thorough physical examination made, and serological tests of the blood and spinal fluid performed. The history should include date of initial lesion, and the date, type, and amount of previous treatment given. A thorough physical examination is essential in determining the character and intensity of the treatment. The examination should include the weight of the patient, the examination of the heart, changes in the blood and bloodvessels, the taking of the blood pressure, the condition of the lungs, and the condition of the kidneys as determined by a twenty-four hour specimen of urine.

The neurological examination should include the examination of the eye fundus, reflexes (knee and achilles tendon reflexes particularly), gait, sphincter disturbances, sensory disturbances, presence or absence of tremors, mental capacity of the patient, and the reaction of the pupils. The symptoms of syphilis of the nervous system are not characteristic, in that there is no symptom or group of symptoms which might not be called forth by other causes, such as tumors of the brain and spinal cord and multiple sclerosis. The symptoms usually found in patients with syphilis of the brain as outlined by Collins (5) are as follows:

1. Headache is the most constant symptom of all syphilitic lesions of the brain. If severe it is usually characteristically nocturnal in type, but greatly relieved during the day.

2. Alteration of personality. This is often slight showing itself only in inaccuracy or inattentiveness

of mind, often diagnosed as neurasthenia and in the graver conditions passing to complete insanity.

3. Paralysis of the cranial nerves. Involvement of the motor oculi are the most frequent, causing diplopia and ptosis. Any or all of the cranial nerves may be involved in the basal meningitis, deafness and blindness being not unusual results. Arterial involvement of the hemispheres may lead to hemiplegia. Apoplexy or hemiplegia developing before the age of forty-five is usually due to lues. Irregularity of the pupils and the Argyll-Robertson pupil are rare with the early lesions of the nervous system but are quite common with the later lesions.

4. Insomnia.

5. Disorders of motor function—shivering attacks, stiffness, convulsions, paralysis, pain, aphasia.

SYMPTOMS AND SIGNS OF SPINAL CORD LESIONS DUE TO SYPHILIS.

1. Romberg sign (swaying of the body with the eyes closed).

2. Absent knee jerks and Achilles tendon reflex.

3. Lancing pains.

4. Staggering gait—ataxic movements of lower extremities (ataxia of upper extremities is relatively rare).

5. Argyll-Robertson pupil (reacts to accommodation but not to light).

6. Sphincter disturbances—difficulty in starting urination, incontinence, moderate retention, frequent urination, relaxation of the rectal sphincter.

7. Sensory disturbances. Hypalgesia and delayed pain sensation are the rule. The perception of heat may be diminished and cold felt more acutely than by normal individuals. There is distinct hypotonia which may and often does precede the ataxia and is therefore of great diagnostic importance.

8. Visual disturbances—due to paralysis of the external muscles and give rise to squint or double vision. A transient ptosis may precede an almost complete ophthalmoplegia. Atrophy of the optic nerve with defect of vision or blindness may be the first cause of the patient seeking advice.

9. Paresthesia and numbness of feet and lower extremities.

10. Girdle sense.

11. Loss of sexual desire. Impotence may be an early or a late symptom. In some cases impotence is associated with anesthesia of the external genital organs; in some it is associated with atrophy of the testicle. Diminished sexual power occurs in very many cases and absolute loss of sexual power in about sixteen per cent.

12. Charcot joints—enormous swelling of the joint with little or no increase of synovial fluid. The joint is enlarged and remains normal in color.

13. Hemiplegia.

14. Deafness.

This group of symptoms forms the symptom complex seen in syphilis of the brain and cord. In each case all symptoms and signs mentioned may not be present, but if a few are present they may direct our attention to probable syphilitic involvement of the nervous system which can be either proved or disproved by further examination of the blood and spinal fluid.

WASSERMANN REACTION OF THE BLOOD.

A positive Wassermann reaction in the blood signifies an active or latent syphilis (cancer, scarlet fever, relapsing fever, measles, malaria, auto-intoxication, cases of diabetes in which acidosis is present, having been excluded.) The reaction cannot tell us that in a patient with an organic nervous disease, whether it is of syphilitic origin or not. A negative Wassermann reaction does not absolutely exclude the possibility of syphilitic infection. A negative blood Wassermann with a positive reaction in the spinal fluid does not necessarily exclude the possibility of syphilitic infection of internal viscera. A negative reaction can be used in differential diagnosis with great probability against the existence of general paralysis, for the blood of paralytics reacts positive with rare exceptions. In cerebrospinal syphilis the blood Wassermann reaction is positive in seventy to eighty per cent. of cases. In tabes (not combined with paresis) the blood Wassermann reaction is positive in sixty to seventy per cent. of cases. In paresis or taboparesis the Wassermann reaction is positive in ninety-five to one hundred per cent. of cases.

CEREBROSPINAL FLUID.

The last step in making the diagnosis of syphilis of the nervous system depends upon the examination of the cerebrospinal fluid. The other aids in the diagnosis are not conclusive in themselves. Some of the symptoms outlined in syphilis of the nervous system may occur in diseases of the nervous system of nonsyphilitic origin and as the blood Wassermann is not positive in every case of syphilis of the nervous system (with the possible exception of general paralysis), our main reliance lies in the examination of the spinal fluid.

TECHNIC OF LUMBAR PUNCTURE.

The patient should be placed on his side with the legs flexed on the thighs and the thighs on the abdomen and with the head bent forward, the chin touching the sternum. This posture helps to widen the interarcual spaces. The skin is disinfected with tincture of iodine. A line connecting both iliac crests is then drawn with the iodine applicator and this locates the level of the fourth lumbar spine. The skin at the site of puncture is then anesthetized with ethyl chloride or a half per cent. solution of novocaine. The site of puncture in an adult is in the space above the fourth lumbar vertebra and just to the side of the median line and the point of the needle is directed upward and inward toward the median line. In children the point of puncture is made in the median line and one interspace below that in the adult. The puncture may be performed with the patient in the sitting position, but it is more dangerous than when performed in the horizontal position, especially in a case of brain tumor and particularly that of the posterior fossa and which may result in instant death.

A spinal puncture done in the sitting position is more likely to be followed by headaches and other cephalic disturbances. The amount of fluid withdrawn depends upon the purpose for which the puncture was performed. For diagnosis five c. c. is sufficient for chemical, cytological, bacteriologi-

cal, and serological examinations. If more than this amount is withdrawn for the purpose of having the fluid examined by several laboratories to check up results, I have found that the patients experienced more disagreeable complications (consisting of headaches, dizziness, nausea, vomiting, pains in the lower extremities) following the diagnostic puncture than those which followed an ordinary intraspinal treatment, in which the amount of fluid withdrawn was replaced by a similar amount of salvarsanized or mercurialized serum. These complications are dependent upon the sudden lowering of the intracranial pressure, the position of the patient, pressure of the spinal fluid and rapidity with which the fluid is withdrawn. In the last few months, in all my diagnostic punctures, I am replacing the amount of spinal fluid withdrawn with an equal volume of tepid normal saline solution. In the majority of cases the reactions have been less pronounced than formerly. The patient should be in bed for at least twenty-four hours after the puncture and fewer complications will occur if this rule is followed. The headache following lumbar puncture is immediately relieved if the patient assumes the horizontal position.

Russell G. MacRobert (6) explains the cause of lumbar puncture headache on the theory that if the puncture hole is not blocked it is because the delicate arachnoid tissue clings around the departing needle and its hole is pulled into and through the hole in the dura. All the fluid secreted by the choroidal glands during seven or eight days, the time seemingly necessary for the hole to close by tissue growth, will be lost by the leakage into the epidural space. According to the theory, the amount of fluid withdrawn at the time of the puncture is not an indication of what may be lost if the puncture hole does not become properly occluded when the needle is withdrawn.

INDICATIONS FOR LUMBAR PUNCTURES IN CASES OF SYPHILIS.

1. All cases coming under observation after the primary stage has passed as a diagnostic procedure. This includes patients who have been treated and latent or tertiary cases where treatment has been neglected.
2. Patients who have been under active treatment for eight to twelve months, with no improvement in the blood Wassermann.
3. As a therapeutic agent to relieve severe headaches in cases of cerebral syphilis.
4. To differentiate between involvement of the nervous system of syphilitic and of nonsyphilitic origin.
5. To introduce medicaments into the spinal canal.
6. Examination of the cerebrospinal fluid as a guide in treatment.
7. As a diagnostic measure before discharging a patient as cured.

EXAMINATION OF THE CEREBROSPINAL FLUID.

Normal fluid.—Pressure in vertical tube ninety to 130 mm. of water, globulin reaction negative; five to six lymphocytes to the c. mm.; Wassermann reaction negative after using .2 to one c. c. of the fluid.

Examination of the cerebrospinal fluid has been proved of value in the diagnosis and differential diagnosis of tabes, paresis, and cerebrospinal syphilis. The five reactions which help to differentiate syphilitic from nonsyphilitic diseases of the nervous system and also to differentiate tabes, paresis, and cerebrospinal syphilis from one another are:

1. Wassermann reaction of the blood, and the
2. spinal fluid examination which consists of a, total cell count; b, reaction for globulin; c, Wassermann reaction, and d, Lange's colloidal gold test.

SPINAL FLUID IN TABES.

The pressure of the fluid is increased particularly during a crisis or other acute stages. The globulin tests are generally positive (ninety to ninety-five per cent. of cases). Fehling's solution is always reduced. The total cell count is generally above normal in eighty-five to ninety-five per cent. of cases. The number of cells vary between thirty-seven and seventy-five to the c. mm. Of the cells present, over ninety per cent. are small lymphocytes. The cerebrospinal fluid Wassermann reaction after the original method (.2 c. c.) is positive in about twenty to sixty per cent. With larger quantities it is positive in eighty-seven to 100 per cent. of cases. There is no definite or diagnostic reaction in tabes as in paresis with Lange's colloidal gold test.

IN TABOPARESIS.

Before cerebral symptoms develop, the persistently positive Wassermann reaction with blood and fluid, and particularly the former, in spite of active, energetic treatment, are of great importance. A patient with tabes showing no improvement in the blood Wassermann or spinal fluid examination, should be carefully examined and watched for evidence of general paralysis.

PARESIS.

The pressure of the spinal fluid is increased especially during the acute stages. The globulin tests are positive in ninety-five to 100 per cent. of cases. Sugar content is normal or slightly decreased, Fehling's solution being generally reduced. The cells are increased in ninety-five to ninety-eight per cent. of cases; the lymphocytosis is usually marked; number of cells usually found is thirty to 100 per c. mm., or even higher. The greater proportion of the cells are small lymphocytes, but plasma cells and large lymphocytes may also be found. The spinal Wassermann reaction is positive in ninety-seven to 100 per cent. of cases, and is but slightly influenced by vigorous treatment. Lange's colloidal gold test usually yields a characteristic and typical paretic reaction and is of great value in making a diagnosis of this condition.

CEREBROSPINAL SYPHILIS.

Pressure of the fluid is increased. The globulin tests are positive in fifty per cent. of cases. In the meningeal form the total cell count is always high, ranging from eighteen to 1,000 cells per c. mm., the majority of cells are of the lymphocytic variety. In the endarteritic variety the cells are normal or but slightly increased. In the gummatous form the number of cells are dependent upon the extent

of meningeal involvement. The Wassermann reaction of the fluid with .2 c. c. is positive in twenty per cent. of cases. With larger quantities of fluid the Wassermann reaction is almost always positive. The colloidal gold test does not yield a specific reaction.

CEREBROSPINAL FLUID AS A GUIDE IN TREATMENT.

In cases of tabes, paresis and cerebrospinal syphilis receiving treatment with salvarsan (intravenously or intraspinally), with mercury and iodides; the influence of such treatment upon the total cell count, globulin reaction, Lange's colloidal gold test and upon the blood and spinal Wassermann reaction serve as indicators as to the condition of the patient and help in forming a prognosis. The cells are usually first influenced and gradually diminished in number, later the protein content diminishes and the Wassermann reactions are the most difficult to influence and are the last to disappear as a cure is effected. The five reactions do not help solve all the questions of diagnosis, for in a few cases the blood of a general paralytic may show negative and in a tabetic all five reactions may be negative. The diagnosis of syphilis of the nervous system must be made on the history, physical examination, blood and spinal fluid examinations and not on one or two symptoms. It is the entire picture that makes the diagnosis.

TREATMENT.

The opinion held today by such syphilographers as Fournier, Koposi, and Neumann, and by such neurologists as Heubner, Gilbert, and Kuh, is that in those individuals who have had no antispecific treatment or insufficient treatment syphilitic involvement of the nervous system is more likely to develop. On the other hand, Collins, of New York, in a study of ninety-six cases of tabes concludes that a thorough treatment of syphilis neither prevents nor postpones the development of syphilitic nervous disease, which occurs later rather than earlier, in cases not thoroughly treated. Kron, as a result of his observation of tabes among women, came to the conclusion that antispecific treatment has no value in the prevention of nervous specific diseases. I have seen a few patients who had received thorough and energetic treatment during the secondary stage of the disease and obtained a negative Wassermann reaction in a few months. Thinking they were cured they neglected to take further treatment. In a few months they returned with clinical evidences of cerebrospinal syphilis—and the diagnosis was substantiated by a spinal fluid examination.

In thirty-five cases of paresis, which came under Schuster's observation, there were three in which the patients had never received antispecific treatment (8.6 per cent.), twenty-one had taken only one course of treatment (sixty per cent.), five cases (14.3 per cent.) two courses, and six (17.1 per cent.) had received from three to none courses of treatment. Even though authorities disagree on the value of antispecific treatment in preventing involvement of the nervous system—we should not conclude from these observations that syphilis in whatever stage it is seen should not be thoroughly and energetically treated. While all cases of syphilis

of the nervous system are due to the activity of the *Spirochetæ pallida*, the doses and the methods of administration of our therapeutic agents are dependent upon the localization of the syphilitic process whether in the meninges, brain, cord, and blood-vessels, by the stage of the disease, the condition of the heart, the changes in the blood and blood vessels, the blood pressure, condition of the kidneys as evidenced by a twenty-four-hour specimen of urine and by the patient's general condition.

Before taking up the treatment of neurosyphilis, I wish to report two cases, illustrating a few of the reactions which may occur following antispecific treatment.

CASE I.—R. V., aged thirty-four, married, laborer, born in Italy. Had been in United States six years.

Family history.—Wife had had three miscarriages.

Personal history.—Had gonorrhea sixteen years ago and a chancre fourteen years ago. Treated for about two years in Italy with weekly injections of calomel. Had about seventy injections in all. Felt fine for ten years, then began to have pains in the right knee. About a year ago he received four injections of mercury salicylate; which treatment was followed by some improvement. Stopped treatment because he could not afford to continue. Had had no pain, but has had numbness of legs ever since, and tired easily. Had worked every day.

Physical examination.—Thin, pale, no rash, mucous patches or condylomata. Had inguinal adenopathy. Loss of pupillary reflexes to both accommodation and light. Marked swaying with eyes closed. Gait ataxic. Muscular sense fair. Complete loss of knee jerks. Wassermann on August 17, 1918, four plus.

Treatment.—On August 22 and 29, 1918, he received intravenous injections of diarsenal .4 gram. A half hour after he received the second injection of diarsenal—forty c. c. of blood was withdrawn and the serum was prepared according to the Swift-Ellis method.

August 30th.—Lumbar puncture done. Twenty-five c. c. spinal fluid withdrawn and thirty c. c. of salvarsanized serum allowed to run into the spinal canal by gravity. No reaction followed. Spinal fluid Wassermann two plus. Total cell count fifty, globulin negative.

September 5th and 12th the patient received intravenous injections of diarsenal .4 gram., a half hour after receiving the fourth diarsenal injection (September 12th) forty c. c. of blood was withdrawn and the serum prepared according to the Swift-Ellis method. No difficulty was encountered in entering the spinal canal the next day, and the serum was slowly introduced by gravity.

September 14th.—The patient vomited about fourteen ounces of greenish fluid, complained of pains in limbs and headache. Had a marked diaphoresis. Appeared very listless. Voided thirty-six ounces Saturday morning. Had no bowel movement. During the night complained of pain in limbs, back of neck, and head.

September 15th.—No change in condition. Did not urinate or defecate.

September 16th.—Catheterized at 3.30 a. m.—seventy-two ounces of urine obtained. Soap suds enema given. Condition the same.

September 17th.—Patient became irrational and got out of bed. Appeared very drowsy and listless. Had to be catheterized every twelve hours and receive a daily enema.

September 18th and 19th.—Patient appeared more comfortable and quieter, though he still had paralysis of bladder and rectum. He returned home on the 20th, without our consent, and was told to return daily for catheterization. He has not been seen since.

CASE II.—G. P., aged thirty-six. Shoemaker, Italian. In United States eleven years.

Previous history.—Had gonorrhea fourteen years ago. Denied luetic infection.

Present history.—Pains in arms and legs and occasional pains in back.

Physical examination.—Scar under foreskin—cauterized chancre. General adenopathy. Pupils reacted to light and accommodation. Gait normal. Right foot deformed from a burn. Reflexes present. Pigeon breasted. Heart and lungs normal. Wassermann, August 20, 1917, four plus. Had three intravenous diarsenal injections at the beginning of his treatment. Between September 20, 1917, and December 19, 1918, he received forty-eight injections of mercury salicylate, one to two grains, and increasing doses of iodides internally.

December 15th.—He had another Wassermann test, which still showed a four plus reaction. We then decided to give him a course of salvarsan injections before doing a lumbar puncture.

December 26th.—He received his first injection of diarsenal .4 gram. A few hours later he had a chill, followed by vomiting. He did not feel well, had a headache and was brought to the hospital and put to bed. He appeared to be in a semicomatose condition. His urine was negative. On going over him we found that his pupils sluggishly reacted to light and that he had absent knee jerks. A spinal puncture was then performed which showed a three plus Wassermann. We immediately started in on intraspinal treatments of mercurialized serum and his improvement became noticeable at once. Treatment was continued and at the last report the patient felt much better.

Case I is the only one in our series of several hundred cases in which intraspinal therapy was followed by such a marked reaction. In the majority of our cases, seen both in private and dispensary practice, improvement both clinically and serologically has followed intraspinal therapy. I shall report our results in another contribution.

As has been stated slight pathological alterations in the spinal fluid have been found in the early secondary stage of syphilis in forty per cent. of cases as observed by Nonne and Mantoux to ninety per cent. as observed by Gennerich. Wile and Stokes believe that in every case of secondary syphilis there is some involvement of the central nervous system. In the majority of cases there is an involvement of the meninges which is readily controlled by energetic antispecific treatment. In Dreyfus's series of cases the pathological

changes of the fluid persisted in about twelve per cent. of the cases (7). In the second or third year of the disease—cases showing involvement of the central nervous system—a symptomatic cure can usually be obtained by active and persistent treatment. In this type of case the involvement is usually meningeal and is exudative in character and not attended by actual destruction of nerve tissue as is seen in later lesions.

THERAPY OF SYPHILIS OF THE NERVOUS SYSTEM.

There are three methods of administering salvarsan in the treatment of syphilis of the nervous system, namely: intravenously, intraspinally, or a combination of both. Intravenous administration of salvarsan can be employed in early cases of cerebrospinal syphilis (meningitis, meningomyelitis, meningoencephalitis), early cases of tabes, syphilitic epilepsy, and secondary cases of syphilis showing involvement of the cerebrospinal fluid without nervous symptoms. The intravenous administration of salvarsan should be first tried in these classes of cases, for the improvement both clinically and serologically is fairly rapid under intensive treatment. Patients not influenced by intravenous injections of salvarsan combined with intramuscular injections of mercury and internal administration of iodides, should then receive both intravenous and intraspinal injections of salvarsan. While the intraspinal treatment of syphilis of the nervous system can be employed in all forms of the disease, it is in the parenchymatous types in which it has its greatest field of usefulness, especially in cases of tabes and paresis. In these latter cases I usually employ a combination of intravenous and intraspinal injections.

DOSE.

The intervals between the intravenous injections of salvarsan depend upon the urgency of the case, reactions following the injections (including the effect on the kidney) and upon the general condition of the patient. In very urgent cases, where heroic measures are indicated salvarsan can be administered intravenously in .2 to .3 gram doses every second or third day. (Neosalvarsan substitutes must be employed in one third larger doses.) This procedure can be maintained until three to four grams of salvarsan have been given. Intramuscular injections of mercury salicylate (One to two grains) can be given every five to seven days associated with the internal administration of iodides especially in cases of the gummatous types. In the more chronic cases salvarsan can be administered in .4 to .6 gram doses every fifth day until eight to ten doses have been administered. Mercury and iodides should be given in the interval between courses of salvarsan. After a course of fifteen mercury injections the patient should be given a rest of two to four weeks and then both the blood and spinal fluid should be examined. After these examinations have been made the treatment is resumed and the amount and intervals of treatment depend upon the nature and urgency of the symptoms. Our aim is to obtain a clinical as well as a serological cure. The technic employed in giving salvarsan intravenously has been de-

scribed by the author (8). There are now in vogue three principal methods of intraspinal therapy—the Swift-Ellis method, the Ogilvie method and the use of mercurialized serum. The first two are salvarsanized serum preparations.

METHODS OF INJECTION.

Swift-Ellis method.—One hour after the intravenous administration of salvarsan (.4 to .6 gram), neosalvarsan (.6 to .9 gram) or one of its substitutes; about forty c. c. of blood is withdrawn and allowed to clot, after which it may be centrifugalized. The following day twelve c. c. of the serum is pipetted off and diluted with eighteen c. c. of sterile normal saline solution, making a forty per cent. solution. This serum is heated at 56° C. for a half hour, after which it is ready for intraspinal injection. A lumbar puncture is then performed and the cerebrospinal fluid allowed to run out until the pressure is reduced to two to three mm. of mercury. Then the serum is introduced by the gravity method using a twenty to thirty c. c. syringe and a rubber connecting tube about forty cm. long. The salvarsanized serum is then poured into the syringe barrel and allowed to flow into the subdural space. The percentage of serum in saline may be increased, if necessary, from forty per cent. as given above to fifty, sixty or seventy per cent. The patient should be kept in bed for at least twenty-four hours.

Ogilvie method.—About fifty c. c. of blood is withdrawn into a centrifuge tube and the latter is immediately placed in a large centrifuge and the fibrin and cellular elements are thrown down. The blood does not have to be withdrawn from the patient himself. To fifteen c. c. of the serum, is then added the amount of salvarsan to be given. As a rule .25 to four milligrams of salvarsan is employed. The salvarsan solution and the serum should be of the same temperature when mixed. The serum is then agitated until the two are thoroughly mixed and this is placed in a thermostat at 37° C. for forty-five minutes. From this it is placed in a thermostat at 56° C. for thirty minutes. It is now ready to be given intraspinally. The technic employed is similar to that of the Swift-Ellis method.

Injections of salvarsanized serum may be given at intervals of one to three weeks depending upon the condition of the patient and the reaction following the injection and should be continued until the cerebrospinal fluid becomes negative and remains negative, although this result is hard to attain in a large proportion of cases. Intraspinal treatments should be given in courses of six to eight treatments and an interval of four weeks should be allowed between courses.

COMPARISON OF METHODS.

The Swift-Ellis method has three advantages: 1, Preliminary administration of salvarsan. 2, Plaut showed that the serum of patients who had received salvarsan intravenously exerted a definite antisypilitic effect, whereas normal serum had no such activity and the serum of patients treated with mercury and iodides has very little. 3, Removal of abnormal spinal fluid. The Ogilvie method

lacks the first two characteristics of the Swift-Ellis method, but the preliminary intravenous administrations of salvarsan can be employed with the Ogilvie method. In the latter method a definite quantity of salvarsan is introduced into the spinal canal, while in the Swift-Ellis method this quantity is indefinite. All agree that intraspinal therapy is practically free from danger, when due care is exercised in the preparation of the salvarsanized solution, in the technic of administration, and in the aftercare of the patient.

INTRASPINAL INJECTION OF MERCURIALIZED SERUM.

The technic in preparing mercurialized serum is similar to Ogilvie's method of preparing salvarsanized serum. To twelve c. c. of centrifugalized serum is added one c. c. of a solution of bichloride of mercury in freshly distilled water, prepared so that each c. c. contains .0013 gram of the bichloride. To the serum thus prepared is added a sufficient quantity of normal salt solution to make a total volume of thirty c. c. The serum is heated to 56° C. for half an hour and administered exactly as salvarsanized serum. It is not essential to introduce salvarsan intravenously before preparing the mercurialized serum, though some syphilographers have given it and have thus made a salvarsanized, mercurialized serum. Mercurialized serum is more stable than salvarsanized serum; it may be prepared at leisure and kept in sealed flasks until ready to be administered.

INDICATIONS.

Certain objections have been raised against intraspinal therapy. It has been asserted that equally good results can be obtained from intravenous injections of salvarsan; that the spinal fluid contains at times as much arsenic after intravenous therapy as is ordinarily present in salvarsanized serums (Swift-Ellis and Ogilvie's methods); that the blood serum withdrawn one hour after an intravenous injection of salvarsan contains such a small quantity of arsenic that it is of little value in intraspinal therapy. Numerous and repeated tests have been made by Ellis on the serum and he has shown that arsenic is present in the form of salvarsan (one-fourth grain), if the blood is withdrawn an hour after the intravenous injection of salvarsan. It is true that intravenous therapy given at short intervals, helps in clearing up symptoms due to syphilitic involvement of the central nervous system and improves both the blood Wassermann and cerebrospinal fluid changes due to inflammation and at times arrests processes of degeneration. On the other hand, there are cases, particularly those of tabes and paresis, in which there is no improvement either clinically or serologically under intravenous therapy but which respond to a combination of intravenous and intraspinal therapy.

Intraspinal therapy gives better results in tabes than in paresis. Frequently, it has arrested the process of degeneration, in some cases improving the blood Wassermann and in others producing a negative Wassermann. As far as the spinal fluid is concerned, gradual diminution in the number of lymphocytes has been observed, associated with the diminution of globulin and improvement in the

Wassermann reaction which at times has been reduced to a negative reaction. In paresis, our results have been discouraging and at best we can say that by active treatment the degenerative process has been arrested—cell destruction cannot be replaced. Norman Sharp has obtained fair results in early cases of paresis by intraventricular injections of solutions of salvarsan in blood serum.

ADVANTAGES OF EARLY TREATMENT.

Our only hope in improving patients showing syphilitic involvement of the nervous system lies in discovering the earliest clinical signs of involvement such as anisocoria, Argyll-Robertson pupil, headaches, auditory and ocular disturbances, involvement of the reflexes. In every suspicious case a diagnostic lumbar puncture should be made. After the diagnosis has been made, active and energetic treatment should be instituted.

As to the result of treatment, we can say that symptoms due to an active inflammation usually clear up and the outlook is encouraging, but in cases of degeneration with atrophy and sclerosis the outlook is discouraging and very grave.

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123 REID AVENUE.

UNIVERSAL HEALTH LAWS.

BY HARRY GREENSTEIN, M. D.,
New York.

Public health, which deals with the health of a community, is one of the greatest problems of modern times, and the fundamental principles of this problem are knowledge and organization. The physician is the guardian of the public health and his obligation to the people is of the utmost importance. He should be a student of hygiene and sanitation and cooperate with the health authorities. In this way many conditions essential to health can be brought under control. No health department, national, State, or local can effectively prevent or control diseases without knowledge of when, where, and under what conditions these diseases are occurring.

The curricula of the various medical schools differ much in the courses of instruction presented. Many touch slightly upon hygiene and sanitation, others ignore it entirely, and graduates are ushered into the practice of medicine with only a vague idea of the fundamental principles of these important subjects. Public health is a review of all known medical topics. It comprises the study of infectious and contagious diseases and their relation to hygiene and sanitation. A physician as a trained

man can assist the health authorities in tracing and detecting the origin of disease; he can tell if it is present, describe its nature, its mode of transmission, and the methods for its destruction and elimination. Prophylaxis is the keynote. In other words, "What can be cured need not be endured." All the known infectious and contagious diseases are caused by a specific organism. They can be isolated, cultured, and passed through animals for the purpose of making antibodies.

The health officers of a small community should be as well posted on public health matters as an officer in a large city. All human beings are subject to the same diseases. It is true that climatic conditions of one section differ from that of another, yet the same knowledge regarding disease is required in all sections. The health of a community is as important to its progress as military protection is to the nation.

A health officer, like a private physician, cannot cover the entire field in medicine. He cannot be posted on all the modern and useful topics. Concentration on one subject causes indifference to another of the same importance. As a specialist becomes skilled by practice, a health officer becomes efficient by experience. An efficient officer is one who has had at least ten years' experience in hospital and private practice and who has spent at least three years in field and laboratory work. No one should be selected who depends entirely upon book knowledge. It is not wise to supplant an experienced and efficient officer by an inexperienced individual who depends upon political pull. The term of office should be long but not a life position. The salary should be large enough to keep the health officer from competing with the outside physician.

The States of the Union do not conform to a universal standard. Each State makes its own laws. It appoints its own officials, many of whom are untrained. No special qualifications are necessary, laymen often being entrusted with important medical subjects. What is legal in one State is a violation in another. A man qualified and posted on all the rules in his own district may know very little about the laws existing in the bordering State. It is safe to say that if a medical man knows very little about sanitation, what can be expected of a laymen, yet in spite of this there are no uniform health laws.

A national body will prevent duplication of records. It will make standard laws for the entire nation. Expenses can be borne in general. It will allow larger systems. It makes communities liable for laxity of laws. It acts as a check against careless local officials. Communities along border lines can work in harmony. There is less chance for hidden conditions. Diseases can be controlled with less expense. The responsibility cannot be shifted. Burdens cannot be cast aside. It prevents confusion with local officials. All must act alike, and obey the same laws. No experiments can be made without the sanction of the board. This will check personal attempts at experimentation that often result in waste of time and material.

307 EAST FIFTY-SEVENTH STREET.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By ARNOLD MINNIG, M. D.,

Denver, Colo.,

Denver Municipal Tuberculosis Dispensary.

If the early diagnosis of tuberculosis was easy this problem of the greatest plague of mankind would be comparatively simple. In fact, it would no longer be a great plague. We believe that tuberculosis is acquired in childhood. In a recent series of 500 autopsies in children dead from all causes it was found that up to one year twenty per cent. were tuberculous; between one and two, twenty-six per cent.; and between the ages of eleven and fourteen, eighty-one per cent. This, of course, includes tuberculosis of the lymph glands. In another series of cases by Hamburger of Vienna ninety-four per cent. of children dying from all causes at the age of fourteen were found infected with tuberculosis. Hamburger's statistics were based on the out patient class of Vienna. He holds that if a child was below the age of four when either of its parents had active tuberculosis the child subsequently manifested the disease and died of the infection. If the child was between the ages of four and fourteen tuberculosis subsequently developed. If one of the parents had active tuberculosis when the child was over fourteen there was no ill effect; in other words, there had to be a massive infection before tuberculosis developed in the child.

Modern life insurance companies have adopted a much more radical point of view. One company asks: "Have you in the past five years lived seven nights in the same house with a consumptive?" If the applicant replies in the affirmative he is rejected. That more can be done by the family physician is shown in a very careful investigation made by James S. Ford of one thousand patients admitted to his sanatorium. He found that they had consulted 1940 physicians and of these only seven per cent. made chest examinations, took temperatures, and made sputum examinations.

I have nothing especially new to present in this paper, but there is one thing above all others which will help the general practitioner and that is to have a good routine for his examination of the tuberculous and then to carry it out.

The first essential in the examination of a patient suspected of having active tuberculosis is to get a complete history, not only of the patient's family, but his own personal history from birth to day of consultation. A history of hemorrhage, pleurisy, fistula, atypical attacks of typhoid, malaria, bronchopneumonia, bronchitis, influenza, frequent colds, are all suspicious; and of these, hemorrhage and pleurisy are practically always tuberculous.

Next we must inquire into the following symptoms: Cough, expectoration, fever, night sweats, loss of weight, hemoptysis, blood streaked sputum, anorexia, tachycardia after exertion and fatigue after light work not experienced formerly, low blood pressure, afternoon depression, localized pains in the chest.

SYMPTOMS.

Cough.—There may be none in incipient tuberculosis but more often this is an early symptom. The tuberculous cough is usually one which has not responded to ordinary remedies. A cough no matter how slight, when persistent and failing to clear up in two or three weeks, is suggestive, and when accompanied by expectoration is strongly presumptive.

Sputum.—The macroscopic examination is not characteristic, but microscopic examinations must be made by the ordinary method, and if negative, by the antiformin method. I have not found Much's granules of any assistance, but the presence of "splitter," or fragments of tubercle bacilli, in my experience, have been helpful. Then we have guinea pig inoculations and the presence of elastic fibres. The latter I have also discarded.

Fever.—This is a most significant symptom. It must be carefully recorded every two hours for fourteen hours of the day for two weeks. Meals, emotion, baths, reading, writing, exercise, the menstrual period, and even the medical examination often provoke abnormal temperature in the tuberculous.

Night Sweats.—The cause of night sweats is obscure. It is possibly due to the absorption of proteins of the tubercle bacillus. They are usually worse between two and four in the morning. A very simple way to prevent most of them is by having the patient sleep outdoors and, of course, using hygienic covering.

Hemoptysis.—The percentage of cases of hemoptysis varies in the experience of different authors, the range being from twenty-five to eighty per cent. Various drugs may bring this on, such as aspirin, arsenic, creosote, iodides, tuberculin, vaccines, and as is well known the weather has a definite relation to the occurrence of hemorrhage. We must remember that hemoptysis occurs in other conditions, notably mitral stenosis.

Gastrointestinal symptoms.—These are common early symptoms. Unlike other diseases fever does not disturb the appetite in the tuberculous. The cause of the anorexia is probably of toxic origin.

Emaciation.—This is always a cardinal symptom. In acute miliary tuberculous emaciation is frightful and rapid, causing great weariness and loss of strength. There is a direct relation of weight to the progress of the disease, and to this there is only an occasional exception.

Cardiovascular symptoms.—The most important are: Palpitation, tachycardia and hypotension. Blood examination usually shows a lymphocytosis.

Nervous symptoms.—Early nervous symptoms are practically always present. Many patients have been treated for months for neurasthenia before the diagnosis of tuberculosis is made. Pains are usually absent but may be present in localized areas of the chest and should be inquired into. It is an established fact that in the neighborhood of two thirds of the insane have an accompanying tuberculosis. The tuberculous have a classical reputation for disturbances in emotional life. For instance, they are usually optimistic, egotistical and selfish; there are menstrual irregularities; sexual

irritability and excesses are common, probably of toxic origin.

EXAMINATION OF THE CHEST.

By this means we find the destruction that has taken place. In incipient tuberculosis inspection is practically negative unless there has been a previous pleurisy. Occasionally there is atrophy of one side or retraction above or below the clavicles. Palpation may show Pottenger's sign and when present is helpful. Elicit tactile fremitus. A definite increase suggests tuberculosis, a decrease fluid or thick pleura. Percussion may show slight dullness. Definite impairment of resonance suggests tuberculosis.

Auscultation gives the most information in the location of the tuberculous focus. Listen to the spoken voice, then the whispered voice. Listen to the breathing. Note whether it is vesicular, bronchovesicular, bronchial or suppressed. Note the expiratory and inspiratory ratio. Normally, expiration is very short and occupies one-third of the time of inspiration. When expiration equals inspiration it is pathological. Listen to normal breathing, then deeper breathing, then, the most important of all, the cough after expiration. Listen very carefully for râles. If these are present they are almost pathognomonic of pulmonary tuberculosis. The sites of election of early tuberculosis are at the inner portion of the upper end of the scapula and the apices, especially in the back, not nearly so often in the front.

In doubtful cases repeated chest examinations must be made. This has been most impressively demonstrated in the recent influenza epidemic, where we have many times found what seemed to be a tuberculous chest after a month or two clear up of all moisture and show us merely an influenza invasion. Repeated examinations of the sputum must be made, but bearing in mind, that only forty to sixty per cent. of incipient cases show the presence of the organism, I use the tuberculin test very rarely.

The x ray may be of assistance, but it does not differentiate between active and latent tuberculosis. Finally, it is better to make a provisional diagnosis or no diagnosis and have the patient alive in a year than to make a diagnosis and have the patient dead in a year.

SUMMARY.

1. Have a good routine for your examination of the tuberculous, and use it at each examination.
2. Carefully inquire as to the following symptoms: Cough, expectoration, loss of weight, anorexia, spitting of blood, tachycardia after exertion and fatigue after light work not experienced previously. Note if there is fever or low blood pressure.
3. Make x ray examinations and repeatedly examine the sputum, even though it is negative. Your patience may eventually be rewarded.
4. Most important of all, of course, is the chest examination. Of the chest signs the râles elicited after coughing following expiration give us the most delicate test.

846 METROPOLITAN BUILDING.

Surgery of the Prostate.—Deaver (*Surgery, Gynecology and Obstetrics*, August, 1919) discusses some of the factors entering into the surgery of the prostate, which may perplex the surgeon. The advanced age of the patient may contraindicate operative interference, but good results may follow. Prostatectomy is not advisable in all cases of enlargement. Some cases yield to dietetics and physiotherapeutic treatment. Surgical relief is sought when the treatment fails and retention begins. Before operation the condition of the patient's organs and his general health should be determined. The condition of his prostate is determined by rectal and cystoscopic examination, the latter after the patient has been in bed twenty-four hours and received urotropin and quinine. Many details may be given in this way. Prior to and after cystoscopy it is well to place a soft rubber indwelling catheter. Vesical calculus is a frequent accompaniment of prostatic enlargement, which may be the cause of or be caused by the residual urine. The removal of the stone may clear up the condition but it may be advisable to remove the prostate also.

The residual urine causes a strain upon the bladder wall and a subsequent hypertrophy followed by atony, chronic retention, dilatation of the bladder, or fibrous contraction with the formation of trabeculae and false diverticula that form sites for urinary collection and possibly stone formation. The overdistended bladder should be relieved prior to any measures taken with the prostate or cystoscopy. This should be done gradually, and cystoscopy should be performed with caution. In carcinoma only palliative relief can be obtained by partial prostatectomy. A differentiation should be made between benign hypertrophy and carcinoma. The functional capacity of the kidney should always be determined before prostatectomy. The laboratory results as well as the clinical history and findings of physical examination should all be considered. The general resistance to infection should be stimulated. This is best done by bladder drainage.

The suprapubic operation is the one of choice in most cases. The advantage is that every portion of the bladder is then open to inspection, and in this way the necessity for a two stage operation may be decided upon. The two stage operation is advocated on account of the low mortality figures accompanying it. Uremia is less likely to occur. The two great dangers are hemorrhage and uremia. To prevent bleeding the entire gland should be carefully removed. It is always well to pack the prostatic bed after operation. Nitrous oxide and oxygen anesthesia generally suffice for the first stage of the operation. Nitrous oxide is contraindicated when the blood pressure is high. In these cases intraspinal stovaine or chloroform is more useful. Ether is the safest and in the average case the anesthetic of choice. In the after care of the patient the principal point is to observe the kidney function. Points mentioned are the shrinking of the gland, which occurs after the first stage of many operations, and also the bleeding after the removal of the prostate in a two stage operation is not so profuse as after a one stage operation.

Editorial Notes and Comments

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FACING THE SITUATION.

War and influenza have kept the statisticians busy. And now when the count is made they tell us that influenza killed twice as many as the war. As if it had waited until the man waged war with its multitudinous inventions, had done all it could to depopulate the world of its youth, and then stepped in like a giant reaper and in a few sweeps of his scythe terminated more lives than the long years of the war. In the titanic struggle we must admit that influenza won. If the cruelties of one exceeded those of the other the efficiency of the victor cannot be doubted. In the two grim combats man was helpless. His work was only to salvage the few. The defeat was complete. Now before time blurs the memory and nothing remains but a bleak record, we may as well face the situation squarely and not try and bury our heads in the sands of the small problems that we feel capable of solving.

Some physicians insist that their duty ends when they have done all within their power to heal the patients who are under their care. They assert that the protection of society by prophylactic, hygienic and preventive measures is the duty of the State. This may be true. But should they be satisfied with their petty patching when great catastrophes might be averted by the application of the knowledge which their profession possesses? The question cannot find answer in the dogmas of ethics alone, for in the last analysis ethics are based on broad planes of self-preservation, which may be interpreted as self-preservation of the species

and in turn as self-preservation of the individual, even the very individual who reasons so logically if so purely objectively. And he may say, "What affair of mine is war or epidemic? My duty is to heal . . ." and when in the midst of the situation which he has invited by his indifference, he loses his loved ones, or even he himself is a victim, how then can he justify the position he has taken on ethical or any other grounds?

History holds no record of wholesale decimation equal to that of the dual conquerors, the great war and the last pandemic. Due to our selfish adjustments and failure to meet the situation squarely the aftereffects will be felt for generations to come. Not content to face the situation, admit our share of the responsibility, and try to change our infantile attitude, we, the survivors, in still further trying to shift the burden, shrug an indifferent shoulder and point an accusing finger at the State. When we are asked to do what we can to remedy the defects in the State, so that loss of life may be prevented, we speak of it in the third person as if it were a diffident guest.

Are we as physicians to wait until the State awakens to the fact that we are able, by raising the standard of the health of the individual in the community by education as to proper ways of living, by causing this self-same State to provide proper housing facilities, by segregation, and by generally improved conditions, to prevent calamities such as those we have just witnessed, and compels us to use this knowledge for the good of society? Or are we going to face the situation, admit our defeat, shoulder our responsibilities and do all we can, with the knowledge we possess, preventing a repetition of man's shameful defeat. May it not in the future be called the great lesson?

THE QUESTION OF HOUSING.

Adequate and sanitary housing accommodations are lacking in all parts of the world. In America, in both the United States and in Canada, the housing situation is almost as acute as in Europe. If New York may be taken as an example of other American cities, matters in this respect have come to a very serious pass. It is not only that the housing facilities of the working classes are not nearly equal to the demand but houses for the well to do and prosperous are difficult to procure at any rental and impossible to obtain at a reasonable rent. Overcrowding is rife in certain districts of New

York, notably in the tenement section, and in consequence despite the energy and care displayed by the Board of Health, conditions necessarily are not so sanitary as they should be. While New York may be somewhat worse so far as housing accommodation is concerned than most American and Canadian cities, it is probable that there is not a great deal of difference in this respect. Further, there is as great a paucity of houses in the country as in the town and, generally speaking, sanitary conditions are not so good. In fact, attention has been drawn to this phase of the matter on several occasions recently in the reports of the Public Health Service. Thus it may be taken as proved that in the United States and in Canada, houses are not nearly so numerous as is necessary nor in many instances are they as sanitary.

But while in America matters in this direction are unsatisfactory, in Europe they are yet worse. Great Britain is faced with a housing situation more grave by far than is America. It is on the whole the most insistent question of the day. The newly formed British Ministry of Health thoroughly recognizes this, and the very first problem of preventive medicine with which its members have to grapple is that of providing in all parts of the country ample and healthy houses for the people. In some parts of Great Britain, and in Ireland in particular, housing conditions are disgraceful. The mortality and morbidity rates of Dublin are the highest in Europe and, according to the *Medical Press*, July 23, 1919, one fourth of the working class of Dublin must continue to live in houses officially declared "unfit for human habitation and incapable of being rendered fit for human habitation." The encouraging feature in England consists in the fact that the Ministry of Health, whose jurisdiction does not apply to Ireland, is most energetically concerning itself with the question of supplying houses adequate, sanitary and suited to the needs of the class for which they are intended. Vast schemes are afoot with this object in view, and although some of these may be chimerical and impossible of execution, there is little doubt that great progress will be made. Good housing is a primary and essential means of ensuring health, comfort, and contentment. Without it, or unless such conditions are universal, unrest and discontent will be widely prevalent, or lie as a canker at the root of prosperity. However, all are agreed that proper housing is a *sine qua non*, if a nation is to progress along the right path, and the sole point for discussion is how to best provide this most potent civilizing influence. It would appear that England has taken a long step toward

this goal, and that America might do well to follow the trail thus blazed by her and by some other European nations. It may be pointed out that preventive medicine is coming more and more to the fore, and that a Ministry of Health is a great, perhaps necessary factor in the consummation of progressive preventive measures, of which adequate and sanitary housing is easily one of the most important.

HABITUAL CONSTIPATION AND DIET.

Probably no subject in the entire category of human ills has been discussed so frequently or at so great length as that of habitual, obstinate constipation. One reason for this is that the condition is extremely common, and another reason is that it is not only very troublesome but is often the forerunner of severe and serious sequelæ. Long continued constipation is essentially a disease of civilization and is due largely to methods of living. Diet is a factor of considerable consequence; inappropriate food, eaten at unsuitable times and in injudicious quantities, has much to answer for in this respect. Eating and drinking unwisely but too well are potent causes of constipation. A sedentary life is another contributory cause which must be taken into account, as it is obvious that fresh air and exercise go far in stimulating the intestines and rendering the function of defecation more easy. The habit of daily evacuation can be generally acquired. But the habit of taking aperients to relieve the condition should not be acquired, for like all bad habits, it is difficult to break and makes an almost intolerable state of affairs.

Constipation may be due to the contents of the bowel being dry and impacted because they have been too long retained in the lower bowel or from indiscretions in eating and drinking, and especially perhaps in the drinking of strong tea or too great indulgence in alcoholic beverages, or because the aperient which has been taken habitually has a secondary constipating effect. In other cases, constipation is to be attributed to a lack of expulsive power, frequently due to a sedentary life and a consequent lack of tone in the bowel. The diet is always of prime importance: the rougher kinds of bread—whole wheat or bran bread, should be taken, war bread in fact. In this connection the statement may be interpolated that war diet generally and war bread in particular must have exerted a favorable effect on the digestive tract and on peristalsis. Undoubtedly, bread made from highly milled wheat flour was responsible for much of the constipation so prevalent in civilized countries. It has been stated that an essential element of food

was lacking in the highly milled product and also that such bread could be eaten with little mastication. The food eaten has been smooth and bland, requiring no particular exertion on the part of the jaws or salivary glands to render it fit to swallow and requiring little effort on the part of the digestive organs or gastric juices. In the opinion of many qualified to speak with authority, the universal custom in civilized lands, especially in America, of eating large quantities of soft, pappy predigested foods provides an explanation of why habitual constipation has become the bane of civilization. If the war has the effect of bringing into dietetic vogue again the cereals not denuded of that portion which contains the vitamins and which provides the grinding apparatus with its requisite amount of exercise, inciting the salivary glands to perform their intended function, and which gives the digestive organs that work necessary for keeping them in proper order, it will not have been in vain. It will not appear arrogant to predict that a diet partly composed of food material of this nature, at any rate, of the rougher kinds of bread, whole wheat or bran, will aid greatly in removing the reproach that a civilized race is a constipated race. A reversion to more primitive methods of living and, in any event, of eating, will be of benefit to the race regarded from all points of view.

RAILWAY TOILETS

Among sanitary conditions that cry to heaven for improvement are the toilet accommodations of our railways. Where there is (or was) rivalry of roads there is perhaps little need for improvement with present day means of disposal of excreta, but where there is no competition the public, both male and female, is very much to "be damned" so far as such accommodations are concerned. Where great numbers make use of a toilet it is impossible to have ideal conditions, but there can at least be a fair degree of decency and of cleanliness. There can be no question that there is ample opportunity for spread of disease. Flies often swarm out from toilets to light upon the handles of bags and baskets and fruit and vegetables. But even if there is slight danger from such carriage of germs, foul toilets are in no way a means of educating the public to better things. Indeed, where they do not disgust, they have the effect of encouraging such conditions. It would seem that such a public servant as the railroad might do its bit toward improving sanitation in general. The railroad is a heavy contributor toward the general unpublished tax which we pay for disease and it would be money

in its pocket to do something by way of example in cleanliness. Cleanliness costs, but it also pays, not only in this general way of teaching by example, but more directly. There are many roads which consider it too much of an expense to furnish free toilet paper for their patrons. As a consequence newspaper is used instead, frequently with disastrous results. We saw one such result recently in the depot of one of the most important lines out of New York City, and the cost of getting the toilet room in condition again would have paid for all the paper needed in a year.

Nor can it be said that reasonably good free toilet accommodations are out of the question. The toilet rooms of the old Grand Central station were a model which impressed every traveler who had a sense of decency. A secretary of the board of health of a neighboring State was so impressed he interviewed the person in charge as to his method and means of keeping things sweet and clean. The reply astonished him. It was "We make a liberal use of soap and water." Where such places are clean the public has respect for them and does its part toward keeping them so. Where they are filthy, the public can do little more than make them worse.

We do not know whose business it is to see that sanitation of railroads is carried out. Apparently it is nobody's business, but we hope that some day strict rules will be adopted in such matters, with adequate inspection and heavy penalties for infringement. Under present conditions a good punishment would be to make the officers and directors use their own toilets.

MEDICAL MISSIONARIES.

Now that the war is over and thousands of doctors and nurses have been released from service, the Medical Missionary Association of China takes occasion to appeal for medical missionaries to China. It is doubtful, says the *China Medical Journal*, whether there are two thousand scientifically trained physicians in the whole of China, Manchuria and Mongolia. The small number of foreign medical missionaries—495 in 1914—was made still smaller by the war. In 1917 there were 270 men and eighty-one women missionary physicians; working with them were 212 Chinese physicians. About 120,000 in patients and 3,165,970 dispensary patients were treated during the year. These figures sound less impressive when it is known that in the province of Shensi, for example, there are only two foreign medical missionaries in active practice to a population of 8,800,000, and other qualified physicians are extremely rare. There is an unlimited field in China for original research in every branch of medicine and surgery. In addition teachers for mission medical schools

are urgently required. The movement for public health education, for which the China Medical Missionary Association is partly responsible, has barely begun, and sickness and wretchedness exist everywhere.

MUSCULAR TONUS AND FATIGUE.

A series of tests to determine muscular tonus in relation to fatigue is described in the July 25th issue of Public Health Reports. The method used was that of determining at different times the amount of tension required to produce a given amount of extension of a group of muscles. It was found that in subjects doing relatively strenuous work or working over a long period, there was usually a decrease in tonus in the evening as compared with the morning condition. After lost rest the morning tonus was lower and the average tonus for the day was less than after a good night's sleep. Strenuous work of short duration was usually followed by an immediate decrease in tonus. Psychic stimulation seemed occasionally to produce an increase in tonus, although fatigue producing conditions were recorded in the history. In subjects doing relatively light work and obtaining plenty of sleep the tonus varied during the day, the evening tonus being frequently greater than that observed in the morning.

News Items.

Blind Polish Children.—The abnormal number of Polish children born blind during the last three years, in spite of healthy parentage, is due mainly to the malnutrition of mothers, according to a report issued by the American Red Cross.

Venereal Disease Cures Seized.—In the course of a campaign to end the false labeling of drugs, the United States Department of Agriculture through its Bureau of Chemistry has seized more than 450 so-called cures for venereal diseases.

Low Death Rate.—The New York health department's records show that the city never had a weekly death rate in the month of July as low as in the week ended July 26th. There were 1,021 deaths, a rate of 8.87 in 1,000. The rainy weather is credited with the decrease.

Physicians Seeking Openings.—A number of physicians formerly in the army service are seeking employment through the Reemployment Bureau for Soldiers, Sailors, and Marines, New York. Many are men whose practice has been ruined while they were in service and who cannot afford at this time to start anew.

Health Institutes in Spain.—A health centre equipped with all that is necessary to "hygienize" school children has been fitted up in Madrid by women of the *Comite Femenino de Higiene Popular*. The children have their hair cut, heads disinfected, the teeth attended to by a woman dentist, and there are bathing facilities. It is hoped to establish more of these *Casas de Higiene Benefica Infantil* in other crowded parts of the city.

Japanese Women Physicians.—At a recent examination held by the educational department of Japan, thirty-four of the fifty-four successful candidates are reported to have been women.

Dr. W. J. Holland Honored.—Dr. W. J. Holland, director of Carnegie Institute, Pittsburgh, has had conferred upon him the title of Commander of the Order of the Crown of Belgium, in recognition of his services to that country.

Doctor Kin Coming to the United States.—Dr. Yamei Kin, recognized as the foremost woman physician in China, is on her way to the United States to make experiments which she feels will be of benefit to her countrymen.

Homeopathic Exhibit.—An exhibit illustrating the history and principles of the homeopathic school of medicine has been added to the history of medicine collection in the Smithsonian Institution, Washington, D. C.

Ambulance Calls.—New York's 102 ambulances are reported to have answered more than 138,000 calls last year. The Board of Ambulance Service directs this work for forty hospitals, twenty-nine of which are private.

Bequest to Harvard University.—By the will of the late Dr. J. Ewing Mears, of Philadelphia, the sum of \$100,000 is bequeathed to Harvard University for the study of methods to reform and cure criminals and mental defectives by surgical means.

Few Women Color Blind.—Color blindness occurs more frequently in men than in women, according to statistics of the United States Public Health Service. The rate for men is 8.6 per cent. and for women 2.2 per cent., in everyday life among healthy individuals in America.

Food for New York School Children.—New York city, one fifth of whose school children were declared by a recent survey of the health department to be undernourished, has decided to operate a system of school lunches. Food will be sold at cost. Provision was also made for a continuation of the work of educating parents regarding the proper feeding of children.

Rifle Range Condemned.—The New Jersey State Department of Health has issued a warning condemning the Caldwell Rifle Range as a breeding ground for malaria. The report was made after a thorough investigation. Officers at the camp, however, maintain that there have been no cases of malaria and that the camp is in no worse condition than other camps in regard to sanitation.

Haeckel Dies in Jena.—Prof. Ernest Heinrich Haeckel, evolutionist and philosopher, died August 9th in Jena, Germany, at the age of eighty-five. He was educated in medicine and started a practice in Berlin but preferred to study in biological fields. In his *General Morphology* he carried the theories of Darwin to more definite conclusions, and in *The Riddle of the Universe* he expounded his theory of monism. All his life he suffered from the bitter opposition of the church and it was only at the instigation of Alexander, Duke of Weimar, that he retained his professorship in zoology at the University of Jena. Since 1909 he had lived in retirement.

North Texas Medical Association.—The following officers were elected by this society at its semiannual session in Dallas: President, Dr. H. Leslie Moore, of Dallas (elected for the eighteenth time); vice-president, Dr. Sidney J. Wilson, of Fort Worth; secretary, Dr. David L. Bettison, of Dallas; treasurer, Dr. M. L. Wilbanks, of Greenville; counsellor, Dr. A. B. Small, of Dallas.

Qualifications of Tuberculosis Heads.—A ruling handed down by the attorney general states that all superintendents or heads of district hospitals in which tuberculosis is treated must possess the same qualifications as persons authorized to practise medicine in the State and must have had experience in the treatment of the disease. The ruling was given at the request of the commissioners of the Springfield (Ohio) Lake Tuberculosis Sanatorium.

Speedway Hospital.—According to reports from Washington the Public Health Service will not take over the Speedway hospital in Chicago, as it is said that Surgeon General Blue does not want it. The secretary of the treasury was authorized by Congress to pay \$2,500,000 for the partly finished structure as it stands, to complete it, and keep the cost within the \$3,000,000 appropriated for the purpose. Estimates, however, place the cost of completing the hospital at \$1,900,000, which would exceed the appropriation.

Emergency Postgraduate Course.—The Fellowship of Medicine, London, has arranged with the medical schools of London and other hospitals for an emergency postgraduate course of three months for qualified medical officers from the Royal Navy, Royal Army Medical Corps, the Royal Air Force, and from the Dominions and the United States and Allies, admitting to their general practice, including clinical instruction in the wards and outpatient departments, clinical lectures and demonstrations, postmortem demonstrations, and laboratory work. All medical officers are invited to attend meetings of the Royal Society of Medicine and to make use of the society's library and fellows' rooms. Facilities are offered for visiting military hospitals in the London district and Eastern command.

Sea View Hospital for Drug Addicts.—Health Commissioner Royal S. Copeland, of New York, is meeting with difficulties in his attempt to bring drug addicts for treatment to the Sea View Hospital, Staten Island. Residents of the island are organizing for a vigorous campaign against the importation of drug victims. Sea View Hospital was formerly given over to the care of tuberculosis patients. It is planned to retain only "third stage" tuberculous patients, of whom there are 243 at present, at the hospital; 416 other patients will be sent to Otisville, N. Y. Drug victims will be housed in separate buildings. Five pavilions, each capable of housing 135 patients, will be placed at the disposal of the addicts, which means that about seven hundred can be taken care of immediately. In addition there are several cottages and detached buildings which can be utilized. The sanitary code has been amended to designate drug addiction as a pestilential disease.

Personal.—Dr. Robert H. Bishop, Jr., former health commissioner of Cleveland, Ohio, has returned from abroad, where he served as director of the American Red Cross Tuberculosis Mission to Italy.

Dr. George R. Love, for twenty years superintendent of the Toledo State Hospital, Ohio, has resigned to take up private practice.

Colonel Edward G. Huber, formerly in charge of the base hospital at Camp Sherman, Ohio, has been placed in charge of the base hospital at Fox Hills, Staten Island. He succeeds Lieutenant Colonel S. W. French, who had been there since March, 1918.

Dr. David L. Melen, of Rochester, N. Y., has returned from ten months' overseas service with Evacuation Hospital 24. He will not resume practice immediately but will pursue postgraduate study in New York in diseases of the bladder and kidneys.

Dr. M. S. Gregory, formerly in charge of the psychopathic ward at Bellevue Hospital, has been promoted to the rank of lieutenant colonel in the Medical Corps of the United States Army.

New York Health Department Building.—An appropriation has been passed by the Board of Estimate and Apportionment making possible the erection of a new building for the New York city health department. The building, which it is said will be a model of its kind, will cost approximately \$1,000,000 and will permit the centralization of health department activities under one roof. Several of the twelve stories will be devoted to laboratories, one floor to the bureau of records, one to a medical library, and one to a modern health station where clinical work will be done. It is also planned to include an auditorium for meetings of physicians, nurses, and inspectors in the employ of the department. The director of the bureau of hospitals will move his office from the Willard Parker Hospital to the new building, and the bureau of laboratories will likewise be moved there. The building is to be situated in West Thirtieth Street between Seventh and Eighth Avenues.

American Public Health Association.—The next annual meeting of the American Public Health Association will be held October 27th to 30th in New Orleans. Southern health problems, including malaria, typhoid fever, hookworm, and soil pollution, will form the central theme of discussion. In the belief that influenza will return next winter, a full session will be devoted to this subject, and there will also be special programs on personal hygiene and various phases of child hygiene. A special effort has been made to arrange the program to meet the practical needs of health officials. Accordingly there will be discussions on such questions as the attitude of legislators toward public health, the obtaining of appropriations, cooperation from women's clubs, health organizations, the organization of health centres, etc. The programs of the sessions will, as usual, deal with public health administration, vital statistics, sanitary engineering, laboratory methods, industrial hygiene, sociology, and food and drugs.

Ohio Physicians in Politics.—Each of the three principal cities in Tuscarawas County, Ohio, has a medical man either on its council or seeking the office.

Smallpox Quarantine at Camp Mills.—Men of the 47th infantry and other units of the 47th division were put in strict quarantine at Camp Mills because of the discovery of a mild case of smallpox on the boat coming over.

Jails Not Insane Asylums.—Attorney General Newton has issued a warning to police officials of New York State against the detention of an alleged insane person in a county jail, pointing out that insanity is not a crime.

Abuse of Free Antitoxine.—The New York city department of health calls the attention of physicians to the great abuse of the free antitoxine distribution service of the department. Antitoxine is supplied free only to those in need and unable to pay therefor, but records of four distribution stations show a total distribution during 1918 amounting to \$799.40, with only \$8.60 received in payments.

Doctors Want to Unionize.—Medical men who are victims of the high cost of living have requested the American Federation of Labor for a labor union charter, but as the bylaws of that body do not provide for the organization of doctors nothing can be done about it until a change is made. The doctors who are desirous of forming a union are those employed on salary by insurance companies, compensation commissions, and similar bodies.

Catholic Hospitals in Public Health Move.—The National Catholic War Council has aided twelve Catholic hospitals in establishing outpatient and social service departments and expects to aid in establishing additional departments in the near future. In the twelve outpatient and social service departments operated under the council more than two thousand sick and disabled soldiers and their families have received medical care during the past three months.

Drug Habit Increasing in Saskatchewan, Canada.—Figures from the department of trade and commerce, Saskatchewan, indicate that within the last seven years legal sales of habit forming drugs have increased by leaps and bounds. The following do not include quantities of the three drugs imported illegally, which authorities state will nearly equal if not exceed the legal imports: Cocaine in 1912, thirty-five ounces; in 1919, 12,333 ounces. Morphine in 1912, 440 ounces; in 1919, 30,087 ounces. Opium (crude) in 1912, 5,017 ounces; in 1919, 34,263 ounces.

Infant Mortality Rates.—An interesting variation in the usual relation of mortality rates among our native and foreign population is reported in Brockton, Mass. The rate for the native group is 101.5 and for the foreign group 92, in striking contrast to most industrial communities where the infant mortality rate is greatest among the foreign inhabitants. Investigators of the situation give as a partial explanation the fact that wages paid to skilled workers in Brockton are high enough to permit a comfortable standard of living and that there are no excessively poor housing conditions.

Fund for School of Public Health.—The University of Cincinnati Medical College is raising a fund of \$30,000 for the opening of a school of safety engineering and public health.

Poliomyelitis in Wisconsin.—Wisconsin health officers fear a recurrence of the epidemic of poliomyelitis. In Milwaukee forty-nine cases and three deaths were reported on July 31st, and in other sections of the State cases were reported.

Fort Snelling Hospital Closed.—United States Army General Hospital No. 29, Fort Snelling, Minn., was closed officially on August 1st. Twenty medical officers were discharged on that date and thirty more will be discharged as soon as the patients can be transferred to other hospitals.

Captain Hutcheson Awarded Victoria Cross.—Captain Bellenden Seymour Hutcheson, M. D., of Mound City, Ill., has been awarded the Victoria Cross by the British Government. Captain Hutcheson was one of six Americans so honored out of 12,000 who served with the Canadian Army. He was also awarded the Military Cross.

Insane Soldiers.—There are reported to be 350 insane soldiers in various New York State hospitals at the present time, practically all of whom suffered mental breakdown while in service in France. It is estimated that at least a thousand New York State soldiers will have been admitted to the various insane asylums by the time demobilization is completed.

Smallpox Patients on Ship.—Twelve members of the crew of a fishing vessel that recently discharged a cargo at Promised Land, L. I., and subsequently came to New York to coal, were found to be suffering from smallpox. As a result the United States Public Health Service was notified with a view to investigation in Nova Scotia, where smallpox is reported to be widespread.

Appointments at Long Island College Hospital.—Dr. Emil Goetsch, associate professor of surgery in Johns Hopkins University and surgeon to Johns Hopkins Hospital, has been appointed professor of surgery and visiting surgeon to the Long Island College Hospital. Dr. William Barrett Brinsmade and Dr. William Francis Campbell have been appointed clinical professors of surgery.

Disabled Soldiers to Study Optometry.—The Federal Bureau of Vocational Education will open a school at Vincennes, Ind., to educate disabled soldiers in optometry and lens grinding. The municipal government will furnish classrooms, while Vincennes will cooperate in instructing the pupils in mathematics and English. Only students with the equivalent of seven years' schooling will be admitted.

American Hospital in London.—Progress is being made in the work of establishing the American Hospital in London, according to a London press dispatch. Several prominent Englishmen, including the Prime Minister, Mr. Balfour, and Mr. Asquith, have become or are about to become associated with the project. Lord Reading, who has accepted the presidency of the hospital, has taken an active part in the movement and will preside at a meeting of its supporters within the next few days.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

DIETETICS IN DISTURBANCES OF METABOLISM.*

Fat Feeding Simplified.

By ROBERT HUGH ROSE, M. D.,
New York.

This is the third and final paper of a series based on an analysis of a sample diet. Herein are developed a number of instructive points regarding the source of fats in diet, and ways in which their amounts may be prescribed with accuracy, and increased or decreased with facility when desirable.

The chief fats are butter, cream, bacon and oil (particularly olive oil). Table No. 1 is arranged to show the grams of fat drawn from foods classed as fats, and the grams of fat drawn from foods classed as either proteins or carbohydrates, and the caloric content of the fats in an average balanced diet. This diet is one that is suitable for the individual living a more or less sedentary life—such as the majority of city dwellers who are engaged in office work.

SOURCE OF FAT IN OUR FOODS.

This table shows that the breakfast furnishes 20.5 grams of fat from foods classed as fats, and one gram from foods placed in other classes, or 21.5 grams altogether. It shows that the luncheon furnishes 16.5 grams of fat from foods classed as fats, and 12.5 grams from foods of other classes, or a total of twenty-nine grams. The dinner furnishes 10.25 grams of fat from foods classed as fats and 34.5 grams from foods placed in other classes, or 44.75 grams of fat altogether.

COMPARISON OF FAT DERIVED FROM FATS AND FROM PROTEINS AND CARBOHYDRATES.

Owing to the fact that eggs, classed as protein food, furnish almost as many grams of fat as protein, and meat which must necessarily be classed as protein, furnishes a very large amount of fat, unless considerable quantities of food classed as fat are taken there are practically the same number of grams of fat obtained from articles classed as proteins and carbohydrates as from fats themselves. From two eggs and three tenths pound of meat, thirty-seven grams of fat are obtained. Among the carbohydrate foods used in this diet it will be seen that thickened soup, which furnishes 4.5 grams of fat, is important.

CALORIC VALUE OF FATS IN THIS DIET.

The caloric value of the fats contained in this dietary shows the following important points: Two and one half balls of butter (a little less than one ounce), which is the daily allowance, furnishes 200 calories. Six tablespoonfuls of cream, medium weight, supplies 180 calories. Two teaspoonfuls of olive oil furnishes seventy-four calories. The total number of calories contained in fats obtained from

foods not classed as fats is 446.4. The number of calories obtained from the fat in foods classed as fats is 439.425. The total number of calories obtained from fats derived from all sources in the day's dietary is 885.825. This is about three eighths the day's requirement for one who is living a sedentary life. This amount may be easily exceeded by taking bacon and a large amount of cream for breakfast, and two butter balls at each meal.

TABLE NO. 1.

Breakfast: SAMPLE MAINTENANCE DIET.		
Fats—	Grams fat.	Calories.
Butter, one ball or one third ounce..	8.5	80
Cream, thin, four tablespoonfuls...	12	120
High content carbohydrate—		
Cereal		100
Bread, two slices, 4x4x½ inch.....	1	140
Sugar, two teaspoonfuls.....		66
Low content carbohydrate—		
Orange		70
Breakfast totals—		
Fat from fats.....	20.5	
Fat from proteins and carbohydrates	1	
Fat from all sources.....	21.5	
Calories		576
Luncheon:		
Proteins—		
Eggs, two	10	160
Fats—		
Olive oil, two teaspoonfuls.....	8	74
Butter, one ball.....	8.5	80
High content carbohydrates—		
Bread, two slices.....	1	140
Macaroni, two tablespoonfuls.....	1	50
Sugar, two teaspoonfuls.....		66
Low content carbohydrates—		
Lettuce, one half head.....		18
Fruit, apple .....	.5	75
Luncheon totals—		
Fat from fats.....	16.5	
Fat from proteins and carbohydrates	12.5	
Fats from all sources.....	29	
Calories		663
Dinner:		
Proteins—		
Meat, three tenths pound, 5x3x¾ inch	27	450
Fats—		
Butter, one half ball.....	4.25	40
Cream, two tablespoonfuls.....	6	60
High content carbohydrates—		
Soup, thickened	4.5	160
Bread, one slice.....	5	70
Potato, medium		90
Sugar, one teaspoonful.....		33
Low content carbohydrates—		
Squash, two tablespoonfuls.....		40
Peas, two tablespoonfuls.....	2	80
Apple, one .....	.5	75
Dinner totals—		
Fat from fats.....	10.25	
Fat from proteins and carbohydrates	34.5	
Fat from all sources.....	44.75	
Calories		1098
Day totals—		
Fat from fats.....	47.25	
Fat from proteins and carbohydrates	48	
Fat from all sources.....	95.25	
Calories		3337

*The third and final paper of the series. The first and second articles appeared in the NEW YORK MEDICAL JOURNAL for August 2 and 9, 1919.

It is easy to exceed requirements by free use of fats. This information regarding the source of fat in one's dietary shows how easy it is for one who is fond of fats, and who is living an inactive life, gradually to increase his weight by following the dictates of appetite in regard to fat ingestion. The amount of fat here allowed is exceedingly moderate. It is of such little bulk that it takes hardly any room in the stomach.

WHY SOME ARE STOUT AND OTHERS THIN.

This furnishes the explanation for two examples so frequently instanced to disprove the fact that weight depends on food intake. One is the gain in weight by some who have the reputation for eating very little. By giving preference to fats they seem to eat little, when they are really taking a large number of calories. The other is the failure to gain by some who think they are eating a large amount and should be heavier in weight. The latter often fail to take a sufficient proportion of fats though consuming a large quantity of less concentrated foods.

A case in point. Recently I was consulted by a thin patient who, I found, took no cream and very little butter. Being quite active and therefore requiring a large amount of nourishment, it was difficult for her to gain weight without the use of these important fats. When it is considered that fats furnish about three eighths of the caloric value of a balanced diet and are the most concentrated of the foods, it is easy to understand their importance in manipulating dietaries whenever undernutrition or overnutrition is concerned.

40 EAST FORTY-FIRST STREET.

Absolute Rest in the Treatment of Pulmonary Tuberculosis.—S. W. Schaefer (*Colorado Medicine*, July, 1919) emphasizes the great value of absolute rest in the treatment of pulmonary tuberculosis irrespective of its stage. The patient should be put to bed at once and kept there for four to six weeks, during which time he is allowed to arise only once daily for stool. If at the end of this period the temperature has not come down to normal the rest should be made more rigid, a commode or bedpan being substituted for lavatory permission. When this fails to bring the temperature to normal the rest should be made still more rigid, the patient not being allowed to feed himself or to talk. After the temperature has become normal—that is, never above 98.6° F. by mouth—the rest in bed should be continued for at least a month in early cases, for several months in moderately advanced cases, and as long as a year in severe cases. The rest treatment should be combined with full feeding and open air, and all adjuvant measures for resting the lung should be employed, such as pneumothorax, lying on firm pillows, etc. The principle upon which the use of such complete rest is based is that of aiding the formation of firm scar tissue in the lungs about the lesions. In the hands of the author rest in the forms outlined has given the most excellent results, even in cases regarded as almost hopeless.

Operative Cure for Inguinal Hernia.—Franz Torek (*Annals of Surgery*, July, 1919) describes a method which he devised fourteen years ago. The salient points in the technic of the operation are as follows:

1. Clean separation of the vas deferens and the bloodvessels of the cord from each other as well as from the sac by the removal of all the connective tissue that binds them together, allowing the vas to come out at the bottom of the opening in the transversalis fascia and the vessels to come out at the top of it, while the stump of the sac sinks back between the two. The stitches uniting the muscles to Poupart's ligament keep the vas and the vessels permanently separated at the site of the internal ring. The introduction of these sutures applies only to the oblique variety of inguinal hernia.

2. Below the vas suturing of Poupart's ligament to the internal oblique and transversus, and often to the rectus, is continued all the way down to the insertion of the pubis. This is important in order to avoid recurrence in a direct hernia, as well as present repair.

3. The employment of nonabsorbable suture material where tension is present.

4. The minor points, as the clean approximation of Poupart's ligament and muscles, without the interposition of fat, connective tissue or other structures. The sutures must be close and not allow gaping of the tissue between them; they must not be drawn so tight as to cut into or through the tissues which they unite; avoidance of rough handling, and the application of other common sense rules. The following summary of the procedure is presented:

1. Skin incision four inches long above Poupart's ligament in the direction of the fibres of the external oblique to the pubis at the external ring.

2. Incision of the external oblique in the course of its fibres, terminating at the external ring where it also divides the intercolumnar fascia.

3. Reflect the outer margin of the external oblique so as to expose Poupart's ligament all the way down to its insertion in the pubis. Likewise reflect the inner margin of the external oblique all the way down to the pubis, at the lower end separating it from the rest of the rectus sheath.

4. The border of the internal oblique and the transversus muscles is freed of connective tissue and fat.

5. Lift the cord out of its bed, liberating it on all sides and entirely loosening its attachments at the brim of the pelvis.

6. Dissect the vas deferens, spermatic vessels, and sac clean of connective tissue well up in the internal ring, until the sac is seen to emerge between the vessels and the vas, the vessels being above the sac and the vas below.

7. Remove all lipomata and other fatty tissue from the region of the internal ring, allowing no structure except the vas and the vessels to be partly inside and partly outside the abdomen.

8. Empty the sac, transfix it at the highest point possible, tie, and cut it off.

9. Lift the cremaster well out of the way before suturing; do not include it in the suture. If it is un-

manageable on account of its bulk or because of a diffuse attachment to the internal oblique muscle, divide or resect it.

10. Before placing the sutures the spermatic vessels are placed at the uppermost angle and the vas in the lowermost angle of the internal ring, these structures being kept apart.

11. The sutures are placed about half an inch apart. The needle should be carried gently through Poupart's ligament, so the hole is no larger than the diameter of the needle. Care must be taken not to split the fascia.

12. For the lowest suture No. 26 silver wire is preferred. All sutures are introduced before any are tied. The wire sutures are tied first by being twisted directly over the suture hole in the muscle, not over Poupart's ligament.

13. The cure of the hernia depends on good union of the deeper layer alone. The suture of the next layer is simply done, then the skin is sutured. The patient remains in bed about two weeks.

14. In direct hernia the vas and the vessels are found not to be separated at the internal ring; the sutures between the vas and the vessels are therefore omitted.

Surgical Treatment of Cystocele.—George Gray Ward, Jr. (*American Journal of Obstetrics*, May, 1919) agrees with Frank that the majority of the operations hitherto devised for cystocele depend upon ingenious denudations and complicated applications of sutures rather than upon a firm anatomical basis. They also fail to recognize the multiplicity of the injuries and the resulting changes in the tissues concerned. In the author's operation, which he terms "cystopexy," an inverted T shaped incision is first made along the entire length of the anterior vaginal wall; the head of the T is made wide enough to uncover the base of the broad ligaments. The line of cleavage is then found between bladder and vaginal wall, and these two structures separated sufficiently to develop the fascial bladder pillars. The latter stand out when the bladder is pushed upward in the midline off the cervix. The vagina is not separated widely at or beyond the urethrovaginal junction. The pillars having been further developed by dissection, the bladder is picked up with forceps at such a point that when it is carried up to the anterior surface of the uterus above the internal os in the centre, the base of the bladder is straightened out and the organ revolved on its transverse axis, the excess due to stretching being carried up into the pelvis to become adherent to the uterus in its new position. The proper points on the bladder base and uterus having been ascertained, they are sutured together with a catgut stitch after the technic of Goffe. The edges of the vaginal incision are then resected, widely at the cervical end and narrowly at the vesicourethral junction, to remove the overstretched vaginal tissue in the middle. Two sutures of catgut are then passed through the edge of the vaginal wall, including the bladder pillar of the same side, and through the uterine wall in the midline above the pivot point at the internal os close under where the bladder has already been attached, and out

through the bladder pillar and vaginal edge of the other side. These sutures are placed in the vaginal wall at such a point that when tied they completely straighten out the slack of the wall. Where prolapsus uteri coexists, the head of the inverted T shaped incision is extended laterally on the sides of the cervix and sutures passed, after the method of Alexandroff, which approximate the base of the broad ligaments in front of the cervix, reefing them and thus elevating the uterus and throwing back the cervix. Before the three sutures are tied, a continuous half hitch suture of catgut is used to bring together the fascial fibres of the bladder pillars under the bladder base. The mattress stitch of Alexandroff and the two angulation sutures are then tied, and the remainder of the vaginal incision closed with interrupted sutures. Where marked retrodisplacement accompanies the prolapse, shortening of the uterosacral and round ligaments is necessary.

Ambulatory Treatment of Varicose Ulcer and Edema of the Leg.—Audibert and Fouquet (*Presse médicale*, May 8, 1919) recommend a treatment based upon firm bandaging of the limb with gauze impregnated with the following paste:

Gelatin,	} of each.....	10 grams
Zinc oxide,		
Starch,		
Glycerin,	} of each.....	40 grams
Water,		
Potassium silicate,		
		100 grams

Before use the gauze bandage is softened in warm boiled water and subjected to pressure to drive out any excess of the paste. The ulcer and surrounding tissues are carefully cleansed with boiled water, the ulcer dusted with a bland powder, and its margins protected with strips of leucoplast to prevent subsequent tearing away of new epidermis when the dressing is removed. The prepared bandage, which should consist of rather stiff gauze, is then applied about the foot and leg in circular fashion, beginning at the root of the toes. In cases with edema, some degree of pressure should be exerted over the lower portion of the leg. The dressing is renewed every four days at first; later, when suppuration has ceased, at weekly intervals. This form of dressing is absorbent and antiseptic; mercury bichloride, one in 1,000, or salicylic acid, may be added to the formula to enhance the latter property. The treatment was applied with notable success in 120 cases. Its efficiency is illustrated in the case cited of an ulcer of ten years' standing which healed in thirty-one days—after six dressings.

Pain disappears in a few hours after application of the dressing, and the patient is urged to walk about, the resulting activation of local circulation, now supported by the bandage which acts as an artificial covering fascia, promoting the processes of repair. Granulation is often so active that application of silver nitrate becomes necessary. After recovery, recurrence should be prevented by means of an adjustable elastic bandage. The treatment is serviceable also in syphilitic leg ulcers as an auxiliary measure.

The Treatment of Neurosyphilis.—A. W. Morrison (*Journal-Lancet*, July 1, 1919) is convinced that in early cases, thorough, intensive, intravenous treatment, over a long period would greatly lessen the incidence of neurosyphilis. The intensive intravenous treatment of neurosyphilis consists in the intravenous injection of arsenphenamine every third to sixth day over a period of several months, with in addition weekly intramuscular injections of mercury salicylate. Of the various methods advised for the bringing of the salvarsan immediately into contact with the nervous system, the intraspinal injection of autosalvarsanized serum according to the technic of Swift and Ellis is the most satisfactory. Generally speaking, the intensive intravenous is the method of choice in the early or secondary stage of lues, and in later neurosyphilis, as being less dangerous and less complicated.

Dose and Methods of Administration of Diphtheria Antitoxin.—Frederick W. Sears (*Albany Medical Annals*, July, 1919) endorses the scheme of Schick who states that we should give 100 units for each kilogram of weight. Following this rule 1,000 units should be given to a child of twenty-two pounds weight; 2,000 for a child of forty-four pounds; 4,000 for eighty pounds; and 6,000 for a normal adult of 132 pounds. For immunizing, one half of the therapeutic dose should be given. As to the method of administration, in mild cases the subcutaneous method will serve; if a more rapid absorption is desired the serum should be injected intramuscularly. In a fulminating case there should be no hesitation in giving the serum intravenously. It is advisable to investigate the question of sensitization to horse serum and of asthmatic attacks before giving the serum, especially intravenously. This can be decided in two ways in suspected cases either by giving a very small dose, as 0.1 c. c. and repeating in twenty minutes with double this dose and then gradually going on up; or the Schick technic may be used to inject a minute quantity of the serum intradermally.

Radium Treatment of Tumors in Otorhinolaryngology.—Launois, Sargnon, and Moutet (*Bulletin de l'Académie de médecine*, May 13, 1919) report their experience in forty-three cases, giving a brief history of each. In general, nonepitheliomatous tumors were greatly improved, the patients often recovering completely under radium. In epithelioma the results were less good, especially in the soft, ulcerated type. Epithelioma of the ectodermal type with hornlike whorls is little affected by radium, and may even be unfavorably influenced. The amount of radium bromide used by the authors ranged between thirty and 120 milligrams, applied wherever possible for twenty-four, thirty-six, and even forty-eight hours. In many instances, a second application proved desirable, but it was always made at as long an interval as possible after the first. Of sixteen tonsillar tumors, six were cured; these latter were lymphadenomas or sarcomas. Tumors of the nose, sinuses, and nasopharynx usually showed good results. The nasopharyngeal tumors were for the most part sarcomatous. Tumors of the larynx, fourteen in number, afforded only three recoveries.

Treatment of Rickets.—C. A. Scherer (*Minnesota Medicine*, July, 1919) notes three factors in the treatment of rickets. The first is diet: in the nursing a whole milk mixture and in the older child a well varied diet of fruits, cereals, vegetables and reduced amounts of protein. The second is sunlight and fresh air, the patient spending as much time as possible outdoors, and preferably in the sunlight. The third is the Kassowitz combination of codliver oil and phosphorus although it seems well established that the beneficial effect of this preparation is derived from the oil rather than from the phosphorus.

Transvenous Aneurysmorrhaphy.—William Pearson (*British Medical Journal*, June 14, 1919) recording a case, recommends a method for cure of aneurysmal varix which has proved satisfactory in many cases. The method consists in the suture of the opening from the artery through an incision through the vein. Asepsis should be rigid and scrupulous care should be exercised to avoid injury to the intima of the vein. Blood should be washed away by gentle irrigation with saline solution and the vessel wall should be smeared with sterile vaseline. The method of suture is important. The needle is first passed through a small portion of the fibrous tissue which binds the vessels together at one end of the communication, on its external aspect outside the vessels and between them, thus avoiding penetration of the intima of either. This stitch is tied and the needle is then passed obliquely from without inwards, emerging on the inner surface of the vein near the extremity of the stoma. The extreme edges of this are then brought together by a continuous suture the end of which is passed out at the end of the stoma as at the beginning and tied outside. This eliminates knots within the vessels entirely.

Hypnosis, Suggestion, and Dissociation.—William Brown (*British Medical Journal*, June 14, 1919) says that there is an overwhelming consensus of opinion that the one satisfactory method of treating the various forms of functional nervous disorder is that of mental analysis and reeducation which can be summed up in the term "autognosis," or self knowledge. He believes that hypnosis can be used to great advantage in this plan of treatment, but not, as formerly, for the purpose of reinforcing suggestion. Its field of usefulness lies in bringing into the patient's consciousness all of the circumstances through which he passed at the time of the development of his nervous disorder. By inducing light hypnosis and causing the patient to go through all his initial experiences these are thus brought into his consciousness and many of his disabilities are at once removed, those most readily removed being mutism, paralyzes, contractures, and tremors. Various disorders of the vegetative nervous system are also much benefited, even more in fact than paralyzes of the voluntary muscles. The extent to which the conditions are relieved depends upon the completeness with which the patient's original experiences are revived. The method has proved most satisfactory in early cases, but is not available in chronic cases in which there is marked fixation of symptoms.

Miscellany from Home and Foreign Journals

Arterial Pressure.—Fernand Lévy (*Paris médical*, May 17, 1919) presents arguments to the effect that the maximum or systolic blood pressure indicated by cuff sphygmomanometers is too high, the true physiological maximum pressure being lower than is generally supposed. The artificial systolic pressure shown by these sphygmomanometers bears a relationship to the force of the heart beat, though it does not definitely measure it. Correspondingly, the differential or pulse pressure is less than it is generally stated to be. The only condition of the artery permitting of correct estimation of the pulse pressure is that in which the pneumatic counterpressure of the cuff exactly neutralizes the constant intraarterial pressure. This is the moment at which the vessel, having returned to its normal calibre, shows in a maximal degree the systodiastolic oscillations of the blood wave. The pressure thus obtained should be taken as a basis in estimating the pulse pressure, but is not furnished by the cuff method now in use. Nevertheless valuable information is obtained from blood pressure studies by present methods, provided, in a given investigation, the form of procedure used—oscilloscopic, auscultatory, palpatory, or graphic—remains the same.

Chloride and Urea Retention in the Nephritis of Children.—P. Nobécourt (*Bulletin de l'Académie de médecine*, May 20, 1919) recognizes, among the acute nephritides of children, a simple albuminous form, unaccompanied by retention of chlorides or urea; this form is frequently that complicating scarlatina, tonsillitis, impetigo, or purpura. There is also a rather common form associated with chloride retention, and a comparatively rare azotemic form. In the former, edema is the most striking symptom; the latter is characterized by torpor, asthenia, and repeated vomiting, which is readily induced by the ingestion of a little milk or water. Combined forms, involving both chloridemia and azotemia, are fairly common. In sub-acute and chronic nephritis, the same subsidiary grouping again applies, but the azotemic cases are exceptional and the combined cases relatively rare. The combined condition is generally an expression of diffuse involvement of the kidneys. The conditions as regards retention are subject to variation at different stages in the individual case. The ultimate prognosis depends, in a measure, upon these conditions. Persistent chloride or urea retention, even if slight and elicited only by ingestion of salt or urea, necessitates a guarded prognosis. Again, some cases of simple albuminous nephritis are grave owing to the secondary anemia, cachexia, or cardiovascular disturbances. As for treatment, dieting will usually counteract retention. In some cases, however, edema nevertheless persists. Diuresis may then be started by means of small doses of crystallized digitaline—two drops of the one in 1,000 solution for five or six days—or better, with theobromine, .4 to .6 gram. The latter drug should be discontinued after a week. In some cases of chloridemic nephritis, acute or chronic, edema is irreducible.

Inversion of the Temperature Curve and Hippocratic Fingers in Long Standing Interlobar Pleurisy.—Alfred Jacquemin (*Bulletin médical*, May 3, 1919) comments on the paucity of diagnostic signs afforded in encysted empyemas, and especially interlobar empyemas, apart from x ray examination. Many such cases are mistaken for pulmonary tuberculosis and receive inappropriate or even harmful treatment. In early cases there are no pathognomonic signs, and the deep exploratory puncture necessary for diagnosis is almost never thought of. Later, after rupture into the bronchi has occurred, all the symptoms seem to suggest tuberculosis. Two special signs, however, are available for differentiation. In long standing interlobar pleuritis, draining imperfectly through the bronchi, the temperature is subfebrile in the morning and normal in the afternoon. This is because pus collects in the lesion at night, causing fever, and is eliminated by coughing in the morning or gradually in the course of the day. In tuberculosis, on the other hand, the cavities are less tolerant of irritation; coughing occurs at night, and an accumulation of material such as might cause fever does not occur. The Hippocratic finger is exceptional in tuberculosis and when present occurs late, after the disease is of several years' standing and has extended to the pleura. In interlobar pleurisy, on the other hand, incurvation of the nails is constant and begins to appear by the second month of the disease. Cases illustrating these facts are described.

Bacteriological Observations on the Epidemic of Influenza at Camp Beauregard, La.—J. E. McClelland (*American Journal of the Medical Sciences*, July, 1919) says that the demonstration of the bacillus influenzae was possible in a large proportion of the patients from whom nose and throat cultures were made. About 5.7 per cent. of the patients were found to be hemolytic streptococcus carriers. The bacteriological examination of the sputa from patients with productive cough showed both influenza bacillus and pneumococci. In postinfluenzal pneumonia Type IV predominated with a large number of Type III. Blood cultures were positive in about fifty per cent. of the pneumonia patients, with the same high percentage of Types IV and III; in no case was the influenza bacillus recovered from the blood either ante or postmortem. The mortality in pneumonia with septicaemia was 88.8 per cent. Type I cases were few; all recovered. The relative number of hemolytic streptococcus cases was small; all with septicaemia died. Only two cases of pneumococcus meningitis; both had pneumococci in the blood. The empyemas did not differ from those following ordinary pneumonias. The influenza bacillus was not cultivated from any of the pleural effusions. Most autopsies showed extensive bronchopneumonia from which both Bacillus influenzae and pneumococci were recovered in cultures made from the lung tissues.

The Importance of Disinfecting All Malaria Patients.—C. C. Bass (*Southern Medical Journal*, June, 1919) urges the disinfection of all patients suffering from malaria by the administration of sufficiently large doses of quinine maintained for a sufficient length of time, at least eight weeks. The dose need not exceed ten grains a day for adults and should be proportionately less for children. He asserts that thorough disinfection in a case of malaria may be beneficial, first, to the patient by curing him and preventing relapse; second, to the community by preventing transmission of the infection. If all malaria patients treated by physicians were disinfected by the treatment, there would be a rapid decline in the prevalence of the disease. He calculates that it would reduce the prevalence of malaria about ninety per cent. in ten years. The chief causes of failure are believed to be: 1, Spectacular methods of treatment, including deep and intravenous injections; 2, failure to give patients convincing advice as to the nature of the disease and the necessity for proper treatment, and 3, not employing efficient treatment. The common practice is to give quinine for a few days and then some preparation of quinine and perhaps arsenic and other drugs, the dose of quinine being insufficient to destroy parasites and disinfect the individual, even if he sticks to the treatment as long as advised. We should recognize that no tonics or other drugs have any specific action in the destruction of malaria parasites, and that if employed at all they should not be allowed to take the place of the necessary amount of quinine. Neither should the dose of quinine be reduced to below what is necessary to destroy parasites. Generally it is better not to give anything beside quinine to malaria patients following acute attacks.

Etiology of Yellow Fever.—Hideyo Noguchi (*Journal of Experimental Medicine*, June and July, 1919) reports the results of a series of studies on yellow fever as follows:

Symptomatology and Pathological Findings of the Yellow Fever Prevalent in Guayaquil.—Analyses were made in 172 cases of yellow fever, giving a detailed description of the symptoms, onset and course in man, and gross and histological findings reported. The yellow fever prevalent in Guayaquil is in no way different from that described by other observers.

Transmission Experiments on Yellow Fever.—Experiments for the purpose of transmitting yellow fever to animals by inoculation with the blood of patients sick with this disease were conducted by Doctor Noguchi. A considerable number of animals and birds were used with negative results, but it was possible in eight instances to cause symptoms and lesions in the guineapig closely resembling those observed in human beings. In the blood, liver, and kidneys of these animals a minute organism was found, which is called *Leptospira icteroides*, and which closely resembles in morphology the causative agent of infective jaundice, *Leptospira icterohemorrhagiae*. This organism when transmitted from yellow fever patients to guineapigs induced similar symptoms and lesions in normal guineapigs.

Symptomatology and Pathological Findings in Animals Experimentally Infected.—Doctor Noguchi reports in detail the clinical features and lesions, with autopsy findings, produced in guineapigs, dogs, and monkeys by inoculating them with a pure culture of *Leptospira icteroides*, or with the blood or organ emulsions of guineapigs or other susceptible animals experimentally infected with the organism. In the guineapig the symptoms were much more pronounced than those seen in the other animals. The symptoms, lesions, and pathological changes observed in these animals correspond with those observed in human cases of yellow fever.

Acquired Immunity of Guineapigs against Leptospira Icteroides.—Doctor Noguchi found that the majority of guineapigs when inoculated with the blood of yellow fever patients were resistant to the disease, though a number of nonfatal, mild, or abortive infections occurred in these animals. In some cases on the fourth or fifth day after the guineapigs had received the inoculation of the yellow fever blood a temporary febrile reaction occurred, sometimes followed by jaundice, but the animals soon returned to normal. Later when they were inoculated with an organ emulsion of a passage strain of *Leptospira icteroides* they resisted the infection, while animals which had previously been inoculated with the blood from malarial patients and normal guineapigs died from the typical experimental infection after receiving the infectious organ emulsion.

Properties of Blood Serum of Yellow Fever Patients in Relation to Leptospira Icteroides.—In order to decide whether or not the serum of yellow fever patients would have a specific effect on *Leptospira icteroides* which had been isolated in a case of that disease, Doctor Noguchi mixed the blood of a patient with the organism in the form of organ emulsion from infected guineapigs or culture, and injected it into the peritoneal cavity of a healthy animal. A study of the Pfeiffer reaction showed that it was positive in fifteen out of the eighteen cases studied (about eighty-three per cent.). Control animals were inoculated with the same emulsion or culture of the organism and in some cases with serum from patients suffering from malaria and other diseases. The control animals succumbed to a typical infection, while some of the cases in which the guineapigs had received the blood from the yellow fever patient a fatal termination was prevented. In one case the serum had no effect on the organism on the second day of the illness, but when tested on the tenth day it was protective.

Cultivation, Morphology, Virulence, and Biological Properties of Leptospira Icteroides.—Doctor Noguchi studied the cultures made in eleven cases of yellow fever from which the *Leptospira icteroides* was isolated three times, besides being obtained in pure culture from the blood of guineapigs which had been inoculated with the blood or organ emulsions of patients suffering from yellow fever. The paper includes a detailed report of the best methods of cultivation, media to be employed, a description of the morphology, cultural properties, virulence, and viability and filterability of the organism.

The Albuminuria of Pregnancy.—Edward P. Davis (*Canadian Medical Association Journal*, July, 1919) differentiates between albuminuria of pregnancy and toxemia of pregnancy, meaning by the former term a condition of edema with abundant serum albumin in the urine near the end of pregnancy, probably dependent on mechanical interference with the kidneys, not of serious importance, and by the latter a serious pathological condition frequently culminating in eclamptic convulsions. Toxemia of pregnancy includes pernicious nausea and vomiting, albuminuria and eclampsia, and other complications. Without attempting to establish definitely different classes of toxemia in later gestation he mentions three groups which are fairly distinct in their clinical manifestations: First, and most common, the nephritic albuminuric group; second, less common, the hepatic variety; third, infrequent, that which is caused by failure of the ductless glands to perform their function, or by exaggerated function, notably the thyroid gland. In the nephritic variety the most prominent symptom is serum albuminuria. Accompanying this there is some alteration in the percentage of urea and in the nitrogenous metabolism, for the nitrogen partition of the urine will show increased creatin and creatinin, rest nitrogen, and often ammonia. Indican is not infrequently present in large quantity. Sugar, acetone, and diacetic acid are usually absent; casts of all varieties are present. The quantity of urine is greatly diminished, its specific gravity much increased, its color darkened. Pulse tension will be above 140 and may rise to 220. The aortic sound of the heart is often sharply accentuated and the cardiac impulse is strong and heaving. There is obstinate frontal headache, often impairment of vision, sometimes with the sight of particles of fire before the eyes. The patient may be dull and apathetic, or irritable and excitable. Local or general edema is common. The tongue is usually foul and heavily coated; obstinate constipation is frequently present. An explosion of nervous energy commonly manifests itself in epileptiform tonic or clonic convulsions. In other cases convulsions do not occur. Autopsy reveals the kidneys engorged, alterations in the lobules of the liver and often in the substance of the spleen, lungs, and brain. The fetus shares the mother's disease and its organs show corresponding lesions. The process is evidently a poisoning, but we are in ignorance of the exact nature of the poison.

In the hepatic variety there is little or no albuminuria, and no casts except a few hyaline. Blood pressure and temperature are often subnormal. There is no severe headache, the patient is apathetic, the tongue dark and dry, the urine scanty and very often slight jaundice is observed. A nitrogen partition reveals a greatly diminished urea, increased creatin and creatinin, rest nitrogen, and ammonia, high indican percentage, and frequently acetone and diacetic acid. A predominant feature is the disintegration of the blood and a tendency to oozing hemorrhage into the viscera, or as petechiæ beneath the skin. Such patients may have convulsions, pernicious nausea may develop, or they may die from exhaustion without an explosion of ner-

vous energy. The diagnosis is made by a general physical examination and by the nitrogen partition of the urine.

In the thyroid type of toxemia the thyroid is evidently altered in substance and structure, exophthalmos may be present, the pulse is frequently rapid, pulse tension may be increased or lessened. There is a history of hyperthyroidism or hypothyroidism often dating from the beginning of menstruation. Examination of the urine reveals a moderate albuminuria, a few hyaline casts, and nitrogen partition shows no great variation from the normal. These cases are especially dangerous at the incidence of labor, when great disturbance of circulation and pronounced dyspnea usually occur.

To prevent these complications through hygiene of pregnancy the cooperation of the patient is essential, and the laity needs to be educated as to its importance. The patient should be seen at least every two weeks during pregnancy and her actual physical condition accurately ascertained. A thorough examination of the urine, including a nitrogen partition, if suspicious symptoms arise, is imperative. The repeated taking of the pulse tension is a wise precaution. The ideal food of the pregnant woman consists of milk, fruit, and bread, and the avoidance of large quantities of highly nitrogenous food is the greatest preventive of the acute toxemia of later gestation. It is also of paramount importance that the bowels act regularly and freely, that the patient drinks at least one quart of good water in twenty-four hours, that the action of the skin is stimulated by bathing and by the wearing of proper clothing, that abundant fresh air and exercise is afforded, and that the patient leads a hygienic life. These simple matters seem to the patient trivial and it is difficult to get women to take them seriously, but strict adherence to them will prevent this dangerous and distressing complication in the majority of cases.

There is no drug which can be relied upon in the acute toxemia of later pregnancy, but the remedies which stimulate elimination are very valuable. Three methods of treatment out of the many proposed in the past have had some measure of success. Recently there has been a revival of the argument to terminate pregnancy at the earliest possible moment when symptoms threaten or convulsions develop by delivering the patient by abdominal or vaginal Cæsarean section. But immediate delivery does not show the best results for mother and child. The anesthetic and the surgical manipulation increase rather than lessen the toxemia, and in a large series of cases so treated the maternal and fetal mortality was greater than in those subjected to other methods of treatment.

Another method of treatment consists in isolating the patient from disturbing influences, in the free use of morphine, bromides and chloral, in the careful avoidance of all disturbance of the generative tract, and in no interference unless labor begins and halts, when it may be terminated by an easy vaginal delivery. The statistics of a considerable number of cases so treated are favorable to the success of this method, but it cannot be said to be superior to that which aims at immediate and

thorough elimination as the basis of intelligent management. It is particularly fitted for the general practitioner who cannot take his patient to a hospital and who has not the experience, appliances, and assistance necessary for more thorough, vigorous, and successful management. In this way both the physician and patient are benefited.

The third method of treatment for the acute toxemia of later pregnancy, with or without convulsions, aims at elimination. It can be carried out most successfully in a hospital, and when this is impossible a hospital must be improvised in the home of the patient. If the patient is not conscious and in convulsions from sixteen to twenty-four ounces of blood should be withdrawn from a vein in the arm and an equal quantity of normal salt solution introduced. The stomach should be thoroughly irrigated with warm bicarbonate of soda solution, and from two and a half to five grains of calomel should be poured through a tube into the stomach.

The large intestine should be thoroughly irrigated with two gallons of hot salt solution. The patient should be catheterized and the urine thus obtained carefully examined. The patient should be placed between blankets, the skin cleansed with soap and warm water, hot water bottles placed at the feet, a dry ice cap on the head, and an abundance of fresh air secured. Should convulsions occur a soft pad is placed between the teeth to prevent biting the tongue, but no effort made to control them by anesthetic or narcotics. In from two to four hours the irrigation of the intestine should be repeated. In from six to eight hours the patient will be better or worse. If she is a multipara and the cervix soft and dilatable the membranes may be ruptured. If she is a primipara with a long and resisting cervix, and eliminative treatment for six or eight hours shows no improvement, and the child is living and in good condition, she may be delivered by abdominal Cæsarean section.

Under no other condition should section be done. If labor develops and halts when conditions are favorable, it may be terminated by forceps or version, but it should not be induced, nor the accouchement forcé be employed. No radical procedure should be undertaken in the interests of the child, as it shares the mother's toxemia and will probably die within two weeks, even if born alive. After delivery two dangerous complications threaten; pulmonary edema accompanied or followed by extravasation of blood into the alveoli of the lung, fever, cyanosis, cerebral edema and death, which calls for the prompt and free use of dry cups, the hypodermic administration of strychnine, digitalis, and atropine, and the free use of oxygen; and an acute cerebral disturbance, usually in the form of mania, which requires restraint, sedatives, isolation, elimination, and often the removal of the patient to a hospital for mental diseases. Prognosis must be guarded in toxemia in later gestation; two weeks must pass before the patient can be said to be safe and then she must be watched for a year. In thyroid cases a cautious trial may be made of thyroid extract.

Cerebral Hemorrhage of the Newborn.—Margaret Warwick (*American Journal of the Medical Sciences*, July, 1919) says that this condition, which is frequently met with, is brought about by trauma in normal or rapid deliveries, by congestion or asphyxiation in slow deliveries, or by disease of the child itself. The so-called hemorrhagic disease of the newborn she considers a much neglected but very important cause. Forceps deliveries, advanced age of the primipara mother, and syphilis probably do not play as important a rôle in the etiology of this condition as was formerly supposed.

Etiology of Influenza.—Jean Louis Burckhardt (*Correspondenz-Blatt für Schweizer Aerzte*, June 7, 1919) finds that Pfeiffer's influenza bacillus cannot be the exciting agent because it is so inconstant not only in endemic, but also in epidemic influenza. The streptococci which appear almost regularly in pneumonia, pleuritis, and other complications likewise appear not to be the agents, but only the cause of the complications. The gram negative cocci are also excluded because they are absent in complications, and frequently present in health. The active agent seems to be a minute, nonbacterial, filterable virus, similar to that of smallpox. The varying severity of the epidemic in neighboring places and under similar conditions is probably due to different combinations formed with cooperating bacteria.

Fever of Endocrine Origin.—Léopold-Lévi (*Presse médicale*, May 12, 1919) recognizes, in the first place, a purely endocrine type of fever, due to an action of the thyroid, luteal, adrenal, or pituitary hormones on the heat centres. In this group belong the febrile states associated with growth, dentition, and muscular, or psychic activity. Another type comprises fevers favored by a special endocrine disposition or oscillations of endocrine activity, as in menstruation. Under this head are included febrile movements due to recurring sore throat, rheumatism, or erysipelas. In a third type, fever is merely accentuated by reason of endocrine disturbances. Finally, the endocrine organs take part in the elaboration of all cases of fever. Fever often prevents the aspect of an endocrine phenomenon. Thyroendocrine disturbance is often manifested in fever.

Tendon Transplantation in Drop Wrist Due to Nerve Injury.—Vernon Pennell (*British Medical Journal*, June 7, 1919) strongly advocates the early practice of tendon transplantation in cases of drop wrist which are due to severance of the musculospiral nerve and which are complicated by infection in the region of the nerve or by fracture of the humerus. The transplantation of tendons prevents the deformity from becoming fixed through the unopposed action of the flexor muscles; it tends to aid in the maintenance of nutrition of the muscles and prevents stiffening of the joints and ligaments; and it in no way prejudices later repair of the nerve. The detailed technic of the transplantations which may be practised is given and special emphasis is laid upon the necessity for securing correct alignment of the anastomosed tendons and for early reeducation of the transplanted muscles.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

SECTION IN NEUROLOGY AND PSYCHIATRY.

Meeting Held April 8, 1919.

The Secretary, Dr. HYMAN CLIMENKO, in the Chair.

Dystonia Musculorum Deformans.—Dr. S. PHILIP GOODHART presented a case, as being typical of this rare condition, for confirmatory opinion. It was the first of its kind in his private practice although he had seen a few cases at the Montefiore Hospital. The patient was a girl twenty-four years of age whose family and personal history showed no taint. The onset of the present condition was atypically sudden and its progress rapid. The young woman had none of the stigmata of neuroses and she was not emotional. Under unusual emotional stimulus, as for example the present demonstration, the spasmodic hyperextension of the muscles became more pronounced and beyond her control. The will had but little influence in the control of the movements which did not persist when the patient lay quietly recumbent.

Doctor Goodhart said that such cases had heretofore been regarded as functional, but it was now quite a general opinion that they belonged to a definite group whose pathology might reasonably be placed in the corpus striatum. This important ganglion, deeply seated within the hemisphere, was the centre of tone and its component structures, with their connections with red nucleus and cerebellum, represented the extra pyramidal influence of the several phases of muscle tone. The case presented was distinctly a disorder of that function peculiar to physiological muscle activity comprehended by the term *tone*. Dystonia musculorum deformans, a condition originally described as such by Oppenheim, was essentially one in which part of the musculature was in a state of hypertonicity, another in a state of hypotonicity, and another in a normal state of tone. This variation of tone became manifest only upon movement. The same set of muscles might be involved, at one time hypertonic and again hypotonic. The hypertonicity of the leg muscles and those of the trunk and pelvis was characteristic so that in walking the trunk appeared to revolve about the pelvis.

Dr. WILLIAM M. LESZYNSKY considered that the only objection to the diagnosis would lie in the suddenness of onset of the condition. Dystonia musculorum deformans was a gradually progressive disease.

Surgery of Craniocerebral War Wounds.—Dr. HAROLD NEUHOF read a paper on this subject in which he related facts drawn from his experience during the spring and summer of 1917 when he had the opportunity of treating patients with head wounds at U. S. Army Base Hospital No. 2 (New York Presbyterian Hospital Unit) attached to the British forces. These patients, the majority of whom had been operated upon in the front area, fell into two classes, one in which there had been primary closure, and the other in which there had

been drainage. The great majority of the patients in the first class did well, but sometimes secondary operations were necessary. When the dura had been lacerated by the missile or bone fragments a hernia cerebri was apt to develop, and such hernias often meant early acute brain infection with later development of brain abscess. Once a hernia cerebri appeared hope for the ultimate outcome was not good. Concerning the second class of patients with wounds drained or incompletely closed, the results were on the whole unsatisfactory. The best ultimate outlook in serious head wounds existed after complete operations performed at hospitals in the advanced zone; operations short of complete were followed frequently by serious and often by fatal complications, and delayed primary operative procedures performed at the base generally had disastrous sequelæ.

Accordingly when Doctor Neuhof was sent with a neurological team to British Casualty Clearing Station No. 17 in Flanders in the fall of 1917, he concluded that complete operations should be done, whenever feasible, upon all head wounds. He realized that efforts at complete operation might result in an even higher immediate mortality than the generally accepted fifty per cent. for wounds penetrating the dura but in the patients who recovered there would be a greater likelihood of freedom from subsequent complications. Careful follow up records were kept and as they covered a period of more than a year they showed figures which might be termed end results. There was not a single report of late hernia cerebri, meningitis or brain abscess. This was the most striking feature of the records of this series of head wounds. Up to the present there had been two reports that suggested the existence of *petit mal*, but none of convulsive seizures. Turning to the symptoms that continued after the patients arrived in England or the various colonies, headache and dizziness were the most frequent complaints, either or both of these symptoms being reported in the first months after operation, and had persisted in twenty per cent. of the patients. There was, however, a general trend toward improvement. Other subjective symptoms, such as insomnia, hypersusceptibility to sounds, inability to concentrate, and so on, were not infrequently mentioned but these had no proportionate relation to the gravity of the wound. The reports in but one case suggested the possibility that insanity might have developed. Gross paralysis occurring after wounds damaging the brain in the parietal and parietofrontal regions was comparatively infrequent, and the majority of paralyses showed improvement before the patients left the casualty clearing station. Subsequently the course of the paralyses or pareses ranged from progressive improvement to complete disappearance. The development of spasticity was reported in but one case, and there was not a single instance of persistent aphasia. The conclusion to be drawn from the follow up of this series was that the ultimate prognosis for patients with craniocerebral

wounds after complete early operations was far more favorable and cheering than was generally thought to be the case. The total mortality in the head wounds operated upon, including deaths from other causes and deaths after leaving the hospital, was forty-two per cent., in dural penetrations in the first series of cases, and was reduced to twenty-nine per cent. in the second series of head wounds with dural penetration. In the latter group of cases the patients were treated at Mobile Hospital No. 2, American Expeditionary Forces.

Doctor Neuhoﬀ described the type of material that came under his care, the physical signs and neurological manifestations, and gave in some detail the operative technic that was employed.

Dr. FOSTER KENNEDY said that Doctor Neuhoﬀ had covered such a wide field that it was difficult to decide which parts of his paper to discuss. At the beginning of the war the neurologists and the surgeons acting with them seemed to be very much in favor of very wide exploration in almost all cases of cranial injury. As the war went on that policy was more and more modified and it would seem the modiﬁcation was associated with good results. At the hospital to which he was ﬁrst attached he said that he saw more cases of brain abscess within three weeks than he had ever seen before. The policy which had been inaugurated there was that a man coming in with a cranial injury was subjected to a revision of the wound. In the course of that revision, if a crack of the cranium was found a trephining operation was automatically done. The result of that policy was the production of innumerable cases of brain abscess. It was very difficult to get surgeons to realize that though they were dealing with a fracture it might be a fracture in good position. They had to acknowledge that if they were dealing with an infected fracture of the femur without displacement they would not cut down upon it and plate it. But this procedure with the skull was followed because it always had been done, as it was believed to be necessary. But it was not necessary. When those same men got in the habit of looking at these wounds, not for cranial injury but to see whether there was cerebral injury, the mortality was very markedly reduced. A rule was followed afterward that men coming in with head injuries were examined neurologically. If they had cerebral symptoms they were then subjected to cranial exploration. But whether they had a fracture or not, if they had no symptoms referable to compression they were left alone. As Doctor Neuhoﬀ had said, the whole problem was sepsis. All these wounds were terribly septic. The capacity of the scalp to become gangrenous and to have a widespread subcutaneous cellulitis of a fulminating type was a serious consideration. It was through such a surface that one had to operate. When a gratuitous opening was made in the skull an avenue for infection of the meninges was laid open which usually had grave consequences and led rapidly to death. It was found that the dura had an ability to wall itself off and the gross manipulations of the surgeons tended to break down those young adhesions. So they became very cautious and this caution was followed by success.

Doctor Kennedy was glad to hear Doctor Neuhoﬀ speak against the policy of digital manipulation of the brain. Sometimes such manipulation failed to remove a bullet from below the surface of the brain and yet the patient subsequently recovered. The capacity of the brain to encyst foreign bodies was remarkable and even large pieces of metal seemed to be borne without much discomfort.

Doctor Neuhoﬀ had said that he thought cerebral hernia was associated with a septic process. The speaker agreed with him up to a certain point but he was not as pessimistic regarding the certainty of brain abscess following. The septic process was often quite superficial. Large hernias had disappeared under dressing every two or three hours; it was an endematos process which disappeared in four, five, six or seven weeks. Those patients, if transferred to England, would have died, for there had been a high mortality among patients taken back home; but when a patient could be kept in France he very often recovered. Those cases were most often the result of a purely local sepsis overcome in the ordinary way by dressing very frequently.

There were some valuable lessons to be learned from the subsequent history in these cases. There never had been a time when so many men were so seriously hurt in the head as in the last few years. There had been ample opportunity to observe the results of very serious brain injuries in the mass. For instance, men returned to the ﬁring line after they had been trephined a year or so before did not do well. They had all lost their nerve. They did not suffer locally from their injury but they were not able to stand the strain, to adapt themselves again to their environment. But on the whole, very little afterresults, as far as ordinary peace time conditions were concerned, had developed. It was amazing that there were not more cases of epilepsy and more cases of mental breakdown as a result of head injuries. Emotional instability varied inversely with the seriousness of the wound; the more seriously the man was wounded the more calm his mind and emotional sphere.

Doctor Neuhoﬀ had not said anything about ﬁlling in the open wound by the surgeon after the removal of missiles or operation for the relief of pressure—trying to do an Albee operation on the head by implantation of bone graft. In this operation there was always uncertainty whether or not the area would become septic again and it was not advisable. The same operator would make an artiﬁcial skull by imposing a piece of metal in place of the bone defect. That seemed to be very bad plastic surgery. It seemed neurologically wrong. If there was a well healed area with the individual not suffering from it one ought not to interfere any more with it, and a metal cap could be given to be placed on the outside of the head—a solution unlikely to open avenues for bacteria.

In some of the worst cases seen by Doctor Kennedy the patients did remarkably well. He was amazed to discover the resistance of the brain to very severe injury. One man had had a very large glancing wound of the left frontal lobe with crushing depression fracture sustained forty-eight hours before. The wound smelled gassy. Fourteen

pieces of bone were removed and some of the lining of the helmet, all from brain tissue. The wound was left open but all of the destroyed tissues of the scalp were cleaned away. The patient had a series of convulsions after the operation, became completely aphasic, recovered, and was sent to England, where he had a plastic operation done, and when last heard of he was doing perfectly well and working as a laborer.

Another man had a small cranial crack but was without symptoms other than headache and some vomiting. The wound was in the region of the left temporal lobe and he had been operated upon but nothing was found. After operation he became motor aphasic. The wound was reopened and a subpial hemorrhage was found. The wound was widened and the hemorrhage left undisturbed. He subsequently made a complete recovery. There was a series of cases of men who were struck on the helmet, sustaining a very small wound, the whole force of the blow having been taken by the helmet. These men came down with concussion of the brain, with pulse below 40 and remaining between 40 and 50 for three days during which time they would vomit. There was no sign of local brain pressure but the spinal fluid came out under extreme tension. The symptoms would last three to five days, the men would be quite well for three to five days, and then they would have a relapse and that situation might be maintained for eight weeks. Many such cases were seen. The men all had the appearance of profound episodic compression of the medulla; by prolonged rest, without operation, they all recovered.

Doctor GOODHART considered very interesting the fact that Doctor Neuhoof placed great reliance on the location of the injury through the neurological reflexes, and thought that was very important. He had a case under observation in which deep seated neoplasm had been suspected, the only sign being absence of abdominal reflexes on the right side, and ten days later there was evidence of pyramidal tract derangement.

Doctor Neuhoof thought the cases to which Doctor Kennedy referred were different from those seen in his own experience, that is, wounds in a state of infection. The treatment for them was different and consisted in not doing anything unless there were definite indications from a neurological examination. At the base hospital he saw six cases of hernia cerebri treated by persistent efforts at sterilization which receded. In four patients subsequent complications developed and they died from five to nine months after the recession of the hernia cerebri. This Doctor Neuhoof believed to be ample reason for pessimism.

Clinical Features Accompanying Changes in the Sella Turcica.—Dr. WALTER TIMME considered that it was difficult in these cases to announce which came first, the sella changes or the actual metabolic and blood disturbances. He did not wish to be understood as saying the clinical manifestations were produced by these changes in the sella turcica. Thirdly, he was not talking particularly of the pituitary gland but of the changes in the sella turcica itself and those two things were not synonymous.

The normal sella turcica in an adult was variable in size, the limits being fairly large, the average anteroposterior measurement being ten to twelve mm. and in depth eight mm. The sella turcica, as well as the pituitary body, was larger proportionately in woman than in man. The anterior lobe of the pituitary body was more liberally supplied with blood vessels than was the posterior or the so-called middle lobe. If through some emotional or other disturbance the abdominal arterial supply was diminished as to capacity, due to excess amounts of adrenalin or other sympathetic stimulant, such condition would be followed by an increased amount of blood in the pituitary body and would have its effect on the pituitary.

The manifestations produced by enlargement or disturbance of the anterior or posterior lobes occasioned a different symptomatology. Hyperplasia or stimulation of the anterior lobe produced genital enlargement and general bodily growth; and disturbance of the posterior lobe was followed by metabolic changes such as increased or decreased sugar tolerance, blood pressure changes, and changes in tonicity of the smooth muscle fibre.

Granting most of these things, what happened to the sella turcica, the pituitary body in which was more or less affected by these conditions? With a sella turcica so small that the pituitary body fitted snugly in the cavity, there was no allowance for much expansion and any increase in size for any length of time was accompanied by certain pressure changes; so that headache in the region of a line drawn between the two temples was produced by a pituitary body enlarged beyond the point where the sella turcica would allow it to enlarge. If such a process continued for any length of time, certain changes took place in the sella.

The small sella turcica was not necessarily synonymous with a low activity of the gland. One might find associated with a small sella turcica a marked increase in growth. In some patients also there were marked symptoms of hyperpituitarism, prognathous jaw, spaced teeth and symptoms of acromegaly, and in addition to disturbance of sugar metabolism, excessive growth of adipose tissue and similar conditions. Up to a certain point these conditions were progressive. If, however, there was too long continued increase in size or pressure of the pituitary body against its bony capsule, then things began to happen to the sella turcica. In the first place, the body capsule began to enlarge, the pressure itself producing an enlargement in all diameters of the sella turcica; or the anterior or posterior wall or base became eroded and absorbed. For a long time it was believed that the change produced in such a capsule as the sella turcica would be indicative of the portion of the gland which was enlarged; if the anterior clinoids were eroded then it was concluded that the anterior lobe was the cause and sexual or growth changes were looked for; and if the posterior, changes in metabolism were expected. That was not always true: the clinical picture might be different and the reason was that if there was an adenoma, or a foreign body, or hyperplasia of the gland, it did not necessarily transmit its pressure on the portion immediately surrounding it but might exert it on a portion

quite distant which became eroded. Another possibility was this: Realizing that the pituitary body compensated for certain activities of other glands, it was clear that the pituitary body itself must enlarge in the performance of this compensation. There was such a thing as a small sella turcica and a closing in of the sella turcica. None entirely closed in had been seen at autopsy, but there were röntgenograms in which the anterior and posterior clinoid processes seemed to be united. A large sella turcica, large as compared to the gland it contained, might be associated with manifestations of pituitary disturbance without a feature of disturbance appearing in the x ray picture.

Dr. LEON T. LE WALT thought that Doctor Timme had given a most careful and conservative paper on the interpretation of the relationship between the pituitary manifestations and variations in the sella turcica. Inasmuch as he had mentioned the heart, in regard to the compensation of the heart it might be apropos to refer to studies recently made in the army of the hearts of aviators under conditions of low pressure and low oxygen supply to determine if the heart dilated. Even in such a large organ, measuring twelve or thirteen centimetres in diameter, it was difficult to differentiate a few millimetres in size as the aviator ascended 20,000 feet. Manifestly then still greater difficulty must be encountered in attempting to differentiate the slight changes in size of the pituitary fossa. In the aviator, account was taken of his size, weight, and height. In the study of the sella turcica this was unpracticable for after considering a large number of healthy individuals one would be struck with the extreme variations to be found in the pituitary fossa. Doctor Timme appreciated that fact and had stated definitely that under certain circumstances it was difficult to make the clinical manifestations agree with no apparent change in the size of the sella turcica, and yet changes might be going on in the gland which did not cause any change in the bony formation. It was impossible to measure accurately the lateral diameter of the sella turcica, so the anteroposterior diameter and the vertical were the only two out of three dimensions usually considered. By stereoscopic radiographic examination a more accurate conception of the size of the fossa might be gained and this should be made a part of the x ray examination. There were two things that were striking in Padgett's disease: The conformation of the skull, which was almost the opposite of the conformation in cases of acromegaly, and the difference in the size of the frontal sinuses which were greatly enlarged in acromegaly but in Padgett's disease were very shallow. There was a prominence of the frontal bone which made one think there were large sinuses but as a matter of fact they were exceedingly shallow. The syphilitic theory of bony changes in Padgett's disease had been entirely exploded, though it was repeatedly diagnosed as syphilitic disease of the skull. When a clinical history did not agree with the laboratory findings, or x ray findings, it was well to trace the case up and identify the individual with the report of the special examinations.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-fourth Annual Meeting Held at Atlantic City, N. J., June 14, 16, and 17, 1919.

The President, Dr. FRANKLIN H. MARTIN, of Chicago, in the Chair.

(Concluded from page 204.)

President's Address: Gynecology as a Specialty.—Dr. FRANKLIN H. MARTIN, of Chicago, in his presidential address spoke on the subject of gynecology as a specialty. He drew the following conclusions:

1. Gynecology as an exclusive specialty is justified under the formula that a specialty is justifiable when a portion of the human body, physical or functional, is sufficiently distinct and important to justify a group of practitioners in devoting their whole time to the consideration of its diseases, if by devoting their exclusive time to such special diseases it is made apparent beyond a doubt that such attention is justified by improved results.

2. Gynecology requires for its successful pursuit practitioners who recognize in its possibilities a specialty sufficiently broad and congenial to their taste to be willing to practise it exclusively. If gynecology requires for its successful pursuit the addition to it of the routine practice of obstetrics or the surgery of the upper abdomen of women, it cannot be ranked as a successful specialty.

3. The status of gynecology must be reestablished by convincing the faculties of medical schools and the medical staffs of our principal hospitals that departments of gynecology are necessary.

4. Gynecologists as medical school teachers and as heads of hospital staff departments must emphasize the importance of their specialty by an exhibition and teaching of their diagnostic methods, and a demonstration to their students and confrères of the importance of their medical and surgical results.

5. Discussions of the relative value and relation of specialties should be abandoned and in their place should be established the *esprit de corps* of gynecology, and its devotees should establish a practical research program that will more firmly place the specialty of the surgical and medical diseases of women on a firm foundation.

A Report of the Work of the Detention Home for Women.—Dr. PALMER FINDLEY, of Omaha, stated that the following were the points of special interest gained from his observations in the management of these cases: 1. More than half the patients were drug addicts and all were social derelicts; as a moral problem the work was most discouraging. 2. It was doubtful if the public was as yet ready for this reform movement. Public sentiment was as yet not crystallized, but much had been accomplished in educating the public, and there was no doubt that the Public Health Service would perform an inestimable service in continuing the propaganda that had been so effectively pursued in the past year. 3. In a total of 275 subjects admitted to the institution all but eight were gonorrheic, seventy per cent. were also syphilitic, though only one in ten showed any clinical evidence of syphilis. 4. The complement fixation test for gonorrhea was

of no practical value. 5. A single negative smear had no significance. In only thirty per cent. of the patients who ultimately revealed the gonococcus was the organism found in the first examination and in isolated cases the gonococcus was not revealed until the eighth, tenth, and in one instance the fifteenth successive daily examination. 6. Doctor Findley was impressed with the low percentage of tubal infections in the chronic cases. In only two per cent. did the tubes reveal any evidence of infection in the clinical examinations. 7. Gas anesthesia, permitting the cervix to be dilated and the endometrium to be swabbed with formalin and iodine solutions, shortened the period of detention about fifty per cent. The average period of detention had been ten weeks, but with the aid of gas anesthesia they shortened the period of detention from four to six weeks.

Are the Operative Procedures Done for Dysmenorrhea and Sterility Justifiable in the Light of Developmental Study?—Dr. FREDERICK C. HOLDEN, of Brooklyn, drew the following conclusions: 1. Operative procedures alone give a small percentage of successes. 2. Operative procedures sometimes add a troublesome pathological condition of the genital organs to the symptom complex of dysmenorrhea and sterility. 3. The only intelligent method of studying the activity of the spermatozoa is in their relation to the female secretions. 4. Ductless gland therapy is at present in its embryonal stage. While the writer fully appreciates the dangers of the indefiniteness of this therapy, he does feel after careful consideration of a series of cases, of which those quoted are a type, that further experience with endocrines will tend to clarify our present position in regard to the treatment of dysmenorrhea and sterility.

The Relation of Preventive Medicine to Gynecology.—Dr. HENRY P. NEWMAN, of San Diego, Cal., stated that the gynecologist, working in the new medium of standardization, could come before his colleagues of the related specialties and lay emphasis on those points in which he felt their co-operation was vital in his work. His own researches, fortified by the statistics of hospitals, permitted him to show to what degree the lesions he handled were due to causes outside his domain in practice while well within his province of theory. For the most part he knew that he had to deal with the results of errors and neglect in the development and in the parturient periods and with infection. He must therefore, ask of internists, family physicians, pediatricists, intensive efforts towards the control and safeguarding of the growing girl. Each time that an infantile uterus, with its train of subsequent evils, was presented in an overworked school teacher, artisan, student, or barren wife, he must make to those other specialists a plea for the more thorough supervision of girlhood, and a campaign of effort towards elimination of the evils in our social and educational system which intensively cultivated the mind while destroying the body.

And when he said "destroying the body" it was unfortunately not in a spirit of sensationalism; it was a reference in cold blood to the already widely circulated reports of some of our leading authori-

ties in obstetrical science who agreed that the new type of woman, appearing as the effect of overcivilization, was no longer fit for maternity. "Indoor life and nerve tension" having prevented normal functional development, they announced that it was now better that "the delicate nervous woman be delivered by Cæsarean section than be subjected to the ordeal of labor."

It was now that we, as specialists, must turn from the laboratory and clinic for the moment in our investigations of diseases and join forces with all other medical organizations and plan movements for the study and promotion of preventive measures. Instead of making our supreme effort the giving to the delicate, nervous, incapable mother a child by the easiest surgical method, let us take up the work of giving the children yet to be born their first right, the staunch and stalwart mother to whom her normal labor shall be an expected and a remembered blessing. As gynecologists we could offer the most comprehensive program dealing with the health of women, and immediate and full co-operation with other specialties on our part would result in as widespread and momentous effects as those we had already alluded to as following the campaign against venereal diseases in our army. And the need was bringing this emphasis not as an indictment of the past but as a legitimate outgrowth of all past efforts.

Pseudomyxoma Peritonei.—Dr. JAMES E. KING, of Buffalo, N. Y., said that pseudomyxoma peritonei presented a rather constant clinical and pathological picture, although the exact etiological factors that produced the peritoneal changes were still more or less in dispute. There was general agreement, however, that practically all cases resulted from the contact upon the peritoneum of the colloid contents of ruptured pseudomucinous cysts.

There were three principal theories which had been proposed to account for this effect of the pseudomucin of these cysts upon the peritoneum. The first held that it caused a chronic productive inflammation associated with myxomatous degeneration. The second was the implantation theory which viewed the pathology as a result of implantation upon the peritoneum of cells derived from the ruptured cyst wall. The third theory regarded the process solely as a reactive peritonitis produced by the mechanical and chemical effect of the unabsorbable colloid material.

The diagnosis of pseudomyxoma peritonei might in some cases be made with reasonable certainty. The dull pain, with rapid and irregular enlargement of the abdomen, was suggestive. The encysted collections were usually flaccid and gave a distinct fluctuation even though the pseudomucin be very thick. There would always be evidence of a pelvic collection which was diffused. In addition to the physical signs, the loss of weight and general appearance of the woman weighed strongly in arriving at a diagnosis. The prognosis was usually unfavorable. The course of the disease was essentially one of malignancy. With a process reasonably localized, or if by early operation after rupture the cyst and its contents could be completely removed, recovery might be hoped for.

Treatment was only palliative in advanced cases. The cystic collections might be temporarily relieved by surgery. In one case of the writer's a few months after the first operation a second was done and following this the abdomen was exposed to the x ray in the hopes that the process might be stayed. The treatment was carried on at the State Institute for the Study of Cancer. Apparently the treatment had no effect. Possibly earlier it might have been useful and it would seem that in such cases it might be tried.

Conclusions.—Pseudomyxoma peritonei is due to the reaction of the peritoneum to pseudomucin. The pathology consists of a proliferative inflammation of the peritoneum with the organization of colloid material on the peritoneal surfaces. In the majority of cases it is a progressive process and results fatally.

Rupture of the Deep Epigastric Artery as a Clinical Entity.—Dr. EDWARD A. SCHUMANN, of Philadelphia, said that the rupture of an artery, whether traumatic in nature or the result of disease of the vessel's walls, was ordinarily followed by the general and local phenomena accompanying hemorrhage. In the case of certain vessels, however, there developed a well defined and distinctive chain of events, due either to the anemia created in certain tissues or, more commonly, to the pressure exerted by the growing hematoma upon contiguous structures. The definite symptom complex following rupture of the middle cerebral artery might be instanced as the most common and striking example of such cycle. Traumatic rupture of the deep epigastric artery, though of infrequent occurrence, might be followed by so complex and yet so definite a series of sequelae that the pathological and diagnostic details might properly be grouped as a clinical entity, reasonably sure to present after the occurrence of such an accident.

The Standardized Splints and Methods of Treatment in Bone and Joint Injury, A. E. F.—Dr. Joel E. Goldthwait, of Boston, in a paper read at the Atlantic City meeting of the American Medical Association said that in order to obtain the best results in any one type of injury, it is desirable and necessary in any army organization that every one use the same types of apparatus, the types being decided upon by groups of impartial observers on the basis of study of large numbers of cases. This resulted, in the American Expeditionary Forces, in the selection of eight types of splint to meet all the bone and joint injuries as well as many of the muscle wounds. In order to secure the best results, not only is it necessary to use standard splints, but to have them used in the same general way by every one, so that irrespective of the hospital to which the patient may be assigned, the treatment goes on undisturbed. This led also, in the American Expeditionary Forces, to standard positions which were carried out without change as the patients moved from hospital to hospital, with the result that not only were the ultimate results much better than had been expected, but the time required for recovery was materially shortened.

Letters to the Editors.

NARCOTIC DRUG RESOLUTION.

A Correction.

NEW YORK, August 4, 1919.

To the Editors:

In your issue of July 19th appeared what purported to be a report of the transactions of the Medical Society of the County of New York at a special meeting held June 23, 1919.

I am directed by the president of the society, Dr. Charles H. Peck, to inform you that this account is, to say the least, incorrect and misleading, especially in regard to the resolution said to have been adopted. Such a resolution was offered but it was determined to be out of order. The resolution presented by the Chairman of the Committee on Public Health, and on motion adopted by the society, read as follows:

"Resolved, That the Medical Society of the County of New York expresses the wish to cooperate with the State Narcotic Drug Commissioner, Hon. Walter R. Herrick, in every legitimate and constructive way to eliminate narcotic drug addiction, and to help cure the drug addict."

As the account published serves to place the society in the wrong light, both before the profession and the public, please give this contradiction the same prominence as was given the article in question.

D. S. DOUGHERTY, M. D.,

Secretary, Medical Society of the County of New York.

THE HARRISON NARCOTIC ACT.

HOT SPRINGS, ARK., July 30, 1919.

To the Editors:

I am certainly a true American. I have a fairly good professional, civil, and military record. I trust I do not transgress the law in criticizing things that uselessly bother me and other good citizens.

The framers of the Harrison Narcotic Law were, I think, oblivious of those who require soothing of the body. They apparently were deeply concerned only with those not worth a tinker's dam. They sought to save the habitude of degeneracy. Whatever their attitude, they have put the respectable patient and the decent doctor in positions that are dangerous to the one and at times embarrassing to the other.

In the narcotic act laymen claim to rival medical men in a peculiar and delicate field of technical character. The layman as a lawmaker has failed to govern degenerates. Very good authority has shown in the columns of the NEW YORK MEDICAL JOURNAL that only about twelve per cent. of the principal narcotics brought to this country is prescribed under the Harrison Act. "The eighty-eight per cent. is bootlegged in the underworld."

Permit this one of many examples:

I was the only doctor on a train in Virginia last summer. A child got a cinder in her eye. It was impacted. We were pulling into a small town. I ran across the street to the nearest drug store and hurriedly asked to have the two per cent. cocaine

collyrium prescription filled which was signed by me with "U. S. Reg. 944 Ark."

The gentle and wise clerk knew his business. He quietly and contemptuously viewed me, in strict accordance with the tenor of the Harrison Act, and said, "No, my friend, they can't catch me. I get that every day from strangers. I'm sorry you got the habit, but I can't help you." "Then give me a solution of novocain. I want to take a cinder—" "I am just out. Your train'll leave you, pardner, you better hurry."

I have no doubt Mr. Harrison thinks that he has done a great piece of work, if he ever thinks of the matter at all. I hope he did it without thinking. Bombshells do great work, but oh, how destructive and useless!

No other country on earth, not even China, restricts or taxes a doctor after he is once taught, graduated, and admitted to practise his profession. No other country has seen fit to degrade its medical faculty individually as the Harrison Act does each American doctor. We are stamped by our government as untrustworthy.

JAMES C. MINOR, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Student's Textbook of Surgery. By H. NORMAN BARNETT, Major and Officer Commanding the Three Hundred and Thirteenth South-Western Mounted Brigade; Field Ambulance Surgeon, Bath Ear, Nose, and Throat Hospital; Surgeon for Ear, Nose, and Throat, Bath War Hospital; Consulting Surgeon for Diseases of the Ear, Nose, and Throat, Officers' Convalescent Home, Bath, etc. St. Louis: C. V. Mosby Company, 1919.

It may seem strange for an ear, nose, and throat specialist to write a textbook on general surgery, but this is not a one man book. However, the author's direction has been uniform throughout, and the result is a remarkably well balanced and clearly presented book which should prove of real value to the student and of aid to the practitioner. The subjects are approached, analyzed, described, and disposed of in a direct and clearcut fashion. Only the essentials are presented and this in so certain a manner that the reader is left with the impression that the authors are sure of their ground as far as they have gone. Colwell, Fielden, Johnston, Shaw, and Wilson, of Belfast; Elmslie, Fleming, Pilcher, Mayou, and Whitaker, of London; Watson-Williams and Llewellyn, of Bath, are among the contributors to the various departments.

Genitourinary diseases in the female and surgical aspects of infective fevers have been included. No description is given of detailed operative technic, and no attempt is made to debate the various procedures that are set forth and so convince the student they are better than some other method. By this means and by boiling down and the avoidance of repetition, a vast quantity of material has been presented in a comparatively small book which contains more useful material than is generally found

in larger and more verbose textbooks. The new departure should meet with approval from all thinking medical men. The idea could well be applied to many other medical fields.

Modern Operative Bone Surgery. With Special Reference to the Treatment of Fractures. By CHARLES GEORGE GEIGER. With One Hundred and Twenty Illustrations. Philadelphia: F. A. Davis Company, 1918. Pp. 250.

A great deal that is essential in plastic bone surgery is comprised in the 250 pages of this moderate sized book. The topic has been taken up carefully, and the illustrations serve to clarify the material and present clear cut pictures of the operations commonly used. It cannot be said that any radical or startling methods or questions of technic are presented, but the generally accepted procedures are described with refreshing simplicity. The author agrees with Albee as to the value of autogenous bone grafts, their mode of application, and the opportune time for the insertion of such grafts. Fresh fractures are given separate consideration. Doctor Geiger's bone instruments and motor are simple in construction and should commend themselves to the surgeon who is interested in bone surgery. Much praise is due the author for the care with which he has selected and eliminated material, for the war brought forth a number of conflicting opinions and a quantity of superfluous literature. The entire subject of plastic bone surgery has been sensibly handled and logically presented.

Births, Marriages, and Deaths.

Born.

DEANE.—In Lawrenceville, Va., on Friday, July 5th, to Dr. and Mrs. Robert Armistead Deane, a son.

Died.

AUGER.—In Jamaica, L. I., on Friday, August 8th, Dr. Henri M. Auger, aged sixty-two years.

BOWER.—In Philadelphia, Pa., on Friday, August 1st, Dr. Franklin S. Bower, aged sixty years.

CADWALLADER.—In Hackensack, Minn., on Tuesday, July 22d, Dr. Isaac H. Cadwallader, of St. Louis, Mo., aged seventy-one years.

CAREY.—In Elmira, N. Y., on Saturday, August 2d, Dr. Daniel G. Carey, aged seventy-nine years.

CROWELL.—In Syracuse, N. Y., on Saturday, August 2d, Dr. Lewis C. Crowell, aged seventy-two years.

GLEASON.—In Brooklyn, N. Y., on Sunday, August 3d, Dr. Daniel F. Gleason, aged sixty years.

GLENN.—In Gettysburg, Pa., on Monday, August 4th, Dr. James E. Glenn, aged fifty-three years.

HOUSER.—In Indianapolis, Ind., on Tuesday, July 29th, Dr. James A. Houser, aged seventy-two years.

JOHNSTON.—In Quincy, Ill., on Monday, July 21st, Dr. Otis Johnston, aged fifty-one years.

LEAVENWORTH.—In Augusta, Ga., on Tuesday, August 5th, Dr. William Cecil Leavenworth, aged thirty-three years.

MAYO.—In Macon, Ga., on Sunday, July 13th, Dr. T. Franklin Mayo, of Newtonville, Vt., aged forty-one years.

ROBERTS.—In Scranton, Pa., on Thursday, July 31st, Dr. John J. Roberts, aged fifty-nine years.

TRIMBLE.—In Lima, Pa., on Wednesday, August 6th, Dr. Samuel Trimble, aged seventy-six years.

SHERMAN.—In South Boston, Mass., on Saturday, August 2d, Dr. John H. Sherman, aged eighty-nine years.

WHITE.—In Ashville, N. Y., on Saturday, August 2d, Dr. William B. White, aged eight-four years.

ZIMMERMAN.—In Springfield, Mass., on Thursday, August 7th, Dr. Henry Zimmerman, aged thirty-five years.

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WHOLE No. 2125.

Original Communications

TREATMENT OF ACUTE DISEASES OF THE BILIARY PASSAGES AND THEIR COMPLICATIONS.*

By JOHN B. DEEVER, M. D.,
Philadelphia.

All surgical diseases of the biliary passages are the result of bacterial infection, their severity depending upon the virulence of the organism and the resistance of the individual. The resulting inflammation leads to acute conditions which in their order of frequency are acute cholecystitis, acute cholangitis, acute obstruction of the common duct, and acute pancreatitis.

The infection usually attacks the bile ducts and the gallbladder at the same time, but in the greater number of instances the ducts are first affected, the gallbladder affection following, but infection of one without the other is rare.

Very often the infection in the bile ducts subsides but continues to persist in the gallbladder leading to acute cholecystic and pericholecystic disease, with or without gallstone formation. This has been proved time and again in microscopical examination of a portion of the liver very often removed in removal of the gallbladder. These acute cholecystic affections may be catarrhal, suppurative, phlegmonous, perforative or gangrenous. The catarrhal condition is probably the first stage which by gradual steps goes over into suppurative and ulcerative conditions in which calculus is often an important factor. The treatment of catarrhal cholecystitis, and certainly of the more severe types, is surgical, for only by surgery can we hope to obviate the sequelæ of the infection such as adhesions, pancreatic disease, and biliary cirrhosis.

In operating for acute conditions of the gallbladder there is some divergence of opinion as to the question of immediate operation. I believe that in deciding the question much depends upon the severity of the attack, as evidenced by the local as well as the general condition of the patient, the presence or absence of constitutional contraindications, such as circumscribed or diffuse peritonitis; in other words, whether we are dealing with the suppurative, phlegmonous, perforative or gangrenous variety of the disease. In dealing with the suppurative type, if operation is decided upon its extent will depend upon the character of the peri-

choleystic inflammation. By this I do not refer to pericholecystic adhesions the result of previous inflammation, but to the involvement of adjacent structures in the infection that we are dealing with.

It is my practice in acute cholecystitis to operate immediately after the onset of the attack, if there is no spreading peritonitis. But where a diffuse peritonitis has set in I prefer to postpone interference until the peritonitis subsides or it becomes localized. In the presence of diffuse peritonitis the indicated treatment is anatomical and physiological rest. All medicines are contraindicated, with the exception of sedatives judiciously administered, preferably morphine hypodermically. This refers with particular emphasis to aperients and purgatives. The latter are antagonistic to nature's efforts to limit the peritoneal inflammation, and therefore aggravate the condition instead of alleviating. Other drugs, except those mentioned, oppose the necessary physiological rest and encourage dissemination. This holds true also with regard to liquids either as water or as nourishment given by mouth in the presence of delayed or arrested peristalsis. The Murphy drip (normal saline solution) provides the necessary water to the body, to which can be added whiskey and expressed beef juice to provide enough nourishment. When normal peristalsis is restored nourishment by mouth can be resumed. Patients sick with peritonitis do not die because they have not received nourishment, but because they have been given it by mouth, a fact which bears repetition time and again and which applies to all conditions that are included in acute diseases of the abdomen.

But when peritonitis, the most serious complication of cholecystitis, is circumscribed I do not hesitate to operate. The seriousness of the peritonitis is dependent on the virulence of the infection and the tissue destruction it has caused. Therefore by operation in the early stage of the infection we can hope to accomplish most by forestalling the havoc of prolonged infection. To those who have seen in the open abdomen the possibilities of late infection this argument needs no further elucidation.

As to the extent of operation. In the greater number of cases I prefer to remove the gallbladder; but in the very obese, the aged, or those suffering from some grave constitutional disturbance, and where there is wide suppurative cholecystitis, I find it best to limit the operation to drainage of

*Read before the Philadelphia County Medical Society, May 28, 1919.

the gallbladder. The question of when to drain and when not to drain cannot be stated absolutely, but must be governed by the individual surgeon, his previous experience in dealing with similar cases, etc. On general principles it may be said that the sicker the patient the less the surgery. Nor is the desperately sick patient, as a rule, one for immediate operation. It is better to institute the conservative treatment, referred to above, until there is enough improvement to make operation more safe than delay.

In phlegmonous acute cholecystitis there is, as a rule, profound toxemia, especially if at the same time there exists a purulent pericholecystitis; these patients bear surgery poorly, consequently incision and drainage is about all that can be done.

In the drained cases there is the risk of such sequelæ as formation of a biliary sinus, fecal, gastric, or duodenal fistula and occasionally intestinal obstruction from angulation caused by adhesions. Biliary sinus or fistula is the least serious of the fistulæ following operation. Two varieties of biliary fistula are seen, mucous and bile fistula; the former due to inflammatory obstruction of the cystic duct and the latter to stone obstruction of the cystic or common duct. These are, as a rule, not difficult to correct; the former, by removal of the gallbladder and the latter by removal of the stone or stones. Gastric, duodenal, and intestinal fistula are the result of pressure necrosis. Gastric and duodenal fistulæ are particularly important sequelæ as the latter with or without operative correction usually terminates the life of the patient, while gastric fistula is difficult to correct and not always followed by good results. Intestinal fistulæ are as a rule amenable to operative treatment. Those of the large bowel frequently heal spontaneously, but those of the small intestine do not.

When the primary infection persists in the bile ducts it gives rise to a hepatic and perihepatic lesion, the simplest form of which is acute catarrhal cholangitis (catarrhal jaundice). As this is a medical and not a surgical condition, I shall not discuss its treatment. Cholangitis also presents a suppurative type which is nearly always associated with antecedent lesions of the biliary tract, the most common of which are gallstones and tumors causing obstruction of the ducts. This is essentially a surgical condition and a very serious one, the result of infection which is usually widespread, although it may be limited to the ducts themselves. It is only by surgery that we can hope to prevent further infection of the liver and to arrest the jaundice before it leads to serious deterioration of the blood.

Suppurative cholangitis is best treated by cholecystectomy, or in the presence of acute obstruction of the common duct, by choledochostomy. Acute obstruction of the common duct, whether due to suppurative cholangitis or to impacted stone, can be relieved only by operation and immediate operation as soon as the symptoms present themselves. In fact, this acute condition can in the majority of cases be prevented by timely operation for gallstone disease. This is the more especially desirable since the mortality for operation for the common duct

obstruction is so very much higher than operation for gallbladder disease which at the same time gives the opportunity for palpation, or if necessary, exploration of the common duct for stones that may be hiding within the canal. It is idle to hope by internal medication to mobilize a stone or stones in the common duct. Temporizing with these cases only presents the additional risk of profuse and rapidly fatal hemorrhage, the tendency to which is particularly great in cases with chronic jaundice.

Adhesions may and not infrequently do cause pyloric and duodenal obstruction to such an extent as at times to require a posterior gastroenterostomy. In a small percentage of cases they cause obstruction of the hepatic flexure of the colon. These conditions lay the foundation for future ill health and too often death. All cases of this type, with few exceptions could be prevented by timely operation. Gastric symptoms following extensive disease of the biliary passages should be studied with this in mind.

Acute pancreatitis may be catarrhal or parenchymatous, the latter appearing as hemorrhagic, suppurative or gangrenous, the difference being one of degree rather than of kind. There seems little doubt that in a large number of cases of gallstone disease the pancreas has been involved, a fact which again emphasizes the importance of early surgery for the primary affection, especially in view of the unfavorable prognosis presented by all pancreatic disease and particularly its acute form.

As to the time of intervention. In the fulminating cases the rapid progress of the disease process may make immediate intervention the only hope of saving life. As a rule, I am not in favor of operating in a state of profound shock; and where possible I prefer to give the patient a chance to rally and to wait for the peritoneal inflammation to localize. This, however, is a matter of judgment gained only by extended experience. While waiting, the method of rest mentioned above for combating the condition should be applied, while for the shock itself, morphine, infusions of salt solution, or adrenalin and pituitrin may be helpful in bringing about a condition more favorable to successful operation. Early operation is desirable with the idea of preventing the escape of blood and of ferments into the pancreas and the surrounding tissues. The pancreas not being provided with a capsule the extravasated material readily finds its way into the surrounding parts.

If blood and fluid exudate are present in the pancreas incision and packing with gauze is demanded, but the extent of incision or scarification cannot as yet be definitely stated. It should not be too free in order to obviate the risk of profuse and probably uncontrollable hemorrhage, but nevertheless scarification of the peritoneum over the gland should be sufficient to allow gauze drainage to be brought into direct contact with the surface. By this method the retroperitoneal space is opened up and accumulations about the pancreas thus prevented. A few blunt punctures of the pancreas will be useful in providing free exit for the contained blood, lymph, and obstructed secretion.

Operation on the pancreas may be done by the

transperitoneal or by the extraperitoneal route through a loin incision. The latter is advisable only when the symptoms point to the localization of the inflammatory exudate or to the presence of pus in the loin. Its disadvantage is that it does not permit of free exposure of the parts, and that radical surgery, if it should be indicated at the operating table, could not be done. The transperitoneal route, on the other hand, provides free exposure of the operative field, permitting radical surgery and gives the opportunity for adequate drainage, a most important item whether the disease be suppurative or hemorrhagic in type. The disadvantage of this route is, of course, the risk of infecting the general peritoneal cavity, but this is offset by the better facilities for doing a more satisfactory operation. The pancreas can be reached through the gastrocolic omentum, through the lesser omentum or through the transverse mesocolon.

In acute hemorrhagic pancreatitis the only possible procedure is to apply tampons and drains freely to the organ itself, going either above or below the stomach, according to circumstances. Tube as well as gauze drainage should be used and should be conducted to the surface through an enveloping sheet of rubber dam to lessen the chance of adhesions to the stomach and intestines. Any free fluid in the peritoneal cavity must be removed by gentle wiping; for this pancreatic exudate of itself contains sufficient toxic material to cause death. It is advisable in these cases also to drain the pelvic cavity.

While in the severely acute case we can do little more than confine our efforts to the lesion in the pancreas, in the subacute case we may sometimes be able to treat the condition through the adjoining viscera, notably by cholecystostomy. This has in my experience given better results in subacute pancreatitis than when it has been combined with pancreatostomy. I have occasionally done a cholecystectomy in these cases, but the risk is hardly one that should be taken except in unusual circumstances.

One of the most troublesome results of draining the pancreas is the formation of sinuses. The effect of the pancreatic ferment on the tissues can be seen in the intense irritation of the skin over which the discharge flows and in the sluggish formation of granulations on the surface continuously subjected to the severe erosive action of the pancreatic juice. To avoid this it is well to protect the skin by a bland ointment; for once excoriation of the surface has taken place it is almost impossible to get anything to stick to the moist surface. Pancreatic activity can be limited by a strict anti-diabetic diet after operation. This has also been found useful in promoting healing.

1634 WALNUT STREET.

Renal Function Influenced by Proteose Intoxication.—Irvine McQuarrie and G. H. Whipple (*Journal of Experimental Medicine*, April, 1910) state that the excretory function of the kidneys of dogs is decidedly impaired by the intravenous injection of the toxic proteose obtained from the contents of the obstructed small intestine.

SEVERE AND UNCONTROLLABLE HEMORRHAGE FOLLOWING MASTOIDECTOMY IN A PATIENT SUFFERING FROM PURPURA.*

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The following case occurred in the otolaryngological service of the U. S. General Hospital No. 14, Fort Oglethorpe, Ga.

CASE.—L. H., private, detention camp, Greenleaf, Ga.; age, twenty years; white, born in Michigan; service, three months; occupation, knitter; tropical service, none; not addicted to alcohol; admitted to U. S. Army General Hospital No. 14, July 6, 1918.

Family history.—Father living and well, history negative; mother had frequent attacks of bleeding, died from "dropsy of the heart"; one brother died from hemorrhage following the extraction of a tooth, and another brother bled to death following an injury to the mouth; one brother had rheumatism; no history of neuropathies or malignancy in family.

Previous personal history.—Mumps; varicella; otitis media, bilateral, with incision of both drums followed by bleeding; vaccinated against smallpox; inoculated against typhoid. Gave a history of nearly bleeding to death several times following slight injury; head injury seven years ago; fracture of right ulna; gonorrhea, 1918.

The patient was in Ward No. 5 of this hospital for about one month, being discharged on June 29, 1918. He was admitted at that time for rheumatism of the right elbow and shoulder. Had had rheumatism in other parts of the body, but this was the first attack in two and a half years. Never had any throat trouble but had two hollow teeth. On admission he complained of pain in the right elbow. His pulse was 62, temperature 98.2°, respiration 22; weight 120 pounds. Physical examination showed nothing abnormal except slight enlargement of right elbow joint and extension of both elbows not quite normal. The affected joints always showed blue discoloration. At that time anterior and outer surface of the arm showed large subcutaneous hemorrhage. Above this, on lower portion of upper arm, there was a yellow discoloration, which also appeared below the forearm. Left upper thigh showed a small subcutaneous infiltration.

He was treated for arthritis, and on July 25th it was noted that a hemorrhagic spot, two by three inches, appeared on the outer aspect of the right shoulder; another about the size of a silver dollar appeared on inner aspect of left elbow; another one and a half inches in diameter in right popliteal space. The throat was slightly reddened and the gums bled easily. The diagnosis made on this date was Schönlein's disease. Arthritis continued in transient and migratory form until about October 1st when C. D. D. papers were sent in.

On October 7th he complained of pain in both

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ears with slight hemorrhage from left ear and some discharge from right ear. On this date Captain Sauer, of the Medical Corps, made a diagnosis of suppurative acute bilateral otitis media, and myringotomy of both ears was performed. The next day bleeding from both canals was noted. On October 9th the bleeding had almost ceased and the inflammatory process seemed to be subsiding. On October 10th Lieutenant Hill, of the Medical Corps, attempted to remove clot from right meatus which resulted in oozing. The left ear appeared to be clearing up nicely. On October 12th the left ear was normal with some clot still in the right ear; on October 13th there was a serosanguineous discharge from the right ear and on the next day the patient complained of pain that ear. The right ear continued to show periods of subsidence only to be followed by recrudescences of inflammation, and on October 16th the left ear commenced to discharge again. On October 22nd the left ear showed a greater degree of inflammation with every clinical indication of acute mastoid involvement but operation was not undertaken because of the history of hemophilia.

October 24th, the left ear appeared to be clearing up with no mastoid tenderness or edema, and this condition continued until November 3d, when the following condition was noted: Moderate purulent discharge from left ear, membrana tympani quite swollen and tender, and some thickening over posterior aspect of the mastoid tip. A blood count on this date showed 16,000 white cells and the differential count showed small mononuclears four per cent. large mononuclears sixteen per cent., transitionals one per cent., and polymorphonuclears seventy-nine per cent. Since the question of operative intervention had to be seriously considered at this time, a brief résumé of the different blood examinations made up to this time would be of interest. On October 21st the coagulation time was ten minutes, and blood type IV; while on October 10th the clotting time was four minutes and blood platelets 275,000.

November 4th, the patient complained of dizziness on sitting up; less pain in the ear, but pain on pressure over the left tip. Whispered voice heard four inches and spontaneous nystagmus to the left. November 5th the patient seemed somewhat better and nystagmus had disappeared. On this date the radiographic report stated that the left mastoid was of the pneumonic type, but the cells were small in area. In the region of the antrum there was some sclerosis. In the right mastoid there was an increased density throughout, which suggested an acute process. The knee of the lateral sinus was about two and one-half cm. posterior to the external auditory meatus.

November 6th, the process seemed to be subsiding but there was still moderate discharge, and on November 7th and 8th the patient had considerable pain in the right shoulder but no pain in the ear. November 9th the patient had bleeding from the gums along the upper incisors which, he said, had commenced at ten o'clock the preceding night and had continued up to the present time. On November 10th, the ear condition was slightly improved.

November 11th, there was a marked swelling over the tip of the left mastoid. Diagnosis: Bezold's abscess. Operation was advised, following transfusion. At 10.30 a. m. 230 c. c. of blood from Jaurnig, donor, type IV, Wassermann negative, together with twenty-five c. c. of 2.5 per cent. sodium citrate solution, were transfused. The patient had no reaction of any kind. Thirty minutes later the coagulation time was ten minutes. At 11.40 a. m. the patient had a chill lasting twenty minutes, temperature 102°, pulse 112, respiration 24, with nausea and vomiting. On the same day the left mastoid was exenterated by Lieutenant Colonel Harris, medical corps, assisted by Lieutenant Curtin, medical corps. The cortex was found to be hard, no cells, antrum contained small amount of granulation tissue. Deep cells were broken down along canal, serving as a basin for pus from the abscess in the neck. The tip was removed; wound was packed; bleeding was not excessive. On November 12th the patient bled constantly but not profusely throughout the night. On this date his systolic blood pressure was 82, diastolic 60. Another blood transfusion, indirect, from Farwell, donor, was done by Lieutenant Spearman. The wound oozing was controlled promptly by five per cent. of coagulen ciba.

November 13th, there was no bleeding and the stomach became more retentive; November 14th, condition the same. November 15th, patient felt stronger and had a good appetite. Pulse was of good quality and regular. Outer dressing was clean. On November 16th the patient felt stronger; pulse was of good quality. On November 17th the outer dressing was changed. There was some bleeding from the upper part of wound; coagulen ciba and a tight bandage were applied. The blood clotted upon exposure to air.

November 18th, during night bleeding occurred. New outer dressing and coagulen ciba were applied; at 11 a. m. 500 c. c. of blood from Farwell, donor, transfused by Lieutenant Spearman, medical corps; no reaction; mastoid dressing and drainage changed by Lieutenant Colonel Harris and repacked with gauze saturated with coagulen ciba; apparently perfect control of bleeding after applying tight bandage. At nine p. m. dressing had to be reapplied because of free bleeding. November 19th, bleeding recurred at three a. m. and redressed at nine a. m. but dressing was ineffectual and had to be done over at 10:30 a. m. The bleeding persisted and at noon Lieutenant Colonel Harris sutured the mastoid wound completely and this controlled the bleeding. At three p. m. the transfusion wound in the left arm commenced to bleed and required redressing.

November 20th, there was pronounced edema of both lids of left eye. Examination was made by Major Wiener, medical corps, who decided that the edema was likely due to temporary blocking of lymph channels from suturing of wound and would probably disappear shortly. Very free bleeding occurred again at eleven a. m. and a pressure bandage was applied. This did not control bleeding, and at 2:15 p. m. dressing was reapplied. Systolic blood pressure was 120, diastolic sixty-five.

At six p. m. Lieutenant Spearman, medical corps, did a direct transfusion of 160 c. c. of blood from Jaurig. November 21st bleeding occurred from lower end of mastoid wound. Packing and pressure bandage were effective. Five c. c. hemoplas-tin were given and coagulen was applied over wound before applying dressing. November 22d, outside dressing was changed; packing in wound was not renewed. The edema of eyelids was much less. November 23d, dressing was changed; no bleeding; two c. c. hemoplas-tin given. November 24th, dressing was changed; no bleeding, though there was about a dram of dark clotted blood in the ear, evidently having bled from the middle ear. November 25th, dressing changed; some bloody discharge from wound; two c. c. hemoplas-tin given; clotting time seven and three quarters minutes. November 26th, wound dressed; no bleeding either from wound or canal. November 27th, wound dressed; gauze renewed; lower part of wound covered by a dense blood clot; very little bleeding, which was easily controlled. November 28th, wound dressed; found clean, no bleeding; clotting time eight minutes. November 29th, no bleeding, wound beginning to granulate. November 30th, wound still doing nicely. December 1st, patient allowed to sit up and be rolled about the ward in a chair. December 2nd, wound doing nicely, patient went for a drive. December 3rd, wound dressed; slight discharge from ear, but wound looking well, no bleeding.

The subsequent history of the case was one of slow but complete recovery. The patient was discharged from the army to his home in Michigan the early part of the year. He died at his home in April after a brief illness, the nature of which apparently was not recognized but was unattended by bleeding.

Mastoiditis occurring in a hemophiliac and requiring operation is in our experience unique. We have made no survey of the literature; the only case that we are acquainted with is one reported by Dr. Philip D. Kerrison at a recent meeting of the New York Otological Society. The clinical features of the case just reported are what chiefly concern us as otologists. To fully appreciate these, however, some consideration of the blood picture is in order. During the last decade much careful study of the normal and abnormal processes of coagulation have been made. In this country Howell, of Baltimore, and Hess, of New York, stand out conspicuously among those who have contributed to the subject. The result of their work has served to set forth clearly the chief distinguishing features of the two hemorrhagic states into which bleeders are divided, namely, hemophilia and purpura. These have to do, first, with the coagulation time and, secondly, with the number of blood platelets.

In a general way it may be said that hemophilia is a hereditary disease characterized by a deficiency in one or more of the clotting properties of the blood which results in prolonged coagulation time. Purpura, on the other hand, representing many different conditions, is characterized by a deficiency of the blood platelets. Hemophilia, as is well known,

is likely to occur in males, although it is transmitted through the female. Purpura occurs both in male and female. The bleeding in hemophilia is really unduly prolonged normal bleeding and occurs usually after injury. The bleeding in purpura is likely to occur spontaneously. As shown by Duke, bleeding time following the puncturing of the skin is increased in purpura. It is not increased in hemophilia. Purpura is characterized by frequent subcutaneous hemorrhages. A definite deficiency in the amount of prothrombin has been shown by Howell to be demonstrable in hemophilia; in purpura, on the other hand, it is normal.

It would seem that with these characteristic differences the differential diagnosis between the two disorders would not be difficult. In the majority of cases it is not. There is, however, a certain number of borderline cases where the diagnosis is exceedingly difficult. These present features of both diseases. In them the bleeding may occur both in male and female members of the same family. Clinically, these cases closely resemble one another. It would seem to point to the fact that there is an intimate association between them in the blood pathology, which up to the present time has not been determined. To quote Hess, "The striking hereditary character of true hemophilia has frequently led to the assumption that the mere fact that the bleeding tendency was hereditary constituted strong evidence for the hemophiliac and against the purpuric nature of the disorder. This has been our experience in regard to cases referred to us by physicians and is the point of view which pervades the literature of hemorrhagic disease. The matter, however, is not so clear cut. The fact is that, although purpura may not be hereditary and may be idiopathic or due to sepsis or many other causes, there is a definite hereditary purpura."

Our case falls in this class. The family history of the two brothers dying of hemorrhage as well as of the mother suffering from frequent attacks of hemorrhage and the history of frequent subcutaneous hemorrhages are in line with this. More important still is the fact that the clotting time was never above fifteen minutes and shortly before the operation was as low as four minutes. Further confirmation is the number of blood platelets, which, while not greatly diminished, was below normal. It is a source of regret that the unexpected death of the patient prevented a more extended study of the blood. From a clinical viewpoint, the case was of more than usual interest to us. Some years ago we reported a case of purpura where the life of the patient was apparently saved by the injection of normal blood serum. In the case under discussion there were given altogether 1,400 c. c. of human blood by transfusion. This undoubtedly had the effect of saving the patient's life. It did not, however, appear to have any effect upon checking the bleeding. The interesting question presents itself in this connection, whether the use of the citrate solution had the tendency to prevent clotting. Opinions differ on this point. On account of this possible effect the last transfusion was given by the direct instead of the indirect method but

without any appreciable difference in the result.

It will be further noted that the hemorrhage during the operation was in no way excessive. Tight packing failed to control the bleeding, which came from no one part of the wound but from its entire extent, superficially and deep. More efficacious than anything else was the suturing of the wound. This had the effect of completely stopping the bleeding for a time. It was followed by the edema of the eyelid referred to, but strangely enough there was no escape of blood into the throat through the Eustachian tube. As was noted, the coagulen ciba gave no benefit. Hemoplastin, on the other hand, appeared to be of decided benefit. This is in keeping with the results obtained by Hess in several of the cases which he reported. Composed as it is of normal tissue juices, the benefit secured would point to the deficiency of these in our patient. Giving whatever credit is due to the employment of this, it seemed to us that there was a gradual recovery of the power of coagulation as the case progressed and that to this chiefly is to be ascribed the ultimate recovery. A gratifying and unexpected feature of the case was the absence of all evidences of septic absorption from the abscess in the neck in spite of the enforced imperfect drainage, which took place on account of the necessity of keeping the mastoid wound tightly packed. The final fatal termination of the case, according to the experience of those who have followed the course of similar cases, was not unusual. It is Hess's opinion that in a case of purpura the patient rarely lives to adult life. The patient does not necessarily die of hemorrhage. Often, as in the present case, the cause is some intercurrent infection.

104 EAST FORTIETH STREET.

MEDICAL SURPRISES IN ITALY.*

By C. ULYSSES MOORE, M. S., M. D.,
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We know as little about Italy as that country does about us. College women in Italy who spoke our language almost as well as their own and who were culinary artists have told me with pride of the ability of their women in the kitchen. Then they asked me if I did not candidly and honestly think Italian women superior to our own, "For," as one said, "your women know how to do nothing except spend their husbands' money."

My six months in Italy taught me that my knowledge of Italians gained in dispensary and hospital in Boston was as inaccurate as their knowledge of Americans gained from wealthy tourists. Our past misunderstanding of the Italian people is no more fully exemplified than by our failure to appreciate the importance of Italy in medical lines. When I went to Italy at the time of the great retreat I knew something of their research work in biochemistry and pediatrics but the greatest medical surprises of my life awaited me. Nor do those surprises seem

to be over. The other day in our neurology laboratory I noticed two new books written in Italian and was told that they were the latest productions in neurology. Again in the physiology department I came across *Human Physiology* by Luciani, of the University of Padua, that great university near Venice which was so badly bombed. The head of the department told me that this was the best monograph on physiology that had appeared in twenty years.

Historically, Italy has a medical foundation of which any nation may well be proud. One doesn't need to go back to Galen or the work of the Middle Ages at Palermo, but may begin where modern medicine begins with the great anatomist Vesalius at the University of Padua. Vesalius was the teacher of Harvey and the one who inspired him to carry on that personal research which led to his discoveries on the circulation of the blood. Another Italian, Francesco Redi, disproved spontaneous generation (1671) and, Huxley says, founded bacteriology. Nor must we forget Agostino Bassi, who was the direct precursor of Pasteur, Lister, and Koch.

In Milan I met Doctoressa Negri and was startled to learn that she was the wife of the discoverer of the Negri bodies of hydrophobia. It was a distinct pleasure to help such a person get Red Cross funds to enlarge her open air schools and agricultural colony for children.

Italy was the first country to regulate the practice of medicine and her laws today are very stringent. Even a dentist, before he begins the study of dentistry, must take a four years' course in medicine. This helped Italy greatly in the present war for she immediately made surgeons out of many of her dentists.

One cannot fail to admire the hospitalization of Italy. In Milan, a city of a half million people, there were about 6,000 beds before the war. The large city hospital, Ospedale Maggiore, has 3,400 beds. Part of it, containing 1,000 beds, was built in the fifteenth century and American architects frequently visit it because of its architectural interest and beauty. The remainder has been added, pavilion by pavilion. The group system is used and each pavilion is for some special class of case. There is one pavilion for eye cases divided into medical and surgical, another pavilion is for dental cases, a large section of which is for reconstructive work on the jaw. Then there are the general and special surgical pavilions, nervous and mental, obstetric, pediatric, skin, and other special pavilions. The pediatric pavilion is divided into pediatric medical, pediatric surgical and contagious pavilions.

In addition to their remarkable hospital specialization their equipment is most complete. They seem to have everything that money can buy. In their x ray pavilion and special electrical departments of other pavilions there is to be found practically every type of apparatus that has been devised. It is true that their transformers are not as good as the latest ones of our General Electric Company and, in consequence, they utilize only twenty-two per cent. of the electricity, nor have they the late Coolidge-Radiator type of tube; but

*Read before the City and County Medical Society, Portland, Ore., February 10, 1919.

they have plenty of electricity and they use it extensively. If we go to the skin pavilion we find the patients lying nude in the sun, and if we enter the Finsen light section we find four large Finsen light projectors made to work separately or together and mercury and other lights both large and small. Our skin men tell us that the St. Louis Hospital in Paris is the greatest skin hospital in the world. But even St. Louis, with its 1,300 beds and its outpatient department of more than 600 cases daily, does not have an equipment for light treatment excelling Milan's.

Near the Ospedale Maggiore is located the Perfezione—a group of hospitals used for graduate teaching only, no undergraduates being admitted. Here are buildings devoted to surgery, gynecology, obstetrics, medicine and a superb new pediatric hospital. This last is made of white marble and reminds one of Rotch's beautiful Infants' Hospital in Boston, but the one in Milan is larger and is divided into smaller wards, in some of which the cubicle system is used. Part of the hospital, twenty beds, is for mentally deficient children who are subjects of special study. A third pediatric hospital in Milan of 100 beds is for general cases in which undergraduate study is permitted.

There is one large hospital for all sorts of deformities, Ospedale Rachitici. The equipment of this hospital demonstrates the mechanical genius of the Italians in a way comparable to the Marconi wireless, the Caproni aeroplane or the Fiat motor. There is a special machine to correct every degree of scoliosis and every other deformity that may be encountered.

Among the remaining hospitals in Milan I must mention at least two others, the Brefotrofia or Foundling Asylum and the Hospital for Occupational Diseases. The Brefotrofia has beds for 200 illegitimate infants and for seventy mothers who nurse two babies apiece. I am told that there is only one other such hospital in existence, the Pouponniere near Versailles. Milan had the first foundling asylum in the world founded by a priest in the year 787 and this new million lire building is the latest fruitage. The Hospital for Occupational Diseases is probably the best known modern hospital of all Italy and has been visited by more American and English doctors and manufacturers than any other. It, too, was the first of its kind in the world and I am told was the model for those in New York and Philadelphia and the recently erected one in Pittsburgh.

Venice, beautiful and romantic even in her gloomy war time dress, maintained in operation eight hospitals, although eighty per cent. of her population had fled. Their city hospital of 2,000 beds had been bombed and when I was there they were admitting patients only to their bomb proof rooms. One remarkable thing about this hospital is its well lighted necropsy room. They have a rule permitting an autopsy on every patient that dies in the hospital and from the men that I met and the specimens that I saw I should say that, as in the past, so in the future, many good things will come out of Venice. Their museum of speci-

mens, collected through the centuries, is in itself worth a visit to the Veneto.

Among the pediatric hospitals of Italy one must not fail to mention Ospedale Meyer at Florence, a modern pavilion type hospital using the cubicle system. It is thoroughly equipped for scientific work, research, and teaching.

At Rome, Doctor Valagussa, the Queen's pediatricist, who has done a lot of research work himself, took me to his Children's Hospital, beautifully situated on the Ceniculum above the city. The building is an ancient convent built around a court which furnishes an abundance of light and air. The doctor showed me his own type of intubation set. It has the advantage of a hollow introducer so that the patient's breathing is not obstructed during intubation.

At the University of Naples I found their laboratories almost untouched by the war. Doctor Caronia, who is in charge, is a brilliant young man and an indefatigable worker. When I expressed a desire to bring back a blood smear containing the kalaazar organism, he prepared it with the rapidity and perfection of a genius. Their laboratory, very justly, holds the leading place for work on kalaazar in children. It was this laboratory that first perfected the method of prophylaxis now used in typhoid. They worked it out on cholera, then Wright and others applied it to typhoid and popularized it. For six years they have been working to perfect a serovaccine for scarlet fever. Last week I received from Doctor Caronia forty ampoules of their latest product with the request that I try it and report results.

A medical tour of Italy would not be complete without a visit to Genoa. To one who believes in preventive medicine and health education, Genoa is an inspiration. Dr. Livingston Farrand and Dr. William Charles White, who had visited the clinics of the central empires before the war and those of the western allies during the war, stated that nowhere had they seen anything comparable with the work in Genoa. The credit is due Doctor Poli who, under the guise of preventing tuberculosis, has in thirteen years built up a program of hygienic education that is the marvel of the world. His plan includes all ages from birth to adult life. His resourcefulness is well illustrated by his use of a strip of rocky shore at the base of a high cliff adjoining the city—ground considered useless. Here he has placed an open air school and a heliotherapy hospital. He told me with just pride of collecting in ten days 350,000 lire (\$70,000) to build a new sun cure hospital there beside the cliff. This too at a time when Italy was straining every nerve in war work.

Their educational scheme is to have a centrally located building to which children come for both examination and instruction. The building is divided into two parts; one for a dispensary, prophylactic work; the other, for education. The educational section has a large room containing their museum of charts, diagrams, pictures, posters, slides, and films. Here too are held regular classes, lectures, and demonstrations. From this centre suspicious cases and anemic patients are sent to

one of nine institutions outside the city which include agricultural colonies, open air schools, heliotherapy institutes, etc. The city, with a population of 250,000 is divided into twelve districts with a nurse in each district who does the followup work in the homes. The public health course is taken by every child in the schools of Genoa. Their graduation therefrom is separate from other school work. Candidates read essays that they have written on health problems and receive prizes and diplomas. The exercises occur once a year. They are held in April in the largest theatre in Genoa. The event is fully as great as graduation from high school in America. Doctor Poli himself is so modest that he doesn't seem to appreciate the greatness of his achievements.

Before the war, most American doctors were acquainted with the highly advertised hospitals of Berlin, Freiburg, and Vienna, but knew little about those of England or France, while Italy was visited solely for its scenic and historic interest. Medical Italy, I trust, will become more closely associated with medical America. Their high class medical schools, extensive hospitalization and hospital specialization, their well equipped laboratories, their thoroughness in research, and finally their example of hygienic education, are all worthy of study.

915 CORBETT BUILDING.

INFLUENZA PNEUMONIA AT CAMP GREENE, N. C.*

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The epidemic of influenza at Camp Greene, N. C., as presumably was the case at other camps, was an event of such magnitude and involved such a tax on the services of all medical officers on duty that it can best be described more by a general survey with impressions than by detailed accounts of individual cases. The patients arrived at the base hospital in such numbers and with such uniformity of symptoms that there was little opportunity to take down detailed histories in such a way that they could later be analyzed for statistical data; yet the numbers and the uniformity of condition were such that without recorded details it was possible for all observers to draw in their own minds a very definite and vivid composite picture of the disease in its typical course and its common variations and complications. For comparison with observations elsewhere in order that the world's epidemic may be described from as many points of view as possible this attempt to record the experience at this hospital is contributed.

At the outset it may be well to notice the presenting features of the world epidemic and to mention the questions involved in it which are most under discussion. While classed as an epidemic of

influenza it is extremely unlike any previous epidemic of influenza or any other disease in modern medical history. In rapid spread, in the large proportion of the population attacked and in symptoms of onset it has resembled previous epidemics of influenza; but previous epidemics of influenza have caused but a trifling percentage of mortality. It is therefore questioned whether we have been dealing with the same disease as the influenza occurring sporadically at all times, attributed to the Pfeiffer bacillus and thought to have been the disease active in the outbreak of 1889-90 before the Pfeiffer bacillus was discovered. The mortality was due almost entirely to pneumonia; the suggestion has therefore been made that the whole epidemic may have been one of infection by pneumonia producing organisms, these organisms being the sole cause of the disease from the start, instead of a secondary infecting agent complicating a primary disease as in measles. The fact that clinically there seemed to be a sharp distinction between the simple cases without pneumonia and those resulting in pneumonia inclines the clinician to favor the view that the epidemic was one of a definite disease of which pneumonia was a distinct though prevalent complication. But as yet the cause of the disease has not been determined. Following upon this question and waiting for their solution upon its answer are the questions of method of transmission, prophylaxis, immunization, and specific treatment. The solution of none of these problems is as yet attained.

Clinically as seen by us the disease was one of sudden onset with symptoms seeming to show a severe initial general intoxication with little evidence of local source. The negro soldiers who were the first and most numerous attacked at this camp would frequently lie down wherever they happened to be when taken with the disease, having to be carried to the infirmary or hospital; headache and general pain in the lower lumbar or sacral regions were the almost general early complaints. Initial chilly sensations were frequent, vomiting was not uncommon and in a small but distinct proportion of cases was severe and persistent and associated with abdominal pain. The appetite generally was lost but thirst was marked. The bowels as a rule were constipated. Cough was not commonly present on the first day but many patients described a peculiar sensation in the neck in the region of the trachea, variously stated as a feeling of tightness or a lump or of a lameness or slight pain. Cough usually developed gradually on the second or third day. Coryza and lachrymation were infrequently noticed by the patient but in most cases objectively slight snuffing and slight conjunctival congestion were present. Epistaxis was very frequent in early cases. Some observers even thought that it had a favorable prognostic significance, but this was certainly not universally true. A few patients had hematemesis or small intestinal hemorrhages. Many white patients on admission, showed slight cyanosis of lips and ears. Somnolence was a conspicuous feature, almost all patients would apparently go to sleep as soon as they were put to bed, complaining of headache, if aroused, but otherwise

*Permission to publish granted by the Surgeon General, U. S. Army.

lying perfectly quiet for long periods. Meningismus, however, did not occur; no convulsions were encountered excepting in two cases complicating nephritis. Temperatures were high from admission but pulses and respirations relatively little accelerated. There was an appearance of discomfort mixed with apathy and a tendency to mental torpor but rarely, except in the presence of pneumonia, any delirium. The general physical examination at onset revealed little that was abnormal. No skin rashes were observed, although from two to three weeks after onset there was a general fine desquamation similar to that of measles, conspicuous especially on the skin of negroes. The throat was often slightly reddened but never to such a degree as to suggest the throat as an important seat of infection. Examination of heart and lungs in the stage of onset was uniformly negative. The spleen was not found enlarged, nor was there any abnormality of the abdomen, except in cases with vomiting in which there was often more or less vague abdominal tenderness, usually more marked in the upper portion. There was no general glandular enlargement which was not explicable by other existing causes. The urinary secretion was diminished as usual in acute febrile disease, the urine concentrated and slightly albuminous. The white count was inconstant, as will be discussed under laboratory findings, together with blood cultures, sputa, and other bacteriological studies. The incubation period in one group of cases which could be traced to a probable source was five days.

In clinical course the first day was marked by fever, general pain and prostration without other features. On the second and third days cough developed but at first without râles in the chest. On the third or fourth day in the milder cases the temperature was lower or normal and convalescence began. In a certain proportion of patients an apparent relapse occurred after one or two days, and in some patients several of these relapses occurred. The constitutional symptoms in these relapses were much less marked than in the original attack some being detected by the thermometer as routine temperatures were taken. In most severe cases the temperature continued high, even as long as a week without symptoms or signs of pneumonia or other complication and then fell by lysis or occasionally by slow crisis. In such patients it is difficult to say with confidence that a concealed pneumonia did not exist but the slow rate of respiration throughout seemed to bear out the absence of pneumonic symptoms and physical signs.

In many patients on or about the fourth day, whether or not the temperature had fallen, scattered musical râles were heard throughout the chest. At about the same time but more often in patients still febrile, medium coarse crepitant râles were frequently audible at one or both bases. Patients in which these occurred might or might not later show signs of consolidation; many became feverfree in a few days in spite of the appearance of these râles; but experience showed that appearance of crepitant râles increased the likelihood that pneumonia was to develop.

The treatment of early and uncomplicated cases

was purely symptomatic and supportive; rest in bed, water freely, liquid or light diet according to appetite, aspirin for milder headaches, Dover's powder or codeine on the first night when discomfort prevented sleep, and ammonium chloride and syrup of prunus virginiana mixture for cough, sponging for high temperature, and care of mouth. Free catharsis was the rule in some cases; in others laxatives were given only as required by constipation. No evidence was apparent that the purgation was of any advantage.

The chief work of the medical officers in following cases after admission and initial examination was the early recognition of pneumonia with view to isolation and special attention. In this work routine examination was of course the chief reliance. Emphasis, however, was laid upon the importance of watching the respiratory rate, both on the nurses records and by going from bed to bed observing each patient. The increased respiratory rate of beginning pneumonia was often of quite sudden appearance and in conspicuous contrast to the slow quiet breathing in uncomplicated cases. Thus while signs of consolidation were not infrequently found in patients with normal rate of respiration, all patients with rates approaching thirty a minute were examined with special care. Rusty or bloody viscid sputum was taken as evidence of pneumonia for purposes of isolation and treatment without waiting for signs of consolidation which regularly appeared later.

The evolution of the symptoms and signs of pneumonia showed certain variations from those commonly observed in primary lobar pneumonia. Pleural pain, while present in certain patients, was relatively infrequent. Dyspnea while sometimes extreme was in many cases slight. The sputum, while typically rusty in many cases, in many others was light green and less tenacious. Whereas in primary lobar pneumonia it is exceptional to hear râles before bronchial breathing and then only a fine explosion of very fine crepitations at the end of inspiration, in these patients it was the rule to hear rather coarse crackling râles with somewhat diminished breath sounds for a day or more before bronchial breathing appeared. Dullness was often marked in the area of these râles while bronchial breathing was still absent. (Certain patients that died while this combination of coarse râles, dullness and diminished breathing was present showed in the corresponding portion of the lungs dark red areas of consolidation of somewhat flabby jellylike consistency.) In practically all serious cases the signs of consolidation were extensive and in a great majority of the fatal cases this process was bilateral.

It is understood that the experience of this hospital has been commented on as differing from that of other hospitals in that the pneumonias described here have been in great majority of lobar type, whereas elsewhere bronchopneumonia predominated. Certainly with exception of the variations noted above the clinical course of the great majority of cases was typical of lobar pneumonia. With few exceptions the local physical signs of consolidation were distinct; few cases came to autopsy

without local consolidation in part or in whole correctly predicted, and in the relatively few cases which proved to be bronchopneumonia the absence of clinical signs of consolidation had been noted as unusual. These cases of pneumonia tended to rather long course with successive appearance of new areas on consolidation. Their favorable termination was more often by rapid lysis than by sharp crisis.

A tendency to delayed resolution was marked in a distinct proportion of cases, the physical signs and x ray picture of consolidation persisting for one or more months. Exploratory punctures proved negative. The dullness and bronchial breathing would then gradually disappear but coarse crepitant râles would continue in the area for another long period after which complete return to normal was apparent.

Serous pleural effusions of sufficient volume to be of clinical importance were occasionally found but were not numerous (see Table III). Pericarditis was infrequent and pericardial effusions few. Empyema occurred in two classes, the early and the late. The first comprised turbid bacteria containing fluids appearing while acute pneumonic symptoms still dominated the clinical picture. Many of these cases were fatal but in our opinion death in these was to be attributed to pneumonia rather than to empyema, the symptoms being pneumonic, and at autopsy the lungs being extensively involved in red or early gray hepatization. Experience with empyema in the previous year had led us to the conviction that operation in the presence of an active pneumonia only aggravated an already severe condition and often accelerated a fatal outcome. When fluids even if becoming purulent and rich in bacteria, were found therefore, where in our opinion active pneumonia was still present, particularly if it involved the opposite side, it was our practice to depend upon aspiration only, deferring surgical drainage until a more favorable opportunity. The second class of cases comprised empyemas first developing after the pneumonia had run its course. In most of these the pus was encapsulated in rather small accumulations of relatively low toxicity. Some of these encapsulated areas gave one the impression of the fluid having accumulated within areas walled off by fibrous bands of adhesions which were due to an old pleurisy. There were twenty-three patients in whom surgical drainage was performed with but three deaths. Thoracotomy without rib resection was used in all under the direction of Major C. A. Wayland. In the three fatal cases autopsy showed the drainage to have been efficient, the death being due to other causes. Pneumothorax occurred in twelve patients. In eight which came to autopsy all but one had no tuberculosis or other lesion which could be found to account for the escape of air. Since acute empyema with air vesicles of more or less prominence was not an uncommon finding in other cases it is probable that these collapsed lungs had previously contained such vesicles, the rupture of one of which had produced the pneumothorax. In all cases entrance of external air from aspiration was excluded. Wounding of the lung by explora-

tory puncture is not regarded as probable in any; in most no exploratory puncture had been made. In three of these patients pyopneumothorax developed. In two the pneumothorax was bilateral.

A group of cases of considerable interest studied by Captain West, the radiologist, presented x ray evidence apparently conclusive on lung abscess, tending to quite rapid spontaneous recovery by an absorption. These cases showed in stereoscopic plates rounded collections of fluid with horizontal surface level not in contact with the chest wall. From two of these, sterile nonodorous thin green pus was aspirated. None had profuse expectoration or foul breath. Local physical signs were slight or absent. All showed progressive disappearance of the lesion, became free of symptoms and returned to duty. There were five cases of suppurative parotitis. In twelve cases of tuberculosis the disease may have been activated by influenza.

As to the etiology of the epidemic our bacteriological data, like those of certain other observers, fail to establish the influenza bacillus of Pfeiffer as the infecting organism. The following studies of cases were made in the acute stage of influenzal symptoms, usually in the first twenty-four hours. In cultures from throat swabs, plated on defibrinated blood agar from eighty-eight cases, *Bacilli influenzae* was present in eighteen, but never predominating and in most cases but few colonies, while the pneumococcus, streptococcus and the usual respiratory organisms were present in large numbers. In the cultures from these eighty-eight cases the organisms observed and the number of cases were as follows:

<i>Pneumococcus</i>	20
<i>Hemolytic streptococcus</i>	19
<i>Nonhemolytic streptococcus</i>	28
<i>Streptococcus viridans</i>	45
<i>Micrococcus catarrhalis</i> (group)	70
<i>Staphylococcus</i>	8
<i>Bacilli influenzae</i>	8

Smears from the throat stained by Gram's method in 109 cases showed influenzalike organisms sixty-three times. The organisms observed (morphologically) occurred in the following number of cases:

<i>Bacilli influenzae</i>	63
<i>Pneumococcus</i>	59
<i>Streptococcus</i>	55
<i>Gram negative bacillus</i> (not influenza)	19
<i>Staphylococcus</i>	35
<i>Vincent's bacillus and spirillum</i>	6
<i>Diphtheroids</i>	10

Blood cultures were made in 101 cases; all proved negative. White blood counts were made in 122 cases; these ranged from eight to twenty thousand as follows:

8 to 10 thousand	31 cases
10 to 12 thousand	38 cases
12 to 15 thousand	40 cases
15 to 20 thousand	13 cases
Total	122 cases

As the blood picture commonly seen in influenza is a leucopenia it would seem that complications were to be expected in many cases from the beginning. However, in twenty-four of these patients pneumonia developed, the blood counts varying from 8,200 to 17,000, so that the blood counts taken within twenty-four hours after the first symptoms were no indication of impending pneumonia.

As our efforts to recover *Bacilli influenzae* re-

sulted in few of them being found in pure culture or even predominating from sputum and throat swabs, further effort was made to recover them by animal inoculation. Sterile cotton swabs were passed up and back of the uvula, then with a downward stroke the swab was rubbed over the nasopharynx and pharynx, and was then withdrawn. This swab was shaken in about one c. c. of sterile bouillon which was then injected into mice, intraperitoneally. This was done in twelve cases; six of the twelve mice did not die; from the six mice that died cultures made from both the heart blood and peritoneum, all proved negative for influenza bacilli.

Since the epidemic has subsided we have isolated a few strains of a hemoglobinophilic organism but this is not unusual as it is well known that organisms which cannot be differentiated from *Bacillus influenzae* are present in the normal respiratory passages. Beef infusion agar titrated to .5 phenolphthalein melted then cooled to 45° C. before the addition of defibrinated human blood three c. c. to each 150 c. c. of agar was used in this work. In a small proportion of the plates one per cent. dextrose was added; no advantage appeared from this addition.

In view of the fact that pneumonia developed in many influenza patients it seemed advisable to study the sputum in certain cases, in order that we might obtain information as to the bacteriology of the bronchial secretions. The following table shows the bacteriological finding in forty patients having influenza with bronchitis but in whom pneumonia did not develop:

TABLE I.

Type I pneumococcus.....	6
Type II pneumococcus.....	6
Type III pneumococcus.....	2
Type IV pneumococcus.....	8
Type I and II pneumococcus.....	1
Type I and III pneumococcus.....	1
Hemolytic streptococcus.....	14
Nonhemolytic streptococcus.....	12
<i>Streptococcus viridans</i>	7
<i>Micrococcus catarrhalis</i>	10
<i>Staphylococcus</i>	14
<i>Bacillus influenzae</i>	3

During the period September 1, 1918, to February 28, 1919, specimens of sputum from 444 patients with pneumonia were submitted to the laboratory for type determination. The washed specimens of sputum were plated on defibrinated blood agar and a study made of the organisms present. It is not to be supposed that the organisms isolated as shown in Table II represent all of the different organisms present. However, the table does show those organisms which were present in sufficient numbers to be considered as having some bearing on the infection. The sputums were those sent routinely and while the ward surgeons made every effort to obtain the specimen which was coughed up from the bronchi, these efforts were of no avail in a number of cases. This was particularly true of some of the negro patients. The specimens which in general might be considered as unsatisfactory were carried through the different mediums, because the results of the examination might have some bearing on the question of treatment, viz., whether serum might be of some value in any given case. Mouse inocula-

tions were made in cases where the Avery tube gave negative or doubtful results; however, inoculations were not made routinely because of the scarcity of these animals.

TABLE II.

THE RESULTS OF TYPE DETERMINATION.	
Type I pneumococcus in.....	113 cases
Type II pneumococcus in.....	71 cases
Type III pneumococcus in.....	4 cases
Type IV pneumococcus in.....	85 cases
Type I and II pneumococcus were associated in.....	101 cases
Type I and III pneumococcus were associated in.....	12 cases
Type I and IV pneumococcus were associated in.....	8 cases
Type II and III pneumococcus were associated in.....	20 cases
Type II and IV pneumococcus were associated in.....	1 case
Undetermined which included streptococcus.....	28 cases

Total..... 444 cases

In these cases the pneumococcus appeared in pure culture fifty-three times and greatly predominated 108 times.

Predominant.

Type I.....	30 cases	Pure culture.....	13 cases
Type II.....	23 cases		10 cases
Type III.....	25 cases		13 cases
Type IV.....	30 cases		17 cases
Total.....	108 cases		53 cases

Other organisms present on the blood agar plates in such numbers as to possess some significance were:

Hemolytic streptococcus.....	65 cases
Nonhemolytic streptococcus.....	162 cases
<i>Streptococcus viridans</i>	117 cases
<i>Micrococcus catarrhalis</i>	79 cases
<i>Staphylococcus</i>	144 cases
<i>Bacillus influenzae</i>	31 cases

There were 403 white blood counts taken, practically all from pneumonia patients during the period in which type determinations were made. These varied within such wide limits that they were of little significance except that those showing high blood counts were considered as showing great resistance. Two hundred and ninety-one blood cultures were taken; nineteen of these were positive for pneumococcus.

The literature which has been available to us shows a wide variation as to the cause of pneumonia in different camps. This is very noticeable in our own cases. The cases in Table II were mostly from those occurring during the epidemic.

TABLE III.

TYPES OF PNEUMOCOCCUS.

	Series during epidemic.	Later series.
Type I.....	113 cases	45 cases
Type II.....	71 cases	10 cases
Type III.....	85 cases	17 cases
Type IV.....	101 cases	21 cases
Streptococcus.....	28 cases	15 cases

SERUM TREATMENT.

Polyvalent antipneumococcic serum was administered in 158 cases of pneumonia, cases being selected according to two principles. First, it was our intention that in all Type I cases the patients should receive serum unless from their condition when type determination was heard from it was judged that they could be expected to recover without serum. Second, in certain severe cases where danger of an unfavorable outcome we considered ourselves justified in giving the patients the benefit of the possibility of improvement by serum treatment without waiting for type determination. In the following table, therefore, it must be understood that the two columns do not represent parallel groups of unselected cases. On the contrary the serum treated cases represent those which appeared from the outset severe:

TABLE IV.

	Serum negative cases		No serum given cases		Total cases.
	Duty.	Died.	Duty.	Died.	
Type I	30	11	45	1	113
Type II	8	2	40	21	72
Type III	0	7	3	1	4
Type III	0	7	51	21	85
Type I and II	5	0	7	0	12
Type I and III	1	2	12	5	20
Type I and II	2	1	0	1	8
Undetermined	7	1	1	0	28
No specimens	7	18	127	194	346
Total	67	51	286	244	688

Returned to duty

Of the pure Type I cases, the patients being treated with serum except where the treatment was needless or hopeless, there were 113 and twelve men died, a mortality of 10.6 per cent. Of the total cases where pneumococcus Type I was present either alone or associated with another type that were 133 and thirteen deaths, a mortality of 9.7 per cent.

It was further the impression of some observers, although the numerical statement cannot be brought to bear on the question, that not a few cases reported as of other than Type I, showed benefit from serum treatment. It was also a prevalent belief that in cases in which a chill followed the administration there was increased likelihood that twelve hours later the temperature would be much lower and the general condition improved. While it cannot be supported as a mature theory the possibility is at least suggested that the non-specific foreign protein reaction may serve to some extent to stimulate reaction against infection.

Serum was given in doses of 100 c. c. or 150 c. c. intravenously, repeating at eight, twelve and sometimes twenty-four hour intervals according to response on the part of the patient. In certain cases one dose seemed to be sufficient to turn the tide toward recovery, other cases required one or more repetitions. The largest amount given in any single case was 500 c. c., however, the average amount given was 300 c. c.

Following the great wave of the epidemic, sporadic cases of the disease continued to occur and patients with pneumonia continued to be admitted, many of whom undoubtedly were preceded by mild unrecognized influenza. There were 4,789 cases of influenza and 688 cases of pneumonia up to February 28, 1919, with 295 deaths.

COMPARATIVE METHODS OF STUDYING PNEUMONIA CASES FOR DETERMINATION OF TYPE.

Every one has experienced difficulty in getting satisfactory specimens of sputum for type determination, special emphasis being laid on the necessity of avoiding as much as possible contamination of the sputum with saliva or mucus, and in order to remove such contamination from the upper respiratory passages, the specimen being washed in normal saline solution. It is not infrequent to have a strain of pneumococcus present in the throat which is of a different type from that causing the infection, so that some workers feel that lung puncture is the only entirely satisfactory method. In view of the difficulty in getting satisfactory specimens from some patients and the great desirability of making early type determination we studied the

sputum and throat swabs of 123 patients. They are presented here to show the results of the investigation, believing that it is worth while to make type determination from throat cultures in addition to sputum examinations. The sputum was always washed and then small portions cultured in an Avery tube for the agglutination test. The throat swab was shaken in an Avery tube for the agglutination test.

The organisms present on the defibrinated blood (human) agar plates are also tabulated. A small portion of the washed sputum being spread on the plates and readings being made after overnight incubation at 37.5° C.

TABLE V.

	<i>Sputum.</i>	<i>Throat.</i>	<i>Cases.</i>	<i>Pneumococcus.</i>	<i>Hemolytic streptococcus.</i>	<i>Nonhemolytic streptococcus.</i>	<i>Streptococcus viridans.</i>	<i>Micrococcus catarrhalis.</i>	<i>Bacillus influenzae.</i>	<i>Staphylococcus.</i>
I	1	I	11	29	3	12	14	11	0	7
I	1	II	..	2	1	0	0	1	1	0
I	1	III	..	1	1	0	0	1	1	0
I	1	IV	..	1	1	0	0	1	1	0
I	1	I	11	9	1	4	4	2	0	0
I	1	II	..	1	1	0	0	1	0	0
I	1	III	..	1	1	0	0	1	1	0
I	1	IV	..	1	1	0	0	1	1	0
I-II	1	I	1	1	1	0	0	1	0	0
I-II	1	II	..	1	1	2	2	1	0	0
I-II	1	III	..	1	1	2	0	1	0	0
I-II	1	IV	..	4	3	1	7	0	0	0
I-II	1	I	..	2	3	0	1	1	2	0
I-II	1	II	..	1	1	1	0	0	0	0
I-II	1	III	..	2	1	1	0	0	1	0
I-II	1	IV	..	2	2	0	0	1	0	0
I-II	1	I	10	7	1	4	2	1	0	4
I-II	1	II	..	6	0	1	1	0	0	2
I-II	1	III	..	2	1	3	1	0	0	0
I-II	1	IV	..	2	1	0	1	1	0	0
I-II	1	I	..	1	0	1	1	0	0	1
I-II	1	II	..	1	0	0	1	0	0	1
I-II	1	III	..	1	0	0	0	0	0	1
I-II	1	IV	..	36	20	9	17	12	1	11

123

Pneumococcus and staphylococcus.....	11 cases
Pneumococcus and hemolytic streptococcus.....	8 cases
Pneumococcus and diphtheroids.....	1 case
Hemolytic streptococcus and diphtheroids.....	1 case
Pneumococcus, Streptococcus viridans, and staphylococcus.....	3 cases
Pneumococcus and Streptococcus viridans.....	1 case

In the period of the epidemic proper, there were, according to statistics gathered by Major Charles P. Adams, 4,595 cases of influenza, resulting in 626 cases of pneumonia. There occurred in his service forty-five cases of otitis media, specimens of which were sent to the laboratory. Pneumococcus was present in twenty cases. Type determination showed:

Type 1.—One case. Pure cultured from both ears.

Type 2.—One case. Pure culture.

Type 3.—Ten cases. Four cases in pure culture. Four cases with *Staphylococcus albus*. Two cases with non-hemolytic streptococcus.

Type 4.—Four cases. Two cases pure culture. One case with *Staphylococcus albus*. One case right ear showed Type IV and *Staphylococcus albus* and the left ear Type IV and nonhemolytic streptococcus.

Hemolytic streptococcus was isolated in four cases, three in pure culture, and in one case *Staphylococcus albus* was also present.

Nonhemolytic streptococcus was isolated in one case in pure culture and four cases with *Staphylococcus albus*.

Streptococcus viridans was isolated in one case; in this case the organism was also present in the epipharynx in practically pure culture.

Staphylococcus albus was the only organism in ten specimens and *Staphylococcus aureus* in four specimens.

A total of seventy-one examinations were made in the forty-five cases, fifty-four of which were positive and seventeen sterile.

Micrococcus catarrhalis was present in two cases.

Diphtheroid was present in one case.

Bacillus influenzae was present in one case.

Micrococcus tetragenus was present in one case.

Bacillus coli was present in one case.

There was one case in which Type III pneumococcus was isolated in pure culture from an abscess in the abdominal wall.

Throughout all of these observations it will be noted how prominently the pneumococci of different types appear. This fact, together with the high incidence of pneumonia, in spite of the absence of conclusive evidence, seems to point an implicating finger toward the pneumococcus as an important, or even perhaps the primary aetiological agent.

(To be concluded.)

PREVENTIVE GYNECOLOGY.

By A. B. LEEDS, A. B., M. D.,
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It is not my purpose to discuss the merits or demerits of any particular operation nor to decry surgical intervention as a relief for gynecological conditions. Consideration will rather be given to the value of preventing those conditions, so often unrecognized, which progress until prompt surgical intervention alone offers any hope—and frequently that is of no avail. I shall mention a few of the difficulties of diagnosis and some of the mistakes frequently made and their causes, so that perhaps a lesson may be drawn from this discussion.

The brilliant results obtained within the last few years in the fields of preventive medicine and surgery are not only a credit but a living monument to the untiring efforts of our profession. Yet a field of usefulness equally as great and perhaps as

fertile is that of preventive gynecology. Following the advent and thorough understanding of asepsis and antiseptics, it was only natural that our efforts should be in the direction of the surgical relief of gynecological conditions, up to that time practically unknown and little understood. As a result of our efforts not only was there obtained a vast store of useful knowledge concerning the results—heretofore vaguely guessed at—of many pathological conditions, but an insistent inquiry developed as to the cause of these conditions. Having to consider the intricate arrangement of the organs and their intimate relation with the rest of the human economy, as well as the effects of environment and our complex civilization upon the usual physiological changes and epochs, we were confronted with a complexity in the ills of the sexual life and organs of woman that at first sight was appalling. But let it be said to the credit of our profession that the unraveling of this tangled skein was undertaken with that spirit of acknowledging no defeat which is always rewarded with results.

In the investigation of the etiology of these conditions and the elaboration of our technic, many interesting facts have been enunciated. Some of these facts are frequent and pertinent sources of error; not being understood they act as a hindrance to the prevention of the conditions and mar an otherwise intelligent conception of the treatment required. With a not entirely rational conception of the sensorial manifestations of the diseases of the female sexual organs and with the added difficulty of a direct sensation of pain being lacking, the pain often being reflected from an initial source of irritation, we find diagnosis very difficult and often impossible. Careful examination will often show that a pain in the hip joint or the knee joint has been reflected from an irritated or inflamed nerve or nerves in the ovaries or uterus. This is not strange when we consider that the sacral ganglion and the lower lumbar ganglion of the sympathetic nerve are connected with the great sciatic nerve and partly with the obturator; these same ganglia are likewise connected with the nerves proceeding through the broad ligament to the uterus and ovaries.

We often find the cecum in the true pelvis, and frequently when it is distended with gas there are vague pains which are mistaken for signs of ovarian cysts and kindred ailments. Occasionally we find that a painful anal fistula and the resultant abnormal distention of the colon and cecum with gas, often give symptoms which are mistaken for ovaritis, appendicitis and, in older women, cancer. Functional disturbances and the more obscure sexual neuroses and the proximity of the appendix and sexual organs and their proneness to inflammation call for ever vigilant care in considering these cases. Many unnecessary operations, in hysterical women, can be avoided by a correct localization of the pain in the lower abdomen. On the other hand, unexpected pathological conditions of a serious nature are frequently demonstrated by an operation in young women who have been regarded by their parents and physician as hysterical. Often the etiological factor of mental disturbance as a primary

cause is either overlooked or not given the consideration it deserves.

Our sanitary laws for the benefit of public health are accomplishing much, but equally important benefit could be obtained by the rational teaching of young girls concerning the effects of the necessary physiological changes and the untoward results of their neglect and abuse; of young women as to the woes saved by the correction of irrational habits; of women as to the results of married life, the importance of careful handling of pregnancy, and the devastating effects of preventable accidents of the puerperium and the scourge of venereal infection.

Our consideration of the complex female organism will be made more rational and we shall hasten the intelligent prevention of many of these conditions if we give such cases the consideration which we do to other derangements of the body.

COMMON SKIN DISEASES FREQUENTLY SEEN IN SCHOOL CHILDREN.

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HEALTH IS A CHILD'S BIRTHRIGHT.

In all lines of human endeavor, a period of great growth is of necessity followed by a period of rest when simplification of effort and standardization of method should be effected. The great growth of medical school inspection, which has occurred in both scope and amount, has necessitated a revision of what has come to be accepted as a necessity of our public school system—medical and dental supervision. Much greater progress can be made, however, if the cooperation in the prevention of disease and physical defects is more general and especially if all teachers and parents will master essentials. As a result of the war, our national government, has taken up health activities and comparisons. The child saving campaign has focused all eyes on the unnecessary waste of child life. This has been accomplished through supervision of housing conditions of employees of the munition industries.

Strange as it may seem, the one subject which every fair minded person admits should be taught thoroughly—how to keep well—has been for years to a very large extent, neglected. Public hygiene may be enforced by statute but personal hygiene and domestic hygiene must be taught and is applied only voluntarily. There is no law which compels a citizen to bathe, to change his clothing, to wear suitable clothing in season, or to take suitable and proper exercise—all of which are most essential to health—both public and personal health. How can this be brought about? The answer is simple—by education and example.

Personal hygiene depends upon the intelligence of the individual. Applied hygiene is the application of the well known truths regarding conditions most favorable to the body of man. Knowledge of the normal functions of the body—especially under stress and strain—is unfortunately possessed by but a few individuals, and no educated person

should be excused from such knowledge. It is highly regrettable that many of our school children reach maturity without proper instruction or supervision in many essential matters of health.

In this paper we shall concern ourselves with one of the most important organs of the school child—the skin. Perhaps no organ of the body is so exposed to abuses from within and without. But few individuals appreciate the number of irritants to which our skin is exposed and to which it does not appreciably react, until finally nature is overcome and impairment results as may be indicated by one of several evil conditions. This breaking down occasions suffering, pain, misery, and at times incommodes or disables and not infrequently disfigures the individual. When it is considered that this is wholly preventable, is it not our duty to anticipate and prevent such eventualities?

Rashes—skin exanthemata—incident to the communicable infections are the subject of a special paper and will not be touched upon.

The skin is the outer covering of our bodies. The appendages are the nails and the hair. The hygienic relations of the normal skin will be considered, then the abnormal.

Anatomically the human skin is composed of four layers, two outer and two inner, but for practical purposes we accept the general fact that it is composed of but two—the top or superficial, thin cellular layer called the epidermis, cuticle, or horny layer. The bottom or deeper layer called the true skin or derma. The function of the top layer is to protect the bottom layer and prevent it from drying and losing its natural softness and pliability. The function of the bottom layer is complex—it being the organ of sensation and with its layers of fat, offers protection to many deeper structures from pressure and violence. The top layer being composed of hard dry scales of epithelium does not concern us and so it will be dismissed from further consideration.

The condition of the derma, however, does concern our bodily comfort very much and this will be considered more in detail. In the derma are two important systems of glands: a, Perspiratory—called sweat glands; b, sebaceous—known as the oil glands. When the surrounding atmosphere is warmer than the human body, the bloodvessels of the skin dilate, and furnishing more material to these glands, excite them to action. Free perspiration taking place, this water, bathing the skin surface, cools it by evaporation.

Evaporation is facilitated or hindered by different physical conditions. If the air is already full of moisture, evaporation of the perspiration becomes slow and difficult and the body suffers more from the heat than if the air is dry. Clothing also retards and hastens this process, depending upon whether the material is a conductor or not—wool retards evaporation, while cotton hastens. To keep the skin in a healthy condition bathing is necessary and essential. Bathing removes the dead, dried top cells, opens the pores and facilitates free perspiration and evaporation; refreshing and stimulating the skin and the circulation and giving energy to the body and its several systems.

The sebaceous glands are found in all parts of the skin except the palms and soles and are especially abundant in the face and scalp. The sebaceous glands of the eyelids prevent adhesion of the lids and in the scalp these glands form the natural oil of the hair and make it supple, shiny, and beautiful. Without this natural oil the skin and hair would become dry, lustreless, and brittle and would crack and make sores (seen in ichthyosis).

Appendages of the skin.—The hair serves many useful purposes besides being an adornment. The hair protects the body, particularly the head from the action of the sun's rays and against violence and furnishes the body a certain amount of warmth. The eyelashes protect the eyes against the entrance of foreign bodies. The short stiff hairs in the ears and the nose aid in preventing the entrance of insects and foreign bodies into those cavities. A fine head of hair is universally prized and it is regrettable that many are deprived of this through ignorance. A thick pliable scalp—moving freely over the bones is very favorable for a good growth of hair. On the contrary a thin tense tough scalp, as a rule, contains but few blood-vessels and drawn tightly over the bones of the scalp lessens the blood supply and occasions atrophy of the roots of the hair from pressure and premature baldness results.

Dandruff is a collection of dry epithelial scales. These may be mixed with dried oil and dirt, forming crusts which are the forerunners of falling hair and baldness. Keep the scalp clean, well brushed, and dress the hair soft and loose and brush and comb regularly. Good hair requires constant and regular care of an intelligent kind. Fine toothed combs serve a special purpose. Use a large comb with well rounded points to the teeth and the teeth wide apart. Comb gently. Never tear the hair by roughly combing out snarls. Regular brushing and combing stimulate the circulation of blood in the scalp, aid in removing dead scales, and improve the vigor of the hair. Loose hairs should be removed and their place will be taken by new and more vigorous ones. The stable groom knows by experience that the only way to keep the coat of his horse thick, glossy, and beautiful as well as healthy is to constantly use the brush and currycomb, using water only when the skin of the animal indicates the need of such by the presence of dirt.

To keep the hair clean and free from dandruff a bath is necessary. How frequently this is necessary depends upon circumstances. Shampooing, like brushing, removes loose hairs, dead, dried scales, and stale oil, stimulates the scalp and is a most important means of preserving a good head of hair, as well as making it beautiful and aids in restoring hair after temporary falling out. The frequency of the shampoo depends on the rapidity with which dandruff accumulates. The scalp should be free from odor and the hair have a tendency to stand away from other hairs. Clumping of the hair in bundles indicates superabundance of oil. Odor indicates an excess of perspiration and decomposed oil. There are some instances where a shampoo once a month suffices but in those cases where the

head is exposed to dust once a week may not be too often and in the presence of scales every other day may be necessary. There is never any danger of shampooing the healthy scalp too frequently but the hair should then be thoroughly and carefully dried and brushed.

A word of caution—don't put your faith in hair tonics. These are often of an alleged miraculous value—which is not only misleading but false. Hair tonics are unnecessary, if the hygiene of the scalp is attended to properly. When the hair falls out prematurely, as it often does after illness or long neglect, it is well to shampoo the head two or three times a week, followed by gentle massage and friction gradually lessening the intervals as improvement occurs. The use of eggs does not have a cleansing effect—there is no more reason for the use of eggs in the hair than on the hands and it is a waste of good material.

Some entertain the false idea that cutting the hair thickens it, while others think that cutting may aid the rapidity of growth. It may do so but dermatologists think otherwise. To keep children's hair short up to the age of eight or nine years is sensible and hygienic and a rapidly growing child has its strength taxed less. Singeing the hair is a waste of time—perfectly useless. Shaving the scalp instead of producing a thicker growth as many have asserted actually has a depilating effect. Shaving in youth is aided by Father Time, producing a coarser growth but here time is the factor and not the razor. Shaving the head to produce a better growth of hair is never productive of success and may be characterized as absurd and perfectly useless.

Never make violent traction on the roots of the hair. Twists or knots should be loose and graceful and without sensations of discomfort. Curling the hair if not done with too much vigor cannot be objected to. Overheated curling irons make the hair unnaturally dry and brittle. Never wear tight head gear. Never wear head gear that prevents free air circulation or undue pressure restricting or shutting off blood supply. To have good hair requires attention to the health. To preserve a good head of hair requires careful attention to hygiene. Never use depilatory pastes or powders for superfluous hair. Electricity is safe and when properly applied is certain. The only thing to do for gray hair is to admire it. Nothing can be done to prevent the hair from turning gray. Dyeing the hair is never excusable, and in our opinion exhibits bad taste. Hair with split ends should be carefully trimmed with sharp scissors about a half inch from distal end.

NAILS.

The care of the nails is highly important. In health the nails grow evenly, smoothly and regularly. They are of a light coral pink and the ends are strong and pliable. The skin overhanging the roots, tending to encroach too far over the half moon (lunula) is likely to become ragged, loose, and cause hang nails which when pulled or torn off leave small breaks in the skin. Trim the rough loose skin with curved sharp scissors. Paint the loose ends with collodion. When the skin

is soft push it back off half moon with an orange stick—be careful and use no more force than necessary or you will bruise the nail bed and cause white spots to appear in the nail. To clean the nails, wash with warm water and a good soap. Remove accumulations with the orange stick—never use a penknife or steel instrument, as these scrape and thin the nail and make it grow unevenly. Never scrape the surface of the nail, as it tends to make it grow thick and form ridges. In buffing stroke slowly and never briskly, as you are apt to overheat and occasion brittleness.

In trimming the finger nails cut with scissors, trimming in a curved direction—or sand paper with fine paper; when using paper wash carefully to remove the sharp sand from underneath the nail. The nails may be bleached with lemon juice, acetic acid in solution of weak strength or a solution of oxalic acid may be used but the latter is poisonous. In trimming the toe nails cut straight across and if there is a tendency to form ingrowing nails elevate the corner with cotton soaked in vaseline crowded under with a wooden tooth pick. Care of the nails is rewarded by beauty and usefulness.

DISEASES OF THE SKIN.

The diseases which affect the skin of the school child are those which are likely to affect any one but by reason of propinquity, certain diseases are more frequent in school children than are usually experienced in older persons. The easiest method of determining diseases of the skin is by the regional method. This system divides the human body into parts—the head, face, hands, trunk, and extremities. Many diseases are local in character and many have their initial appearance in a particular site, later spreading to other localities.

TABLE NO. I.

SKIN.

Diseases of the Face.

Eczema	Birthmarks	Impetigo
Ringworm	Seborrhea	Acne
Pernio	Lupus	Erysipelas
Vitiligo	Boils	Dermatitis
Scleroderma		

Diseases of the Lips.

Fissures at corners (perlerche)	Impetigo
Febrile herpes	Intertrigo
Fissures (eczema)	Lupus
Milium	Mucous patches

Diseases of the Scalp.

Eczema	Boils	Birthmarks
Ringworm	Kerion	Impetigo
Dermatitis	Lupus	Parasitic
Alopecia	Favus	

Diseases of the Hands.

Redness (erythema)	Pernio	Cracks
Fissures	Dermatitis	Warts
Tuberculosis	Vitiligo	Xeroderma
Dysidrosis	Scabies	Edema
Boils	Ringworm	Eczema

Many of these are both common and frequent, some are readily communicable and owing to this condition, teachers and social workers should promptly refer skin lesions of children to the family doctor or to a dispensary. In the case of a school clinic refer forthwith and take no chances.

Eczema.—This is often found and is generally in the unclean and debilitated and undernourished, the weakened systemic condition probably being

the cause and not external unhygienic conditions which merely intensify the condition. The skin here is red, moist, and the sensation of itching, smarting or burning may be present. This disease is intractable in the presence of a weakened constitution. These children suffer considerably and demand great care and patience but are easily and quickly cured when the cause is detected and removed.

Impetigo is an infection, sometimes called scald, and is incident to filth and is recognized by its creeping disposition, rapidly spreading, highly contagious but is quickly and easily cured by cleanliness and antiseptics.

Pernio—Chilblains are seen on the nose, the ears, the cheeks, and on the feet and hands—they are due to exposure to cold. Warm clothing and application of astringents and stimulating the circulation with time will relieve—avoid exposure in thinly clad condition as the skin is sensitive to a relapse.

Ringworm—Due to a fungus called trichophyton—of which there are several varieties, they form small blisters on a reddened base, occasion itching. It is very contagious, and may occur on any part of the body but as a rule usually appears on exposed parts where infection is implanted. An application of tincture of iodine or salve will cure the disease but the treatment is lengthy and must be persevered in.

Acne.—Pimples of the face appear at the period of life when the boy or girl passes from childhood to youth. The oil glands are overactive, and owing to a debilitated state are sensitive, quickly becoming infected, forming small boils. The resulting red color and uneven skin disfigure and torture the patient. The treatment is mechanical and careful attention to the rules of personal hygiene. When ready they should be opened and an astringent antiseptic solution applied. The bowels should be opened and tonics administered. Exercises and open air walks aid greatly.

Fissures are cracks which appear at the corners of the mouth, and are due to filth. They occur in children who frequently moisten their lips and are not clean in their habits. Mouth washes of an antiseptic character and a salve slightly antiseptic afford relief.

Herpes are incident to intestinal intoxication. Administer a laxative but no local treatment.

Mucous patches are silver erosions of syphilis. They are very contagious. The children should be excluded from school and referred to a doctor and a nurse should follow up the case carefully.

Parasites.—The statistical table which follows is highly enlightening:

TABLE NO. II.

Lice Among Pupils of the Public and Parochial Schools, New York City.

Year.	Inspections of heads.	Cases found both nits and lice.	Excluded from school—live lice found on scalps.
1913	6,619,070	232,087	3,869
1914	6,374,827	246,193	5,507
1915	6,845,494	260,077	5,685
1916	7,361,855	288,008	8,203
1917	7,845,827	231,378	6,988
1918	7,117,157	209,991	8,535
Total	42,164,230	1,467,822	38,987

In this analysis of six years' experience in the medical examination of school children, over forty-two million heads were examined; many heads reexamined time and again and the proportion with lice present is rather considerable. The number of actually live vermin is extraordinary, 38,987. Lice are generally considered as belonging to two groups in school children: 1, body lice, *pediculus corporis* (Vestimenti) and 2, head lice, *pediculus capitis*. In passing it might be said that almost the whole of the poorer population in this city is more or less permanently infested with lice. When this question is considered historically, evidence points to the fact that lousiness has been rather general up to within recent years. One of the best hotels of a certain European country, excludes, even the nobility from a certain country, because these people are so frequently infested and they in turn infest the hotel, necessitating a formidable process of delousing, which took away much of the profits which such visit entailed.

In England the proportion of lice infestation is reported to be as follows:

	Boys.	Girls.	Infants.	Total.
1909....	16.3	50.3	26.4	30.1
1917....	7.8	28.5	13.5	15.5

A very appreciable decrease in all classes is quoted.

In addition to the mental and moral effects of infestation with lice, there are other objectionable and dangerous results. The primary effects are slight transitory prickling sensations with varying afterresults, restlessness, lack of sleep, irritability, anemia, and general debility. A tolerance to the presence of lice can be acquired in relatively short time by some persons. Lice may spread skin diseases by acting as carriers.

Lice are known to be specific carriers of diseases as typhus fever, trench fever, and plague and relapsing fever—by crushing. Serious outbreaks of these pestilential diseases have occurred from time to time and are invariably caused by lice.

Numbers of lice.—Very little information is available as to the number of these pests that may be found on any one person, but Professor Nuttall records that he enumerated the lice on the hair cut off from the head of a woman regarded as representing a very mild degree of infestation and found 1,004 insects and coupled with innumerable nits. Each female may lay as many as 300 eggs in twenty-four hours. The egg to egg period takes about sixteen days. The adult lives about thirty days. In her life time she may have 2,000 descendants. The offering of her daughters, during their life time, would number nearly 113,000 in forty-eight days.

Seasonal incidence.—It has been fairly definitely established that the louse population increases in winter and decreases in summer—children are more often infested in winter than in summer.

Fertility of eggs.—Ingenious experiments have been carried out to determine the habits of the louse. From such it has been learned that the head louse deposits its eggs on the hair. The body louse is quite ready to adopt the same habit and appears to prefer to do so. Lice avoid the light; prefer to lay their eggs on rough surfaces and on the lower

side, lice are gregarious, have a homing instinct and are extremely active. The head louse will climb a hair eight inches long in one minute and fifty seconds and the ease with which it clings and the speed with which it travels upward indicate sufficiently how girls with long hair may pick up lice—the insects soon reaching the root of the hair and seeking refuge near the scalp. If a comb is warmed enough to be pleasantly hot to the hand, and used, the lice become excited and come into the open, instead of sticking to their dugouts, making removal easy and without discomfort.

SPREAD OF INFESTATION.

1. By contact with infested individuals.
2. By contact with infested sick or dead.
3. By contact with clothing, bedding, brushes, previously used by infested persons.
4. By contact with a clean person's clothing, blankets, hats, brushes, with similar articles belonging to infested persons. Lice are not infrequently found in school girls' lockers and hats.
5. By acquiring stray lice—in public conveyances, from carpets, upholstering, and furniture.

Tenacity to life and virulence of eggs.—Unfed adult lice have been found to survive a period of five days, in the dark, at fairly low temperature. Lice will sham death. They have considerable powers of resistance and survive immersion in water for some days, or will live after being temporarily narcotized by exposure to vapors of essential oils, benzine, kerosene, ether, and larkspur, for a time insufficiently long to kill them. Lice will live unfed five days and survive immersion for powers of resistance and survive immersion in water for four days and after exposure to frost for several days. The louse feeds by anchoring its body, fixing its head to the skin by its curved hooks and protrudes its piercing organs and proceeds to pump up the blood. It must be particularly remembered that lice and eggs have considerable powers of resistance and that the live lice will sham death for hours.

The following signs may aid in determining death: 1, Nits, by complete collapse of shell, the contracting of contents into small space, the change of color—whitish when coagulated by boiling or brownish when heated dry; 2, lice, by shriveling up and becoming brittle, changing color—whitish when boiled, or brown or blackish when heated dry. On the child's head it is impossible of being certain that all nits are destroyed or lice are dead. The only safe course is to remove all of them.

TO CLEAR A CLASS OF INFESTATION.

1. Examine all children in attendance. This must be periodical and systematic.
2. Give warning to the family—mild at first, cooperative, and strictly confidential.
3. When lice are found on a pupil, the case must be recorded, and followed up and a special file kept. The child should be reexamined until free from lice and kept free for a period of four weeks or more. The period must be sufficiently long and the examinations carefully performed to assure cleanliness.
4. Reinfestation of pupils must be followed by careful followup work in the home and instruction. Failing to secure cooperation, drastic action must be undertaken, even hospitalization of the offenders

and summoning to court of parent after repeated (four are required in England) warnings.

It must be appreciated that many persons know of lice only by name, especially in the better classes of society. An individual who is likely to become infested should at least know enough about these insects to be able to recognize them and appreciate the dangers the presence of such indicate, so that one may take measures to rid himself of their presence. The first step therefore in annihilation is to instruct and educate the people as to their significance. Such naturally is the work of the school.

Prejudice and superstition.—There was a belief, and it is said to still prevail in Ireland, that head lice are beneficial and it is also said that a like belief holds in Scotland among the lower classes, it being thought that a hardy louse population on the head was a sign of good health. Lice on a woman's head I have been informed in this country indicated a sign of productivity. Lice in the head, among our colored population, has been said to be a sign of good luck and is a good omen of something pleasant which is going to occur.

Prevention.—To prevent these heritages they must be vigorously combated. Prevention consists in careful education. Prevention consists in observance of the rules of personal hygiene, combing and brushing the hair periodically, shampooing regularly, keeping the hair of small children cut short, and in school girls the hair should be carefully braided. Closets for hats and wraps should have individual pegs and hooks specially assigned. Boys should wear caps and keep them in their desks or pockets. Oils or pomade may to a certain extent keep them away but these are unreliable. Oils occlude the spiracles of the insects and close up the opercular orifices of the nit covering. Hungry lice, however, will attach themselves in spite of anything.

Useful remedies.—Acetic acid, vinegar, for removal of nits, preferably used hot. Alcohol with or without camphor, larkspur and other drugs. Benzine and zylol are highly inflammable. Carbolic acid in solution, salve, or oil. Chloroform, preferably in solution. Bichloride of mercury, in alcoholic solution, aqueous, in vinegar or in oil, is very useful. Calomel used in a pomade. Oil, mercury, sassafras, and turpentine soil bedding and clothing and some of these have objectionable odors. Balsam Peru is very expensive, odorous but efficient. Kerosene or petrol, plain or with equal parts of vinegar, is very efficient and generally used. They should be used carefully as they are inflammable. They are cheap and easily obtained.

Among the very earliest medical writings of antiquity are found remedies for lice—Pliny 1900 years ago recommended vinegar to dissolve the chitin. Professor Nuttall calls attention to the habits of monkeys—hand picking—which was observed centuries ago.

TREATMENT.

The hair should be well soaked with a strong solution of bichloride of mercury for several hours and tied up in a kerchief. At night, an ointment

of mercury should be applied to kill the larvæ and adult embryos. The head should be washed carefully with soft soap and hot water and thoroughly rinsed to remove dirt and salve. When the hair is dry from bathing soak well with vinegar, preferably hot, for half an hour, and comb out the nits with a hot metal comb, with very fine teeth. The hair should be combed gently so as to never tear the hair. The strand should be picked up and combed full length; the comb being dipped from time to time in hot vinegar. The comb should always be dipped after pulling through the hair. Instead of a comb, linen cloth, soaked in hot vinegar may be used, grasping the strand of hair between the thumb and finger, covering with a soaked hot cloth and the hair pulled through the hand its entire length. The hair is pinched firmly and the nits are closely adherent.

This very old sanitary problem is more deserving of attention than it is being given—Murillo, Teniers and many other celebrated artists did not think it beneath their dignity to illustrate the process of delousing and in the recent war this was one of the most frequent and principal problems of warfare.

DESTRUCTIVE ACTION OF NEOSALVARSAN ON LEUCOCYTES.

Used in a Case of Acute Lymphatic Leucemia.

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CASE.—A. G., male, aged nine years, first brought to my office by his parents early in January, 1919, for swollen glands in the neck. When interrogated as to why the boy was carried, the father volunteered the information that some months previously the boy had been operated upon for abscesses on both hips and that an orthopedic surgeon had advised against permitting the boy to bear his weight upon his legs. This resulted in the lad crawling upon his hands and knees. He had practised this for some months. He was afraid to stand up. Examination showed that the inability to walk depended entirely upon fear and not upon any abnormality of feet, legs, knees, thighs or hips—the scars of the previous abscesses were visible over the trochanters, but motion was unimpaired in all directions, the conclusion being inevitable that the abscesses had not involved the hip joint itself. The parents were ordered to permit the lad to learn to walk again and this he did within a week.

Further examination showed a fairly well nourished lad of pale, intelligent countenance. His mucosæ were pale and his gums were bleeding and swollen. Upon his body were seen here and there petechial and ecchymotic spots. The glands of his neck were visibly swollen to the extent of causing his face to appear rather stout. The glands were freely movable of varying size and not clearly defined. The enlargement involved the submaxillary, the anterior and postcervical, the axillary, the inguinal and the popliteal glands in particular. The spleen was slightly palpable. His temperature was

101° F; pulse 120. The child was removed to my service at the Mount Sinai Hospital. X ray examination revealed nothing of importance and, incidentally, the hip joints were negative as were also the dental roots and sinuses.

The blood examination made by Dr. A. I. Rubenstone on January 17, 1919, showed: Hemoglobin, sixty-five per cent.; red blood cells, 2,370,000; white blood cells, 23,000; small mononuclears, 98, and polymorphonuclears, two per cent. Diagnosis, lymphatic leucemia. Blood cultures were negative.

The following treatment was ordered: Benzol, three minims daily, to be increased one minim daily until the child received seven minims daily. Later this was changed to ten minims daily. Sodium cacodylate, one half gram by intramuscular injection once a day. Syrup of hydriodic acid, one half dram three times daily. X ray over the spleen was also ordered and carried out under the direction of Dr. George Rosenbaum.

Under this therapeutic régime the general condition of the patient gradually became worse, the boy becoming weaker and finally bedridden. Rather severe hemorrhages from the gums and nose appeared, and the blood picture remained unchanged, as illustrated by the following reports, all submitted by Dr. A. I. Rubenstone.

On January 25, 1919, hemoglobin, sixty-five per cent.; red blood cells, 2,450,000; white blood cells, 26,500; small mononuclears, ninety-seven per cent.; polymorphonuclears, three per cent. January 27, 1919: Hemoglobin, sixty-five per cent.; red blood cells, 2,370,000; white blood cells, 23,000; small mononuclears, ninety-eight per cent.; polymorphonuclears, two per cent. February 1, 1919: Hemoglobin, sixty-five per cent.; red blood cells, 3,080,000; white blood cells, 30,600; small mononuclears, ninety-eight per cent.; polymorphonuclears, three per cent. February 3, 1919: Hemoglobin, sixty-five per cent.; red blood cells, 2,330,000; white blood cells, 29,600; small mononuclears, ninety-eight per cent.; polymorphonuclears, two per cent.

On account of the severe bleeding resort to transfusion was made, inasmuch as two injections of horse serum had failed to help. The father was the donor and the operator Dr. A. I. Rubenstone. The effect upon the bleeding was good. February 4, 1919: White blood cells, 51,400; small mononuclears, ninety-eight per cent.; polymorphonuclears, one per cent.; large mononuclears, one per cent. February 6, 1919: White blood cells, 39,600; small mononuclears, ninety-nine per cent.; polymorphonuclears, one per cent. February 8, 1919: White blood cells, 34,400; small mononuclears, ninety-eight per cent.; polymorphonuclears, two per cent.

The child's condition rapidly became worse, the temperature rising to 104° and 106°, the pulse was rapid and weak, the glandular enlargement increased enormously, and the face became white and edematous. All treatment was suspended for a few days except small doses of calomel. The acute glandular swelling and edema subsided somewhat. It was decided to make use of an intravenous injection of neosalvarsan. Three decigrams were employed by Dr. A. I. Rubenstone. The following day the blood examination showed: White blood

cells, 10,600. On February 11, 1919: Hemoglobin, nineteen per cent.; red blood cells, 1,410,000; white blood cells, 2,400; small mononuclears, ninety-five per cent.; polymorphonuclears, five per cent.

The marked reduction in white cells, red cells and hemoglobin will be noted. Whether this was dependent upon the action of large doses of arsenic as represented by neosalvarsan, or whether it represented a prelethal phenomenon is a matter for discussion. The former conclusion seems inevitable inasmuch as the reduction in white cells occurred almost immediately after the systemic introduction of the drug and also because arsenic in poisonous dose is known to be hemolytic in its effect.

Furthermore, the natural history of leucemia records a marked spontaneous reduction in the white cells only as an immediate preagonal phenomenon, or as the result of an acute intermittent infection, for example, in tonsillitis. The latter was absent and the reduction was noted at least a week before death, and, as was stated, immediately following the use of the drug. The query as to whether a too large amount of arsenic was introduced is of course relevant and can only be determined by noting the effect of smaller doses when the opportunity for their employment will present itself in a subsequent case.

Aside from the main point of interest in the protocol of this particular case, viz., the effect of neosalvarsan on the reduction of the blood elements, the conclusion must be accepted that thus far the medical profession remains in darkness as to the cause and cure of this disease.

2011 CHESTNUT STREET.

THE NECESSITY FOR EARLY AMPUTATION.

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Frequent severe traumatism of the limbs occurred requiring immediate amputation at the dressing stations on the battlefield or at the first line ambulance. During attacks the artillery preparation and barrage fire assumed considerable proportions. The explosive shells, which took the place of shrapnel in field artillery, broke into large pieces or sharp splinters about fifteen cm. long, propelled with great force and capable of crushing or producing complete section of a limb. Surgeons observed early in the war that, all things being equal, shrapnel was more potent in its work than rifle bullets because with the shrapnel shot were carried the products of the combustion of phosphorus as well as pieces of clothing. On account of the low velocity of the shrapnel bullets, severe bone lesions were uncommon. These unfavorable conditions were intensified in bursting explosive shells by the mass and irregularity of the projectiles and because the shell, being percussive, carried earth along with its pieces.

Bombs and torpedoes contained a considerable weight of explosive in proportion to the amount of

metal, producing wounds of extreme gravity and great destruction of limb. In bursting they hurled pieces along the ground, striking the feet and lower third of the leg. The violence of the air displacement at the time of the explosion must be added to the effects of the traumatism, increasing the state of shock of the wounded. Hand grenades, which broke up into small bits, are of less interest in this paper, but I shall have to refer later on to a relatively common injury, namely, the tearing off of a hand from premature bursting of the grenade.

Wounds from rifle bullets or mitrailleuse gave rise to a large number of amputations. The lines were near each other, and the comminutive effect of close range fire is well known. These wounds had a punctiform entrance and a gaping exit wound with the bone splintered and the tendons torn and lacerated. Ricochet bullets or even cut bullets produced crushing of the bone and even more marked lesions of the soft structures. Metallic débris penetrated deeply into the tissue.

In this paper I shall refer only to the wounded who must be treated at the nearest ambulance before being sent to the rear. Amputation is done at the second line, particularly in cases where conservative treatment is out of question on account of secondary or late infections. Early infection alone is an indication for amputation at the first line ambulance; apart from these cases I must refer particularly to serious crushing or section of limbs and severe compound fracture. It sometimes happens that during periods of inactivity patients can be kept at the first line ambulance instead of being sent to the rear, but such cases need not be considered further. Generally speaking, a first line ambulance is most active while attacks are in progress and therefore only extremely urgent operations are done. After appropriate treatment patients who require conservative therapy are sent to hospitals at the rear.

In order to facilitate understanding of the subject, I shall classify the wounded coming to the ambulance under three rather distinct clinical headings, taking into account above all the gravity of the general condition—shock and infection. From this standpoint we have: 1, Crushing or avulsion of limbs without shock or infection; 2, crushing or avulsion of limbs with shock and infection; 3, crushing or avulsion of limbs with shock and infection, or early infection only.

Class one comprises cases with neither shock nor infection. Most characteristic of this group is an injury frequently met with in grenadiers—the tearing away of a hand and often the lower part of a forearm by the premature explosion of a grenade. These patients present an irregular wound with ragged tendons hanging from it with traces of burning. The radial and ulnar epiphyses are broken, the fracture radiating towards the diaphyses. These patients generally do not present symptoms of shock; they can walk and this hastens their arrival at the ambulance, so that they can be treated within a few hours after receipt of the injury and before infection has had time to develop. Then, too, the bursting grenade does not carry earth into the wound. Wounds received on the first line from

exploding shells or bombs may present the same conditions but infrequently.

In Class two the patients are in a state of shock with more or less hypothermy. They usually, present comminutive fractures near the root of the member or with avulsion of the limb. The face is earthy in hue, the conjunctiva grayish, the nose cold, and the limbs devoid of heat. The pulse is difficult to find, the voice is extinguished, and the subject replies indifferently to questions. Sometimes the state of shock is even more marked, the integuments being colorless and the temperature distinctly low.

The direct causes of shock in wounds of warfare are traumatism, division of nerves, and violent pain. The predisposing causes are more often present in overwork or bad hygienic conditions than under any other circumstances. Loss of sleep, the tension before an attack, cold nights passed on the alert, and the lack of regular meals all go to place the soldier in the trench in a manifestly inferior physical condition. On the other hand, trench life exerts a good influence on the respiratory tract and the body weight, though it tires the renal glands. Antityphoid vaccination produces albuminuria among the men. Many papers have been published showing the progressive frequency of acute primary nephritis, eighty per cent. of the patients being soldiers who have been fighting without interruption since the beginning of the war.

It must be admitted, therefore, that before the receipt of the wound the man was in a nervous and physiological state predisposing to shock. Shock often manifests itself immediately after receipt of the traumatism. I have met with twelve cases of crushing of the middle of the leg in which this occurred from the explosion of the shell. Usually, however, shock occurs a short time after the injury, in which event other causal factors come into play. The first of these is hemorrhage. The loss of blood is not as great as might be supposed; usually severe extensive lesions bleed but little. I remember the case of a gunner under my care whose thigh was completely divided but who bled little. On the other hand, some of the men bleed freely, and in such circumstances it is evident that the state of shock is aggravated by the great loss of blood. It accentuates the fall in blood pressure which is always present and is an alarming symptom.

Transportation of the wounded was often rough, especially in mountainous countries or where roads were far from the place of the fighting. These men were first carried in the arms of their comrades, then on stretchers, and finally in automobiles or wagons. The stretcher bearers worked with difficulty in the trenches and *boyaux*, which were very narrow with frequent, sudden turnings and which were often filled with men. The means of evacuating the trenches have been improved, but all these conditions accentuated the shock.

Cold weather often enters as a factor, as the patient may have remained on the battlefield for a long time before being picked up. Fortunately this is uncommon.

At the field ambulance the first aid dressings

were removed, when one of the following lesions is discovered:

1. Avulsion of the forearm or leg. If the avulsion involves the segment of the limb in the region or the root, the subject usually dies during transportation, and only exceptionally do the men live long enough to reach the ambulance.

2. Crushing of a limb.

3. Comminutive fracture.

4. Arthroarticular crushing. In this case the surface of infection is considerably greater than in the majority of cases of class three.

5. Severe injuries with shock and infection, or infection only, the shock having passed off.

Many patients show shock, and immediate operation is put off on this account, but if the propitious moment for the operation is allowed to pass, infection may develop. In another category of cases infection is added to shock without any interval; the temperature changes from subnormal and may often reach 102.5° F. The face is ash colored, delirium takes the place of indifference, and the tongue becomes dry and cracked. In other cases the infection is in the process of development, as in gangrenous septicemia, or the wounded are brought in late from the field with a fully developed infection.

These clinical types being separated, the indications for treatment become more easily evident. Amputations done at a first line ambulance are usually clearly indicated; the time and procedure of the interference are the two particular points to be considered. Usually the case will not allow of conservative treatment: the mutilation or the destruction of tissue is such that no hesitation is possible. If the surgeon is sufficiently conservative and if doubtful cases are sent to the rear after receiving proper treatment, such as the removal of bone splinters and thorough disinfection of the wound, the indication in the remaining cases is perfectly distinct. With surgeons who have had experience in war surgery the balance will probably be in favor of operation if the lower limb is the seat of injury, while conservative treatment will be adopted in the case of an upper limb. Aside from this formula, the surgeon must be left to his own judgment as to the cases requiring amputation for the lesions *per se* and those in which infection appears during the days following. Without entering into argument, I would say that while interventionists may sometimes have to regret the hypothetical preservation of a limb or one of its segments, conservatives often have to regret the loss of life.

There are cases in which the indication for amputation is distinct, even if the destruction of bone is not considerable. I refer to instances in which there are extensive injuries to arteries, nerves, and muscles. On the other hand, if comminutive fractures exist with integrity of the vasculonervous bundle, conservative treatment may be essayed. The vasculonervous and muscular lesions play an important part in the future of the limb. Severe infection or necrosis may force amputation as the only solution even if the bones are intact or little damaged. In all wounds of the

limbs, therefore, one must be assured of the integrity of the principal arterial trunk by looking for the radial or tibial pulsation, as the case may be.

To sum up, it may be said that at a first line ambulance the indications for amputation are quite simple if one is guided by the conservative principle that an amputation should not be performed except when the injury is so extensive as to have absolutely compromised the member.

Theoretically, the subject should be operated upon as rapidly as possible in order to remove the traumatic focus which is the source of early infection. In practice this reasoning does not apply, and it is just here that the three classes of cases referred to must be taken into account. The first class (without shock or infection) offers no contraindications to immediate amputation or other interference.

In the second class (patients with shock) operation must not be resorted to. This rule must never be laid aside. In a patient with shock the additional operative shock is to be avoided, a simple rule long followed in civil practice which likewise applies to war surgery. These patients must be put in a heated bed, given hot drinks, and the pain eased by small repeated doses (one centigram) of morphine. A valuable stimulant is a hot enema composed of 300 c. c. salt solution to which is added a little infusion of coffee or rum. The salt solution as well as caffeine and camphorated oil may be given subcutaneously. Hot water bottles, heated bricks and other mechanical means of warming the patient, and above all rest in bed are of vital importance. I am under the impression that in the majority of cases with the treatment outlined above and four or five hours of rest the patient is warmed and the blood pressure assumes a better general tone. As soon as this amelioration is noted one should wait no longer and operation should be done at once. To come to a correct conclusion, these patients must be closely watched, examined at least every hour, and taken to the operating room just as soon as the signs of shock are regressing.

It might be maintained that these are not instances of true shock but similar states such as have been described from time to time. I shall not discuss this point because, whether the case is one of false or real shock, when this clinical picture is offered by the patient the condition is greatly improved by the treatment outlined, and operations performed afterward give the best results. Otherwise the patient may die while being anesthetized or a few minutes after the operation is completed. The lamentable statistics of the early days of the war are the partial result of ignorance of this rule. If a patient dies before operation, it merely goes to show that he could not have reacted against the operative shock.

When a patient offers both shock and infection, the former condition must be watched in order to be able to conclude that there is also infection. The evening temperature is probably about 97° F. and the following morning temperature 102.5° to 104° F. with rapid pulse and phenomena of marked infection in the wound. Sometimes infection becomes superimposed on shock during the

treatment of the latter condition. In these cases it is difficult to decide upon the proper time for operating. When the infection has once developed nothing is gained by waiting. Immediate operation is the only hope, and the surgeon need not regret a too hasty interference. The prognosis is very serious.

In cases of early infection unaccompanied by shock the question resolves itself into one of the proper time and the indications for dealing with gangrenous septicemia, a vast question in itself and far too long to be considered in detail. These cases are only rarely met with at the first line ambulance for the simple reason that the infection requires a certain time in which to develop. To my way of thinking, if it develops in a wound which in itself requires amputation, it is merely one more indication for immediate operation. It may, however, develop in quite mild traumatic lesions before the patient has been sent to the second line ambulance, and in closing I shall outline the indications for treatment of such cases.

If there is a massive gangrene with a typical ascending progression, amputate. If the case is one of ordinary partial gangrene the parts are merely to be excised, but the patient must be seen again in five or six hours because such conservative interference may be insufficient, which insufficiency will shortly be manifest. Gas gangrene is an indication for urgent intervention, usually amputation, but the infrequency of this process at a first line ambulance needs no further mention here.

Cases of septicemia are quite another matter. The local conditions require our attention. If the septicemia exists with a large infectious focus in which other infections may develop, amputate. But if the patient has a well drained fracture it is more than probable that he has quite as much chance to pull through without amputation. Turpentine, collargol, etc., come into play here, as well as the ordinary medical treatment of such conditions.

LONDON LETTER.

LONDON, July 29, 1919.

Ministry of Health.—Housing a Pressing Question in Great Britain. Postgraduate Medical Study.—American Hospital in London.—Preventive Treatment of Venereal Diseases.

A Ministry of Health has been established in Great Britain, of which Sir George Newman has been appointed chief medical officer by the minister, Sir Christopher Addison. Sir George will have a status corresponding to that of a secretary of the ministry. By arrangement between the president of the Board of Education and the Minister of Health, Sir George Newman will retain his position as chief medical officer of the Board of Education. Several medical women have been appointed to posts in the new ministry—almost as many women as men, in fact.

* * *

The duties which will fall within the scope of the new British Ministry of Health are many and varied. Perhaps the most important and certainly the most pressing of these is housing. Houses are

lamentably scarce in all parts of Great Britain, in industrial as well as in agricultural districts; indeed, it is hard to say in which district the need is most imperative. It is unnecessary to write at length with regard to the importance of adequate sanitary housing from the standpoint of health. If housing facilities are not ample and in good condition, public health will suffer. It is therefore only natural that the first problem with which the Ministry of Health should grapple is that of housing. A scheme has been evolved by which the Ministry hopes to remedy, to a great extent, the lack of houses in Great Britain and thereby to prevent or to decrease the prevalence of many diseases.

* * *

Long before the war it was painfully obvious that opportunities provided in London for postgraduate instruction were by no means equal to the demands. It was largely owing to this neglect on the part of London medical authorities that Germany established a reputation as the European centre of postgraduate teaching and that Americans desirous of keeping in touch with the latest discoveries and happenings in medicine and surgery flocked to Berlin and to other German medical schools. London with her wealth of clinical material did not avail herself of her splendid facilities and with scarcely a struggle allowed Germany to reap fame and fortune from foreign medical men and students, a considerable proportion of which were Americans. It appears now that the London medical profession has awakened to the folly of its ways and is determined to place London in as favorable a position for giving postgraduate instruction as that held by cities with far less clinical material. Postgraduate teaching in London is being put on a sound basis. As mentioned before, it is principally to Americans that London will appeal as a centre of postgraduate instruction, one of the chief reasons for this being the possession of a common language. The intermingling of American and English medical men occasioned by the war has also stimulated London's desire to be the European mecca for members of the American medical profession.

* * *

A step in this direction has been made recently by the decision to build an American hospital in London. On July 17th last a meeting was held under the chairmanship of the Earl of Reading, at which it was proposed to erect in the west end of London a thoroughly up to date hospital with wards for paying as well as for free patients, research laboratories, a library, and meeting and recreation rooms. It is intended that the institution shall be in the nature of a club for American medical men who come to London for postgraduate instruction and shall in addition serve as a hospital to which Americans will have the first claim for admission and in which conditions will resemble as closely as possible those to which they are accustomed in their native land. At the foundation meeting the chief resolution, adopted on the motion of Mr. R. Newton Crane and seconded by Sir W. Arbuthnot Lane, stated that the hospital was founded "in commemoration of the cooperation of the medical men of the United States and Great Britain during the

European war, and to strengthen the friendship existing between the two nations." The resolution further declared that the hospital should be for the medical and surgical treatment of patients of all classes, irrespective of creed or nationality, and for the promotion of scientific study and research. Mr. Philip Franklin, who was elected honorary secretary of the hospital, read a report in which the reasons for its establishment were stated. He pointed out that although there were a few beds in some of the London hospitals specially endowed and set apart for the use of American citizens, the time was considered propitious for the establishment of a purely American hospital. Up to the present time when Americans had come to Europe for the purpose of specializing in advanced medicine and research, London had not formed one of their centres, notwithstanding the fact that the clinical opportunities offered in the London medical schools were unequalled by any European city. This was the unanimous verdict of two hundred medical officers who had been working in London and attending the special emergency postgraduate courses during the six months previous. There was no doubt that American medical men were likely to visit London more frequently in the future than in the past, and it was anticipated and hoped that this hospital would be their headquarters and medical home. Two medical committees had been constituted, one for Great Britain and the other for the United States. These were as follows:

Medical committee for Great Britain: Sir William Osler, regius professor of medicine, Oxford University; Sir Arbuthnot Lane; Sir Humphrey Rolleston, president of the Royal Society of Medicine; Sir John Bland-Sutton, vice-president of the Royal College of Surgeons; J. Y. W. MacAlister, Esq., secretary of the Royal Society of Medicine, and N. Philip Franklin, Esq., joint secretary of the Fellowship of Medicine.

Medical committee for the United States: Dr. George W. Crile, of Cleveland; Dr. W. J. Mayo, of Rochester, Minn.; Dr. Albert J. Ochsner, of Chicago; Dr. Rudolph Matas, of New Orleans; Dr. Franklin Martin, of Chicago.

Aside from any good results that may accrue to American medical men from medical, surgical and scientific standpoints and to Americans residing in or visiting London, from the establishment of an American hospital in that city, it must not be forgotten that such an institution should prove a factor of no mean importance in maintaining and cementing the good feeling between American and English medical men which has been fostered by the war and which it is so important to the interests of international peace and therefore of the human race to keep intact. Incidentally it may be mentioned that the foundation of the American Hospital in London was due largely to the initiative of the secretary of the hospital, Mr. Philip Franklin, who is an American citizen for many years resident in England.

Stress should be laid upon the fact that the foundation of the hospital is only one of the outward and visible signs of the change of heart that has occurred among the majority of the London medical profession with regard to the need for organizing

a really efficient system of postgraduate medical instruction in London. There is now on foot a postgraduate plan in connection with the Fellowship of Medicine, and as the *Lancet* of July 26th last truly remarks editorially, this organization, started on emergency lines, is sure to develop into a permanent organization. It seems more or less assured that London will in the near future take its rightful place as a great, if not the greatest, postgraduate centre of the world.

* * *

The question of the early preventive treatment and direct prophylaxis of venereal disease has been discussed with animation and with some acerbity in Great Britain over a lengthy period. While many prominent practitioners have declared themselves in favor of such preventive measures, arguing that they have been effective when employed scientifically in some countries, other equally eminent authorities have opposed the introduction of these methods. Supporters have taken the stand that the prevention of venereal disease is the greatest and most difficult problem confronting the medical profession at the present time. As the existing situation constitutes a national peril, no measures however drastic or radical should be ignored if there appears to be a reasonable chance that their introduction and enforcement will have the desired effect. It is stated moreover that similar measures have proved effective on a large scale during the course of the war and that consequently no moral or religious scruples should be permitted to block their initiation and enforcement. The opponents of early preventive treatment contend not only that the carrying out of such a measure is in contravention of moral principles but, what is of greater importance, that it has been shown to be ineffective.

A short time ago the London County Council published a report which appeared to uphold the contentions of those opposed to early preventive treatment. The British National Council for Combating Venereal Disease suggested that early preventive treatment should be introduced. The report of the London County Council deals with this suggestion. The report states that the Public Health Committee of that body has been advised that with one exception the hospital committees of all the London hospitals at which venereal clinics are in operation have definitely expressed the opinion that it would be impossible for them to introduce such treatment. The committee declared itself of the opinion that, apart from the moral issues involved, the medical advantages in particular cases from the introduction of early preventive treatment would probably be nullified by a consequent increase in the number of cases of exposure to infection. The spread of venereal diseases in Great Britain has assumed such wide dimensions that their prevalence may be termed almost a national menace. If, then, direct prophylaxis or early preventive treatment will effectively stay their dissemination, their adoption and enforcement would seem to be worth while. However, after all the question resolves itself not so much into a matter of immediate expediency as to whether this radical departure would be beneficial in the long run.

Editorial Notes and Comments

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THE ORIGIN OF MAN.

Both Darwin and Huxley accustomed a reluctant world to the general proposition that man, instead of being a separate creation, was a descendant and collateral of the animals. A portion of their argument was based on a comparison between the structure and embryology of man and those of the highest apes, the gorilla, the orang-outang, and the chimpanzee. The subject was so *fin de siècle* that people were surprised to be told that the great apes, like man, had lost their tails. Neither author, in reality, maintained that man had arisen from any of the existing apes. To the popular mind, nevertheless, it appeared an inevitable inference that man must have come from the highest of the apes, if he came from any kind of ape. The schematic dogmatism of Haeckel confirmed the popular judgment. He invented theoretical creatures to take the place of the links supposed to be missing.

The tendency of modern physiological research has, on the whole, supported the supposition of a closer affinity between man and the great apes than between man and any other animal. This has appeared particularly evident in investigations of the properties of the blood, and in the fact that it has been found possible to communicate some characteristically human diseases to great apes and to no other animals. Anatomical and paleontological work has tended to oppose the earlier view. Comparative anatomy has failed to recognize the existence of a linear chain stretching from lemurs, through South American monkeys, old world monkeys, and the great apes to man. At the present

time it is even doubted if the lemurs have a place in human ancestry. In many respects the great apes are more closely allied to the South American monkeys than to any old world types. Many features in human anatomy and embryology suggest that man is an extremely primitive creature and that he arose as a separate branch of the mammals, close to the monkey stem but quite distinct from it. There have been many startling discoveries of human remains, such, for example, as the Piltdown skull from Sussex, England, so different from the modern type that some of our paleontologists have declared the inferior maxillary to be that of a chimpanzee, although the assumption involves the almost miraculous coincidence of a single fragment of a chimpanzee and of a human being occurring together in a locality and a geological horizon where neither had ever been found before.

Two facts, however, are unquestionably certain; man is much more ancient than has hitherto been suspected, and the early remains show that in a very remote geological epoch there were human types so distinct that they must be looked upon as belonging to different genera.

HAND TO MOUTH INFECTION.

Not a little anxiety is being manifested as to the possibility of a recurrence of influenza. Judging from the experience of the past it is probable that influenza will recur. It will not be so severe as the past pandemic and in the majority of cases those who have had preceding attacks will be protected while those who proved immune before will probably reassert their immunity at this time. This immunity is largely individual and not entirely a matter of health and vigor, but a good constitution is undoubtedly a great help in the corroboration of resistive vitality. In former recurrences of influenza the disease attacked only the people who did not have a very strong physique who were not exposed seriously when the recurrence made itself manifest or those who for some reason or other had run down in health and strength since the preceding epidemic.

The experience of last year showed clearly that quarantine could be made an excellent protective factor. In students' training camps in the colleges, where military regulations could be made and maintained, the epidemic did not become serious. Indeed in some of these instances where quarantine was thoroughly maintained only a few mild

cases occurred though a great many of the students were within the influenza age. Those who made careful observations during the epidemic have noted that quarantine could be made extremely effective.

Usually when influenza entered a household it attacked more than one member and frequently spread to every one in the family. Solitary cases of influenza in a house were a rarity. In this manner the disease differed from infantile paralysis, the last serious epidemic before influenza which we had in this country. Quarantine was established in infantile paralysis in many towns and most strenuous efforts made to maintain it. As a result of this parents sometimes were put to a great deal of trouble during the summer whenever they made the effort to give city children a summer outing. And yet it was infrequent to have two cases of acute anterior poliomyelitis occur in the same family. The other children were seldom attacked and for three cases to occur in the same family was a medical curiosity.

In connection with quarantine for influenza the observations made that are most significant are with regard to the transmission of the disease from hand to mouth. It used to be universally believed that when an epidemic as widespread as influenza occurred the germ must have gotten into the air and must be air borne. If that were true it would seem almost impossible to prevent in any hopeful way the spread of the disease. The more carefully observations have been made, and the more study has been given to epidemic disease, the less the idea is credited that germs are ever carried through the air. Contagion is quite literally a matter of contact. The germ of the disease may be coughed or sneezed into the air over a limited radius and people who are brought in contact with these particles of mucus which are thus scattered about and on which there are microbes may become infected. This is, however, not what is meant by air borne. The coughed or sneezed particles are material and not at all gaseous. They do not remain in the air but fall on seats, furniture, or on the floor and become sources of infection.

It has become clear, however, that the hand is more frequently the conveyor of the disease than any other medium. The hand of the sufferer from the disease or the carrier of the microbe, who may be either convalescent or may not as yet have been attacked by the affection, is brought in contact with the mouth and nose and thus may easily convey infective secretory particles to other people. The shaking of hands probably facilitates this conveyance. The most important factor for the distribution of the disease is undoubtedly the

hand of the recipient. This may become infected either by contact with other persons or seats or chairs or other objects and then convey infective material to the nose and mouth.

This might seem a far fetched explanation to those unfamiliar with the ease of microbic conveyance, but recent experience with regard to lead and other metallic poisoning in connection with occupational diseases has served to show how important this mode of conveyance may be. In many of the trades where lead becomes a source of danger it has been found that the most important prophylactic has been to insist that workmen shall not eat until their hands have been thoroughly washed. By thorough cleansing is meant washing with running water for at least three minutes with the use of a brush for around the nails. Many occupations become less dangerous with the enforcement of washing regulations, though the minute particles that cling to the fingers would seem to be able to play only a minor rôle in the production of plumbism.

If this is true for a mineral poison where quantity means much it is easy to understand how important preventive regulations become in connection with living toxic activities like microbes which multiply rapidly under favorable conditions. We are probably not certain as to the microbe which caused the last epidemic of influenza and we use the word microbe advisedly because there is a question in the minds of certain pathologists whether it was a bacterium or not. We know that the disease usually begins at the back of the throat where infection might readily occur as the result of hand to mouth conveyance of infected material and that therefore it is extremely important to insist on the cleansing of the hands before going to table. Of course people should also be warned with regard to carrying their hands to their noses and mouths without previous cleansing and to the frequent changing of handkerchiefs, towels, and other such cleansing materials. It is just possible that the Chinese custom of using a paper handkerchief, which is immediately disposed of and never used again, may find more favor as a consequence of these observations in the spread of influenza.

In a word the precautions against the spread of influenza, if we are to have a recurrence, consist in emphasis on personal hygiene and especially on the necessity for taking precautions not to convey the germs of the disease to the mouth with the food or in any other way. An additional precaution would be to avoid personal contact and indirect contamination which may be caused by hand-shaking.

DENTAL DEFICIENCY DURING PREGNANCY.

Opinions differ considerably as to the effect of carious or defective teeth upon the general health, and there has been a good deal of more or less acidulated discussion on the subject. So much has been written on oral sepsis that it is unnecessary to dwell upon it at any length. At the same time it is being more generally recognized that this condition does exert a bad influence on the health and that in the best interests of health it is always advisable to have the teeth and mouth put into as sanitary a condition as possible.

Dr. J. W. Ballantyne, of Edinburgh, writes in the *British Medical Journal*, July 26, 1919, concerning dental conditions of patients seen at an antenatal clinic. His experience, from a systematic examination of the teeth of one hundred patients attending the antenatal clinic in the Edinburgh Royal Maternity Hospital, was that, speaking broadly, these patients revealed a most "imperfect dental exhibition." His conclusions were that of one hundred expectant mothers drawn from by no means the poorest class, most of them enjoying a fair measure of health, half of them primiparæ and more than half under twenty-five years of age, ninety-eight had more or less defective teeth.

The author points out that such a state of affairs suggests certain reflections. In the first place it draws attention to the existence among working class mothers of an alarming amount of dental deficiency and disease with, in not a few cases, concomitant oral sepsis. This condition cannot fail to react injuriously upon the mother's digestion and through her upon the nutrition of the unborn infant. It may also retard the return to complete health and strength in the puerperium, even if it does not increase the danger of septic infection which always exists then, and it cannot be helpful in lactation. The influence of carious teeth upon the health of the unborn infant is a somewhat novel aspect of dental deficiency. Although at first thought it seems rather far fetched, further reflection lends plausibility to the point of view, and at any rate it is certain that a pregnant woman or a woman who breast feeds her infant is in a better condition to nourish the offspring properly if her teeth are sound and her mouth is clean and wholesome.

In this country teeth are better cared for than in Great Britain and there is not the same widespread dental deficiency. Still, the war has shown that dental defects are too prevalent in America, and doubtless many women of childbearing age are afflicted with decayed teeth. The suggestion of Doctor Ballantyne that temporary dental physi-

cians should be appointed to maternity hospitals not already provided with them, in order that women about to leave the hospital may have their mouths inspected and be given advice as to treatment, is therefore applicable and expedient, to some extent, in America. Ballantyne is inclined to be sceptical regarding the supposed danger of treating or extracting teeth during pregnancy. He believes that this view is based on false premises and holds that custom should be revised. The entire question of the teeth during pregnancy is well worth looking into.

FLY PROOF PRIVIES.

Most elaborate devices have been constructed to make the privy a safe place for the deposit of excreta and usually the more elaborate the structure the more unsanitary it has been. It is fortunate that at the present time there is a tendency to return to more primitive and more practical easing houses.

A great point has been made of the use of screen wire as a guard between flies and fecal food and the sanitary inspection of privies has sometimes consisted in the observation as to whether the windows were properly screened. It has been overlooked that the privy door is seldom closed, and that after a few months it is so warped or sagged that the house is not fly proof when it is closed. Nor does the wire screen remain a protection after the first season.

The most certain and human negligence proof protection against flies is darkness. Every housewife knows this, but not every privy builder. A deep pit, walled to the floor of the house over it, makes a dark chamber which is not likely to be much visited in its depths by house flies. One addition to this, a seat cover which closes automatically when not in use, would make the vault fly proof, though the windows and doors were open at all times. Moreover, such a house can be readily inspected to find whether these conditions are present.

So far as sewage disposal is concerned, the pendulum of opinion as to methods of privy construction has already swung from the complex back to the simple, and sanitarians are recommending, where the soil is of the right nature (and it usually is), the old fashioned deep pit with a house of the old style over it. The privy problem is a difficult one, for in some parts of the country they are surprisingly scarce, and apparently because of their cost. A simple method of construction and of fly proofing is therefore of great sanitary significance during the summer months.

A NEW JOURNAL OF INDUSTRIAL HYGIENE.

The rapid development of the activities in the field of industrial hygiene has led to the establishment of a special journal under the editorship of David L. Edsall, for the United States, and A. F. Stanley Kent, for Great Britain. The *Journal of Industrial Hygiene* is to be published monthly, the subscription price being five dollars a year for the United States and Canada, twenty-one shillings in Great Britain, and six dollars for foreign countries.

Each number consists of two sections, one devoted to original articles, the other being an abstract of the literature of industrial hygiene. Judging by the three numbers now before us the editors have set a high standard of excellence. The first article in the initial number, by Lieutenant Colonel Harry E. Mock, consists of a historical résumé of industrial medicine and surgery. In the same number will be found an article on lead poisoning by Alice Hamilton; a critical review of the work thus far done on fatigue by Reynold A. Spaeth, and a study by Anna Richardson of the medical aspects of telephone operating. The second number opens with a paper by Fieldner and Fogler which deals with the use of army gas masks in industries. This is followed by an address by Professor Whipple on human health and the American engineer. Other articles deal with chip fractures of terminal phalanges, inorganic poisons other than lead in American industries, and the medical inspection of factory employees. The third number, now before us, contains papers on the mortality caused by unhealthy trades; the pathological and clinical manifestations following the inhalation of dust; a review of the methods for studying the dust content of air; a report on the condition known as back strain; and an article on the applicability of war time surgery to industrial surgery.

The review of the literature of industrial hygiene is apparently most thorough and will be of invaluable aid to all interested in this field. The publication is certainly a credit to American medical journalism and is deserving of a brilliant future.

News Items.

Poliomyelitis in Baltimore.—Eight cases of poliomyelitis were reported to the Baltimore health department in the ten days ending August 5th.

German Baths to Americans.—It is reported that the city of Karlsbad, Germany, will rent its famous baths to an American concern.

Liverpool Physicians Organize.—Press dispatches announce that Liverpool physicians have adopted a resolution in favor of organizing on a trade union basis.

Hospital for Drug Addicts.—The Volunteers of America have established what is said to be the first absolutely free hospital in Baltimore for the treatment of drug addicts. The hospital has thirty-six beds. A second hospital will shortly be opened by the volunteers.

New Tuberculosis Sanatorium in St. Paul.—Plans are being prepared for a new tuberculosis sanatorium to be erected in St. Paul, Minn., at an estimated cost of \$125,000.

Monument to French Doctors.—The faculty of medicine of Paris is engaged in a project to erect a monument to the memory of medical men and students who died in the war.

Rehabilitation of Blinded Soldiers.—A movement has been initiated by the committee for men blinded in battle to duplicate in Italy the reeducation of blinded soldiers now being carried out in France.

Syphilis in Wisconsin.—Laboratory examinations of 20,000 persons in Wisconsin in four years demonstrated twenty-two per cent. to be actively syphilitic, according to a report made to the State Legislature by Dr. W. F. Lorenz, director of the Wisconsin Psychiatric Institute.

Red Cross Ambulances for Home Use.—Motor ambulances used in France have been donated by the British Red Cross to county areas for civilian hospital use. Thus far 206 ambulances have been allotted to eighty-nine county areas, the needs of the rural districts being considered first.

Municipal Health Slides.—Health slides will be thrown on the screen in connection with the movies shown at municipal concerts if the plans of Mayor Broening, of Baltimore, are carried into effect. Slides will emphasize the importance of pure milk and food, care of babies, and the "swat the fly" crusade.

Exchange Students.—Laval University, Quebec, will receive free of charge all medical graduates of other Canadian universities who wish to follow courses in medicine at Laval for one year. In return English universities in the other Canadian provinces are to be asked to extend the same privilege to French Canadian doctors graduating from Laval.

Child Welfare Clinics.—Eight clinics to promote the welfare of infants and children under school age will be established in St. Louis about September 1st. The donors are private citizens, but the funds will be administered by the director of public welfare. After April, 1920, the city will take over the work and continue it as a municipal undertaking.

Camp for Wounded Soldiers.—A camp where disabled war veterans may come to rest and recuperate has been opened in Palisades Interstate Park, Bear Mountain section, New York, under the supervision of the Seward Park Rehabilitation Centre and the Federal Government. In addition to being given facilities for recreation, men at the camp are taught trades by the Federal authorities.

Public Health Move in Alberta.—A radical public health program is being put into force in Alberta, Canada. The provincial board of health has been empowered to deal directly with any affected territory, whether it covers one municipality or several. A survey of the province is being made to ascertain what points are not within striking distance of a doctor or nurse, and to these points will be sent nurses specially trained in obstetrics and authorized by the legislature to practice midwifery.

Missouri Valley Medical Society.—The thirty-second annual meeting of this association will be held September 18th-19th in Des Moines, Iowa, under the presidency of Dr. Charles Wood Fassett, of Kansas City.

Typhoid Fever Suits.—Seven suits for damages, aggregating \$125,000, have been brought against Francis P. Garvan, alien property custodian, as a result of the epidemic of typhoid fever among men employed in the construction of Kamp Kill Kare on Racquette Lake early in the summer of 1916. The suits are brought by residents of Saranac Lake, Tupper Lake, Malone, and Plattsburg.

New Chicago Hospital.—A new hospital to be known as the State Surgical Institute for Children is to be built in Chicago. Three other hospitals will be erected on the same site: the Illinois Charitable Eye and Ear Infirmary, a clinic for students of the Medical College of the University of Illinois, and the State Psychopathic Hospital. More than \$1,500,000 has been appropriated for the construction of the hospital group.

University of Chicago Medical School.—The first of the new buildings of the University of Chicago Medical College will be a hospital and dispensary known as the Albert Merritte Billings Hospital, which is to be erected at a cost of \$1,000,000. The medical school will be constructed on property adjacent to the university grounds, and the school for practitioners will be located near Rush Medical College.

Advisory Committee to Children's Bureau.—Dr. Julius Hess, of Chicago, representing the section in diseases of children of the American Medical Association; Dr. Richard Smith, of Boston, representing the American Pediatric Society, and Dr. Howard Childs Carpenter, of Philadelphia, representing the American Child Hygiene Association, have been named as an advisory medical committee to the hygiene department of the Children's Bureau, U. S. Department of Labor.

Five Million Dollar Drug Law.—A bill appropriating \$5,000,000 for the care and treatment of drug addicts was introduced in the Senate on August 15th by Senator France, of Maryland. The bill provides an appropriation of \$3,000,000 for the first fiscal year 1920 and of \$2,000,000 for the year 1921, to be divided among the states in proportion to their appropriations for stamping out drug addiction. All hospital facilities not needed by the army and navy would be turned over to the Public Health Service for the treatment of drug victims.

Druggists Will Not Dispense Alcohol.—Investigation by the president of a large wholesale drug company in Chicago seems to show that a very small percentage of retail druggists will apply to the collector of internal revenue for permission to dispense liquor. The average computed from replies to a questionnaire was approximately five per cent. "The prevailing feeling in regard to dispensing liquor by physicians' prescriptions seems to be that of 'hands off,'" the gentleman is quoted as saying. Resolutions condemning the dispensing of liquor have been drawn up by national and State associations of druggists.

Belgian Medical Congress.—The eleventh congress of the Belgian Medical Federation was held July 19th and 20th at Antwerp. Topics discussed were the relation of the medical profession to insurance societies, dentistry and general medicine, the organization of a medical cooperative purchase association, medical printing and medical cooperative societies.

British Medical Federation.—Representatives of more than fifty medical, nursing, and pharmaceutical societies of Great Britain have united to form the British Federation of Medical and Allied Sciences. The federation, which is under the chairmanship of Sir Malcolm Morris, will protect the political interests of the various bodies comprised in its organization.

Population Congress.—A national congress of birth and population will be held September 25-28, at Nancy, France, to consider the problems with which the country is faced. The Chamber of Commerce of Nancy has taken the initiative in calling this gathering and has secured the promise of patronage by presidents of chambers of commerce throughout France. The motto adopted by the organizers is "Minimum of discussion, maximum of work."

Aid for Mentally Weak Children.—Establishment in the Federal Bureau of Education of a division to look after the welfare of mentally handicapped school children was introduced in Congress by Representative Dyer, of Missouri. The proposed division would collect and standardize tests in determining arrested mentality and establish a psychoeducational clinic for the study of the problem of mentally weak children.

German Vital Statistics.—The *British Medical Journal* summarizes the report of a Danish committee which, under the direction of Dr. C. Döring, has been collecting information as to the cost of war in terms of human life. Results as regards Germany indicate that within the first year, reckoning from April, 1915, onwards, the births were twenty-one to twenty-four per cent. fewer than in the last year before the war. By the end of the war the accumulated deficit of births amounted to 3,500,000. The deaths were more than 2,000,000 above those which might have been expected under ordinary conditions. "To a definite loss of more than 5,500,000 human beings is to be added a long continuing decline of the birth rate and for years to come a higher rate of mortality," says the report.

Personal.—Dr. Evarts A. Graham, of Chicago, has been appointed professor of surgery in Washington University, St. Louis, to succeed Dr. Fred T. Murphy. Doctor Graham will be head of the department of surgery and will have charge of the surgical service in Barnes and Children's Hospital.

Dr. Hugh Forsythe Lorimer, formerly of Olney Springs, Colo., has been appointed secretary of the Colorado State Board of Health to succeed Dr. Erlo E. Kennedy, deceased.

Dr. Winfield Scott Hall, for more than twenty years a member of the faculty of Northwestern University Medical School, Chicago, has been appointed director of the newly organized department of social hygiene of the Presbyterian Board of Temperance and Moral Welfare.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

WHEN AND HOW TO USE DIGITALIS.*

BY ROBERT ABRAHAM, M. D.,
New York,

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Digitalis should not be exclusively arrogated to the treatment of organic diseases of the heart, although its important properties are preeminently exhibited there. Anemia, primary or secondary, is beneficially influenced by adding digitalis to the cardinal drugs, arsenic and iron, which are universally employed in that condition. I am sure that the desired results are obtained better and more quickly for what iron and arsenic are to the impoverished and vitiated blood, digitalis is to the weak and anemic heart muscle. Even in hopeless pernicious anemia, digitalis helps to prolong life by prolonging the contractions of the dilated and poorly emptied heart and by increasing its period of rest.

In lesions of the kidney, the use and value of digitalis depend largely upon the presence or absence of arteriosclerosis and the presence or absence of high blood pressure. Arteriosclerosis is recognized as the essential factor in the production of interstitial nephritis; the walls of the capillaries undergo sclerosis and eventually obliteration. This capillary deterioration and destruction produce peripheral resistance which results in high blood pressure and hypertrophy of the heart. The use of digitalis here is forbidden, first, because the blood pressure will increase, greatly to the discomfort of the sufferer and, second, because the strained and hardened vessels may rupture causing hemorrhages in the kidney, the retina, or the brain. The temptation to administer digitalis under such circumstances is great on account of the dyspnea, diminished urinary excretion in advanced cases, and the occasional presence of mitral incompetency, though that valvular defect is only relative, not organic.

In old fashioned Bright's disease, attended by a dilated heart, low blood pressure, anemia of the skin and mucous membranes, decrease in the urinary output, dyspnea and edema, digitalis is used with great advantage. The combination of this drug with either the citrate or acetate of potassium is sanctioned both by time and experience. The dose is twenty minims of the tincture, or a half ounce of the infusion, three times a day.

In regard to the use of digitalis in the treatment of diseases of the lungs, my close contact with a great number of medical men has convinced me that while digitalis is extensively used in diseases of the heart, its employment in diseases of the lungs is undertaken with unnecessary diffidence and unwarranted lack of confidence. Digitalis is a most potent and beneficial drug in many acute and

chronic pulmonary affections, as we shall see from the following discussion.

EMPHYSEMA.

Consider the circulatory difficulties in pulmonary emphysema: First, obstruction to the passage of the blood through the lungs on account of the obliteration of the capillary vessels in the walls of the air vesicles. Second, this circulatory obstruction in the lungs embarrasses the heart by throwing extra work on it with the inevitable result of hypertrophy, dilatation, and all the evil consequences that go with the latter, namely, venous congestion in the liver, spleen, stomach, kidneys, and mucous membranes. Third, the dilatation after attaining a maximum in the right heart produces tricuspid insufficiency which in turn produces turgescence of the jugular veins and pulsating liver. Fourth, spasmodic contraction of the arterioles resulting in a rise of blood pressure. This is one of the rarer phenomena.

In the face of these disturbances in the circulation of the blood through the lungs and the consequent involvement of the heart and other organs, digitalis, the great circulatory stabilizer, is preeminently the remedy. Even in the event of spasmodic contraction of the arterioles, digitalis should be given on account of the flabby heart and allow the nitrites to take care of the capillary spasm. In administering digitalis in emphysema, the dose depends on the condition of the heart, on the severity of the venous engorgement, and on the degree of dyspnea. Digitalis in emphysema is not an emergency drug like morphine, for example, administered subcutaneously in cases of smothering dyspnea. Digitalis should constitute a part of every prescription that is given to the patient to stimulate the heart and keep the blood moving. The dose at first should be twenty minims (not drops) three times a day; in a week or so, ten minims three times a day, this dose to be continued with occasional interruptions as long as the patient needs medicine. If the infusion is preferred, begin with half an ounce and follow it up later with two drams three times a day; or digipuratum may be employed, two or three tablets a day.

CHRONIC BRONCHITIS.

Chronic bronchitis improves under digitalis. I add digitalis to every cough mixture; or it may be given separately, but the point is that it should be given. Chronic bronchitis invariably produces congestion of the lungs and venous stasis. Skin and muscle anemia is a frequent attendant. The indication for the drug is two fold: First, to liven up the circulation and thus remove blood stasis, and, second, in improving the contractions of the heart muscles, the blood supply of the anemic heart itself is made better and more sustaining. Chronic bronchitis is first the agent and later the partner of emphysema; digitalis, therefore, becomes of great importance in the drug treatment of this vicious combination.

*Read by invitation before the Williamsburg Medical Society.

PULMONARY TUBERCULOSIS.

Digitalis in the treatment of pulmonary tuberculosis is of very great value. Abraham Jacobi was most enthusiastic about its use in that lung affection. In the opinion of this master mind, digitalis in tuberculosis "exerts its influence, as in other conditions, when it is indicated. It contracts the heart and arteries, increases blood pressure, nourishes the tissues, including the heart itself" (1).

In tuberculosis digitalis is combined with arsenic, strychnine, and guaiacol in the following proportion:

R	Digitalis, powdered,	grain 1½
	Arse nic trioxide, }	grain 1/30
	Strychnine nitrate, }	grain 1/30
	Guaiacol carbonate,	grain 10
T. i. d.		

If an intolerance for digitalis exists, a good substitute is spartein sulphate in doses of one half to one grain. These drugs may be given in the form of powders or capsules. Its use should be kept up for one, two, or three years. I usually prescribe 100 capsules and tell the patient to take thirty, stop for a few days, take thirty again, and then stop a few days. This method gives the patient a little freedom from taking drugs, which is very welcome to him, and it also prevents the effects which follow in some cases of the prolonged use of arsenic and, perhaps, digitalis. It may be well to mention that this combination of drugs is only given in the incipient and first stages of tuberculosis. It has comparatively little influence in the second stage and it is contraindicated in the third or terminal stage. In the incipient stage, this formula is as near a specific for pulmonary tuberculosis as can be found. I am not making this assertion from hearsay, but from an experience covering more than a quarter of a century. Digitalis alone, however, finds its useful field in the second and third stages.

Apropos of these remarks I wish to register a protest against the attitude that the ultramodernists assume toward the drug treatment of pulmonary tuberculosis. I confess that I am entirely out of sympathy with them. Their assertion that those tuberculous patients who improve under medication do so in spite of the drugs which they are taking and not because of them is without fact or warrant or reason and is mischievous enough to be of distinct detriment. I say that drugs are of value, great value, in this universal affliction and digitalis is one of them.

PNEUMONIA.

The role of digitalis in the treatment of pneumonia is paramount. Few cases of pneumonia should be allowed to proceed without the use of this drug. The old practitioners of medicine were lame and lacking in laboratory learning, but we can not deny their keen and careful clinical observations. They used digitalis inwardly and they used it outwardly and who can say that the mortality from pneumonia was greater in those days than in this enlightened era?

Pneumonia is an infectious disease just as diphtheria is, one having its local lesion in the lungs and the other in the throat. The toxins of each

poison the heart muscle, but in the case of pneumonia the heart has to stand an additional insult, namely, the overcoming of the impeded circulation in the consolidated lung. This extra burden is thrown on the right heart and frequently life or death depends upon the ability of the right ventricle to cope successfully with the added labor.

DIGITALIS IN PNEUMONIA.

Class A.—Moderate degree of infection with a small amount of lung involved; the administration of digitalis should be begun at the end of the fourth day of the disease in anticipation of the crisis.

Class B.—Moderately severe infection with the involvement of one or more lobes; digitalis should be given on the second or third day of the disease.

Class C.—Cases in which there is limited or small involvement of lung, but with preponderating and overwhelming toxemia; digitalis should be administered from the very inception of the infection.

Class D.—Influenza pneumonia; digitalis should be given as soon as influenza sets in and before physical signs of pneumonia appear.

PREPARATION AND DOSE.

The following four preparations of digitalis can be safely recommended, namely: the tincture, the infusion, the fluid extract, and digipuratum. The first three rest in a halo of honored antiquity; the last, though but a stripling in the digitalis family, has stood the test of severe scrutiny and trial within the last few years and emerged triumphant, so that today it ranks among the reliable and dependable preparations of the mother plant.

The dose of the tincture is from twenty to thirty minims every four hours. The larger dose is reserved for the period approaching the crisis. Of digipuratum, from one to three tablets a day, also reserving the larger dose for the critical period of the disease. Of the infusion, from two drams to half an ounce every four hours. I prefer the tincture to the infusion because it is standardized and eliminates the possibility of using poor leaves in preparing the infusion. An infusion made of fresh, English Allen leaves is a very desirable preparation, but frequently it is hard to get. In the severely toxic cases the best method of administering digitalis is by the hypodermic method. The best and most available preparation for that purpose up to the present is digipuratum in ampoules. The dose is one or three ampoules a day guided by urgency and the necessity of the case. In giving digipuratum hypodermically, I would advise that the needle be plunged deeply into the muscle instead of inserting it under the skin, the latter method being likely to produce gangrene of the skin.

The following signs indicate that the digitalis is producing the desired effects: First, improved pulse; second, disappearance of cyanosis; third, deeper and freer respiration; fourth, the heart sounds become more distinct; fifth, the louder accentuation of the second pulmonic sound, the very best criterion of progress in the case.

Francis Delafield, whose memory his students

revere and whose teaching is still an inspiration to them, used to advise the following combination of drugs in the treatment of pneumonia:

Fluid extract of digitalis,m℥
 Fluid extract of convallaria,m℥xx
 Potassium iodide,gr. v
 Distilled water enough to make 1 dram.

This dose to be given every two or three hours.

Delafield's explanation is: "The reason for this combination is that the response to convallaria seems to be better on the right ventricle than on the left, while to digitalis the response is more on the left ventricle and it is important to increase the force of both ventricles; the iodide of potassium is added to prevent contraction of the small arteries, which is caused by the digitalis and which we do not wish to produce in this case" (2). And be it reverently said of this great American physician that when he said a thing it was so.

How long shall digitalis be continued after deferescence? At least four days, in doses of twenty minims three times a day. In some instances, especially during the convalescence of gripe pneumonias, digitalis should be given for at least one week after the crisis or the lysis. Influenza and its associate pneumonia vitiate the heart muscle more than any other common infection and the tendency towards rapid and, at times, irregular heart action is noticeable many days after the subsidence of all signs and symptoms, hence the administration of digitalis during the recuperating period.

(To be continued.)

Empyema.—B. C. Garrett (*New Orleans Medical and Surgical Journal*, August, 1919) classifies empyema into three groups: 1, Those following influenza pneumonia; 2, those following streptococcic hemolytic pneumonia, and 3, those following lobar pneumonia. Empyema following influenza pneumonia as a rule occurs late, usually from three to five weeks after; the exudate that occurs before this time will most probably be absorbed as the pneumonia clears up. The fluid is purulent, very thick, and hard to aspirate. In the empyema following streptococcic hemolytic pneumonia the fluid appears early, is very thin, greenish, and evidently very toxic as these patients are always desperately ill from the beginning. The empyema following lobar pneumonia shows a definite level by x ray, occurs in the fourth week, whereas empyema following influenza pneumonia has no definite level, but shows more or less the involvement of the whole lung. We have numerous complications in influenza empyema, such as cholecystitis, peritonitis, metastatic abscesses, meningitis, and mastoiditis, but seldom any complications in empyema following lobar pneumonia. The diagnosis of empyema is made by the history of the case; by watching the temperature, which will usually be up and down; by physical findings; by the x ray; by the aspirating needle. Great reliance is placed on the last two.

1. Do not operate as long as pneumonia is present.
2. Aspirate if the quantity of serous exudation is such as to interfere mechanically with respiration.
3. Operate only after pneumonia has subsided and when fluid has become purulent.

Treatment of Lichen Planus.—A. Ravogli (*Dominion Medical Monthly*, June, 1919) is inclined to accept the French view that lichen planus is a neuritic condition of the skin induced by auto-toxic factors. In the treatment he found cacodylic acid, given hypodermically in a ten per cent. solution, to exert an excellent effect. He gives from two to four or five mils of the solution once a week at first, and later every two or three weeks. Frequently after the first injection, the patients are relieved of the itching sensation. Externally, the use of an alcoholic solution of phenol is advised to overcome itching and make the skin soft:

R Phenolis, } ana..... 1 dram (4 mils)
 Glycerini, }
 Aque rose, } ana..... 3 ounces (90 mils)
 Alcoholis, }

M. Sig.: Use externally, applying at bedtime.

In more stubborn cases an ointment containing ammoniated mercury was found beneficial:

R Hydrargyri ammoniati, ..20 grani (1.25 grams)
 Phenolis,10 drops
 Bismuthi subcarbonatis, } ana 30 grains (2 grams)
 Zinci oxidi, }
 Petrolati,1 ounce (30 grams)

Fiat unguentum.

Sig.: Apply at bedtime.

Treatment of Proctitis.—Charles J. Drueck (*Medical Fortnightly*, June 15, 1919) divides the condition into acute, chronic hypertrophic, and atrophic forms. In acute proctitis the first indication is to remove the cause. Impacted feces or foreign bodies should be carefully removed, the anal sphincters should be dilated so as to permit easy emptying of the rectum; decomposed intestinal contents should be gotten rid of by a saline cathartic and afterward the bowel should be irrigated two or three times a day with physiological saline solution at 110 degrees. Following the douche about two drams of an astringent solution such as 1-5,000 silver nitrate is introduced and retained. If symptoms persist after the third day of this treatment it will usually be found that there are ulcers in the rectal wall and these must be treated locally with pure ichthyol or five per cent. silver nitrate. The diet in these acute cases should be absorbable, non-irritating, and of such a nature as to insure soft or semisolid stools. Milk should be excluded as it gives rise to hard, irritating curds in the feces. Fibrous vegetables such as cabbage, celery, and green corn are also forbidden, and in their stead gruels of oatmeal, rice and barley, egg albumen, gelatin, meat broths, peptones, etc., should be ordered. At least eight glasses of water should be taken daily and a full glass of flaxseed tea at night. In chronic hypertrophic proctitis the treatment is similar to that of the acute form, furthermore all condiments, alcoholics, pastries, salads, sweets and fresh fruits are forbidden, and eggs, gelatins, meat, poultry and fish given with a small allowance of green vegetables such as spinach, beet tops, lettuce, asparagus, endive, and kale. Once a day the rectum and sigmoid should be cleansed with an aqueous fluid extract of krameria. In atrophic cases tonics may help by building up the general condition, drastic cathartics should be avoided, lavage may be used to empty the bowel and in every

case lues should be suspected and looked for. Locally these atrophic cases may be touched up daily with a two per cent. solution of argyrol, and erosions may be filled with powdered calomel. After symptoms begin to subside, the mucosa should be lubricated by injecting each night three ounces of liquid petrolatum with one half per cent. of menthol.

Corpus Luteum in Neurological Practice.—H. Climenko (*Endocrinology*, January-March, 1919) refers to the hiatus which still exists between our theoretical conceptions of the influence of internal secretions on psychic processes and the actual therapeutic application in neuroses and psychoses. We do not know, for example, whether when we give a dead extract we supply the body with approximately what the living gland secretes, or with an entirely new substance. Climenko has studied the clinical effect of extracts of corpus luteum on various groups of symptoms; he quotes several cases where corpus luteum was used with variable success. He comes to the conclusion that: 1, Corpus luteum extract is effective only in the female; 2, it acts best when the native corpus luteum is present; 3, it cannot replace the native substance in pregnancy and probably not in menstruation; 4, if menstruation is disturbed through some other gland, corpus luteum is useless; 5, its action is prompt; 6, its action is uniform when effective at all. Therefore Climenko concludes that corpus luteum has a specific action, probably the stimulation of the native substance, but it does not act quite the same as the latter.

Intravenous Injections of Typhoid Vaccine in the Treatment of Various Diseases.—William W. Cadbury (*China Medical Journal*, May, 1919) reports results of this treatment in fifty-one cases. In four cases of acute arthritis three patients were completely and one partially relieved; in a case of rheumatic fever injections were followed by marked relief of pain, but the condition relapsed after each; in two cases of chronic arthritis the patients were discharged cured, seven very much improved, seven with some improvement; immediate relief followed the injections in five cases of gonorrheal arthritis, one patient was discharged as cured, four as much improved; temporary relief in one case of syphilitic arthritis; rapid and permanent relief was afforded in four cases of neuralgic pains from gunshot injuries; no relief from neuralgic pains due in one case to a sarcoma, in another to a gumma, and some relief in six cases of neuralgic pains from various causes; in five cases of psoriasis the patients were temporarily relieved, but relapses occurred sooner or later; the same was true in two cases of lichen planus and four of eczema; in one case of erythema induratum the patient was cured. For the most part he used "expired" vaccine. The solution for injection was prepared by mixing the contents of an ampoule of typhoid vaccine with sterile normal saline solution in such proportion that one mil should contain 100,000,000 bacilli. This was then kept in a sterile glass bottle and used as occasion demanded. No deterioration was evident, even after a week. The initial dose was generally sixty to seventy million

bacilli; afterward the quantity was increased by ten million in each injection till as many as 100,000,000 were given at a dose. An ordinary hypodermic needle was used and the solution was injected in a vein at the elbow or forearm, or in infants in the external jugular vein. Not a single case was encountered in which it was necessary to cut down on the vein. After the injection there was a chill in from a half to one hour, followed by fever which persisted from four to twelve hours causing headache and malaise. In a few cases there was fever for two or three days. In two cases we have seen serious symptoms following the injection, but in the series here reported nothing alarming was noted although more than 200 injections were given. Injections were given every three or four days, or at longer intervals when there was a tendency to relapse.

Filarial Chyluria Cured with Novarsenobenzol.—Marcel Deschamps (*Bulletin de l'Académie de médecine*, May 20, 1919) reports a case of filarial chyluria in a Senegalese. Three hours after meals the urine looked like milk, and clotted so firmly in ten minutes after micturition that a glass rod placed in it would be held upright, as though plunged into jelly. Urination was slightly painful, and at times accompanied by terminal hematuria. The urinary sediment showed living filarias and bilharzia ova. On one occasion there was considerable difficulty of urination, owing to intravesical clotting. This was relieved by the ingestion of three grams of sodium citrate. Intravenous injections of .3, .45, .6, .75, and .9 gram of novarsenobenzol were administered at weekly intervals. As a result of this treatment, the urine became absolutely clear, the urea and chloride contents rose to normal, and filarias disappeared from the sediment. Arsenical treatment having no hold upon the bilharzia, the intravesical lesions due to this parasite, previously seen by cystoscopy in this case, remained.

The Nutritive Value of Yeast Protein.—Thomas B. Osborne and Lafayette B. Mendel (*Journal of Biological Chemistry*, June, 1919) kept rats successfully for over a year covering the period of growth on a diet consisting of dried yeast, salt mixture, starch, butter fat, and lard. The dried yeast made up thirty to forty per cent. of the food mixture, and furnished the sole source of nitrogen as well as water soluble vitamins. Although the animals grew well to adult size in many instances it was noted that they were sterile. To determine whether this was due to a deficiency in vitamins or to some other property of the yeast, four rats fed on this diet, which contained an abundance of water soluble vitamins, were mated with vigorous females on normal mixed diets. Two of the rats were fertile, but produced inferior young; the others failed to breed, so that apparently infertility on diets in which only a small quantity of yeast supplied the vitamins is not caused by the yeast *per se*. As animals have tolerated such large amounts of yeast it does not seem to produce a toxic action, as has been observed by some workers, and it certainly is safe to use it in such doses as are recommended for therapeutic purposes.

Intensive Arsphenamine Therapy.—H. H. Hazen (*Southern Medical Journal*, July, 1919) two years ago began treating his private patients with injections every three days, choosing this interval because most of the drug is excreted at the end of this interval and because any serious reaction should be manifest in time to avoid the dangers that might result from a further injection. He says that while the three day interval is not advocated as the only method to be employed, or even as the ideal method, it has been demonstrated that a patient will stand as many as ten injections at seventy-two hour intervals with perfect impunity, that much time is saved, and that both clinical and serological conditions are brought to normal in a much shorter space of time than is possible with injections given but once a week.

Treatment of Infantile Paralysis.—Blasco Reta (*Medicina Ibero*, June 14, 1919), from a consideration of the last epidemic in Granada, outlines the treatment of acute anterior poliomyelitis as follows: 1, Absolute rest in bed for several weeks after the febrile period is past; 2, calcium chloride to diminish exudates and transudates; 3, urotropin 0.3 to 1.5 gram daily according to age; 4, lumbar puncture once or twice during the febrile period according to the pressure and generalization of the paralysis; 5, diet and symptomatic treatment in accordance with the initial manifestations of the respiratory or gastrointestinal tract; 6, disinfection of the mouth, nose, and pharynx, not only of the patient but of all the members of the family, with hydrogen peroxide, and iodine in glycerine; 7, hygiene appropriate to an infectious and contagious disease.

A Therapeutic Study of Benzyl Benzoate in Bronchial Spasm or Asthma.—David I. Macht (*Southern Medical Journal*, July, 1919) analyzes 150 cases of bronchial spasm or asthma in which benzyl benzoate was used. Both adults and children were treated; in many of the adults the cases were of long standing and many drugs had been tried with little success. Benzyl benzoate was administered in most of the cases by mouth, in a few by intramuscular injection. The preparation administered by mouth was a twenty per cent alcoholic solution, the dose for adults ordinarily from fifteen to twenty-five drops in cold water three or four times a day. As the drug when given by mouth is practically nontoxic much larger doses could be given, but they are not necessary. The dose was reduced proportionately in case of infants and children, but very young children have been given thirty to forty drops three times a day with no bad results. When the drug was to be given by injection a few minims of either benzyl benzoate or benzyl acetate were dissolved in olive oil and the solution injected deep into the muscles. Pure benzyl benzoate and benzyl acetate are not adapted to injection as they are somewhat irritant. In most cases they are not necessary. This treatment proved to be beneficial in about seventy-five per cent of the cases. In some cases the results were striking, equaled only by those obtained through injections of epinephrin. A number of patients who failed to respond to epinephrin were

relieved by the administration of benzyl benzoate by mouth. A number of patients failed to react to the benzyl treatment. This is not surprising as the asthmatic cases include a variety of conditions, and where the dyspnea is due to other causes than the bronchial spasm the benzyl benzoate can be of very little use.

Tartar Emetic Injections in Bilharziasis.—George C. Low (*Journal of Tropical Medicine and Hygiene*, May 15, 1919) reports a case of mild bilharzial disease treated by intravenous injections of tartar emetic with successful results. Twelve injections were given at intervals of two to four days. The dose was progressively increased from one half grain to two grains, and the total amount given was fifteen and one half grains. First the blood emitted at the close of micturition disappeared; then it became difficult, and finally impossible to find any bilharzia eggs. After the two grain injections the patient began to complain of a feeling of constriction over the heart. At this time he seemed cured, so no more injections were given. The antimony seemed to have a toxic effect upon the bilharzial adults and possibly kill them. Further observations are required to prove this.

Surgical Treatment of Gastric Ulcer.—Carlos G. Pelaez (*Medicina Ibero*, June 14, 1919), from an analysis of a series of sixty-four cases where gastroenterostomy was done, finds that there was a resultant hyperchlorhydria in only thirteen. The chemistry of the gastric contents does not seem to differ in those cases where an occlusion of the pylorus was done. The contents of the fasting stomach during the first month after operation are generally from one to two hundred c. c., the greater part consisting of liquid more or less greenish. Later than the first month the quantity of contents extracted is always small, from fifty to seventy cubic centimetres, with very little green color. The first effect noticed from a gastroenterostomy is the disappearance of pain, then there is a return of the appetite after the third day; generally there is a rapid increase of weight which in some instances is enormous.

Treatment of Acute Postoperative Dilatation of the Stomach.—A. C. Hendrick (*Canadian Journal of Medicine and Surgery*, June, 1919) sums up his treatment as follows: Lower the patient from the Fowler position; wash out the stomach with a three per cent. solution of sodium bicarbonate; turn the patient on the right side; give nothing at the onset either by mouth or rectum; give pituitrin, one c. c., by hypodermic injection and follow at once with a turpentine enema; repeat this every four hours if necessary for four times; give strychnine, one thirtieth grain every six hours; give atropine, one two hundredth grain, every six hours. If the patient is restless give bromide and chloral per rectum, with nutrient enema if necessary to preserve the patient's strength. Give fluids by mouth only when the stomach ceases to dilate, and if the condition is not brought quickly under control it may be necessary to give normal saline by rectum or subcutaneously. Operation such as gastroenterostomy is never indicated.

Miscellany from Home and Foreign Journals

Clinical Significance of Inertia Developing Late in Labor.—Paul T. Harper (*American Journal of Obstetrics*, May, 1919) considers uterine inertia in the light of abnormalities of physiological forces producing it and points out that it may be due either to inhibition of normal muscular action or to overwork of the uterus. An example of the former variety is that reflexly caused by a distended bladder. When catheterization is employed in such a case, the inhibitory action is removed, normal uterine action is restored, labor terminates spontaneously, and beside, the presence of contractions that make impossible undue postpartum bleeding from persistence of inertia is insured. The true criterion of postpartum hemorrhage, however, is not an arbitrary limit of sixteen ounces blood loss, but a lowering of the patient's resistance on account of it. Again, not uncommonly blood loss is concealed, blood being held within the uterus by clotting in the narrow contraction ring. Rise in the level of the fundus and increasing boggyiness suggest this condition. Stress is laid on the possibility and seriousness of undue postpartum blood loss due to inertia developing toward and especially at the end of labor. Prophylaxis of this condition is urgently required, for curative treatment promises little, oxytocics and massage failing to stimulate an exhausted organ. The most efficient treatment is a firm intrauterine tampon. Inertia early in labor does respond to curative treatment. If due to inhibition, normal action will follow removal of the cause, whether this is a distended bladder or rectum, the misdirection of forces resulting from a pendulous abdomen, or suffering from "pains" either severe or poorly borne. If due to exhaustion, hypnotics or narcotics, together with nourishment, will give the rest necessary for resumption of normal uterine action.

In the prophylaxis of late inertia, the problem is one of conservation of muscular energy, and into it enter several factors, such as the efficiency of the individual uterus, the resistance the pelvis has to offer, and the possible dystocia attending malpresentations or malpositions. Maintenance of uterine tone between contractions and slow, incomplete relaxation following them rapidly use up muscular energy and call for treatment by sedatives or even ether. Premature rupture of membranes increases uterine work and, especially in the presence of disproportion, calls for early use of a hydrostatic dilator. Inertia immediately following the second stage, suggested by gradually decreasing duration and propulsive character of the contractions, calls for traction with forceps or upon the breech. Pituitary extract, which fails to conserve uterine energy, is indicated only where but few more contractions are required for delivery. In inertia occurring late in the second stage of labor because of profound anesthesia, extraction by forceps or breech must be practised in the presence of uterine contractions; if the child is extracted from an inert uterus, postpartum hemorrhage must be expected.

Removal of Foreign Bodies.—J. A. Hofheimer (*International Journal of Surgery*, July, 1919) divides the foreign bodies which find lodgment in the human economy into two groups, the absorbable and the nonabsorbable. They may enter the body from within or externally. He does not take up the question of bullet wounds or the presence of foreign bodies in the principal viscera.

Eyes.—Cinders and other irritating substances may cause considerable annoyance when caught at the edge of the palpebral cartilage of the upper lid. Relief may be secured by eversion of the upper lid and the removal of the offending object with gauze. The foreign material may become imbedded in the ocular conjunctiva or a minute piece of metal may penetrate the membrane and enter the eye. The removal of superficial objects is rather easy and seldom followed by inflammatory changes.

Nose.—Here foreign bodies such as shoe buttons are frequently found among young children. In this case if the metal eye of the button can be seen it may be grasped and removed by a pair of toothed forceps, but if the rounded end is seen the task may be more difficult. In these cases a solution of cocaine and adrenalin is advisable. It may then be removed by a small snare or an angular pair of forceps. In children with a bad catarrh, beans, kernels of corn, and slivers of wood may be found in the nostrils.

Ears.—Foreign bodies may be found in the ears of both children and adults. Various implements are used by adults for scratching their ears and these may fall into the canal and rest against the tympanic membrane. In the removal of these objects, which is generally easy, they may scratch the membrane and eczema may result. Insects can be removed by syringing with boric acid and glycerine.

Throat.—Foreign bodies are generally introduced into the throat during the deglutition of food. Fish bones or pieces of other bones may cause anxiety and pain when lodged in the faucial pillars. Splinters of wood are also found, due to the chewing of matches or toothpicks. Plates of false teeth have also been swallowed. The removal of an atomizer tip is recorded. Cases have been known where the body was coughed up, swallowed, and passed in the feces. Greedy feeding has been known to result in foreign substances in the throat. Patting on the back or postural change of the head may remedy the difficulty. A case is mentioned where a man swallowed his uvula, almost suffocating. It measured over two inches in length.

Chest.—In this situation the bodies usually come from stabbing or shooting, although instances of the penetration of other sharp objects are recorded.

Hands.—Splinters of wood, brush bristles, fragments of glass, and metal findings frequently find lodgment beneath the integument of the hands. Needles are the most common among the foreign bodies found. These may come from washing the clothes where needles have been left. The needles usually break into fragments. As a rule an attempt is made to remove them before the physician sees

the patient. The incision of choice in these cases is a triangular flap, which is reflected back on its base and allows the foreign body to be easily and quickly removed. The procedure for the removal of fish hooks is to push the hook through to the side opposite to where it entered and cut off the offending barbed point. This prevents trauma.

Vagina.—Foreign bodies are frequently found in the vagina. Neglected pessaries often cause vaginal abrasions; knitting needles, hairpins, and other objects which are indiscriminately inserted into the vagina may cause serious lesions. Neglected silver wire sutures are also listed among the bodies which have been removed.

Feet.—The feet of bathers are frequently wounded by glass, shells, and pieces of fine gravel. These wounds should not be closed until every particle of material has been removed. In the removal of these bodies no general rule can be followed but the nature of the accident, the character of the object, and the portion of the anatomy involved must serve as a guide.

Clinical Features of Tuberculous Involvement of the Lymph Nodes at the Pulmonary Hilum.

—Méry, Salin, and Girard (*Bulletins et mémoires de la Société médicale de hôpitaux de Paris*, March 13, 1919) deal in particular with the clinical diagnosis of this condition and report nine cases. The chief physical signs are those elicited by percussion. Anteriorly, there is dullness, most marked in the infraclavicular region at the inner portions of the first two and even the third costal interspaces. The maximum dullness is parasternal, but in pronounced cases it extends towards the clavicle, axilla, and nipple. The dullness remains fixed and has rather well defined margins, but diminishes gradually in cases where improvement takes place. Dullness may also be elicited, though as a rule much less distinctly, in the interscapular region. Anterior auscultatory signs are variable. Posteriorly there may be harsh expiration or respiration, bronchophony, or transmission of the whispered voice, but these are less constant anteriorly. Generally there are no râles. Diminished lung expansion over the area of dullness may be discovered. In some of the authors' cases there were absolutely no auscultatory signs. Vocal fremitus was sometimes abolished, sometimes increased. The condition occurred with about equal frequency in the left and right lungs. An important feature is that, in spite of the definite physical signs elicited, there were never any pressure signs. Cough was the only functional disturbance present. Fever was the most constant of the constitutional symptoms, persisting for months in several cases; such fever, however, is likewise common in enlargements of the bronchial glands. The group of cases as a whole showed a distinct tendency to gradual recovery; the prognosis of the condition, therefore is relatively favorable. X ray examinations showed a transverse shadow directed somewhat upward and outward and most marked in the region of the hilum. Differentiation from infraclavicular or interlobar pleurisy, from pulmonary tuberculosis about the hilum, from caseous infiltration, and from hydatid cyst is often rather difficult. The condi-

tion described is to be clearly distinguished, by the persistence of its manifestations, from the bronchial or congestive reactions of the hilar region described by Hutinel as occurring in the course of mediastinal adenopathy. From mediastinal tracheobronchial adenopathy it is also to be distinguished by the absence of signs of mediastinal pressure, of paroxysmal cough, of dyspnea, and of compression of the large mediastinal vessels. Definite evidence of a tuberculous origin of the intrahilar lymphatic enlargements was elicited in several of the authors' cases.

Angioneurotic Edema.—Charles R. Austrian (*Southern Medical Journal*, July, 1919) divides angioneurotic edema or Quincke's disease into six types. Type 1 is styled allergic because of the fact that in the patients included in it specific sensitization can be demonstrated by the development of the symptom complex when the protein or proteins to which the individual is sensitive are ingested; a specific reaction when the particular protein is applied dermally or intradermally, and the abeyance of the symptom when the offending protein is withheld. Type 2 is termed infectious on less secure ground, but the fact that a local focus of infection is present and that the removal of the infection leads to a subsidence of the symptom is very suggestive. Probably the infectious group is really a subgroup of Type 1 and the sequence of events may be infection, sensitization with the parenterally introduced protein of the invading organism or with the interaction products formed as a result of infection, and subsequent intoxication, with the efflorescence of symptoms. To establish securely these cases as allergic it is necessary to demonstrate at least a local sensitiveness to the protein of the offending organism.

Type 3, the endocrine group, has been recognized by many observers. The frequent association of other evidence of vasomotor neurosis and the occasional occurrence of angioneurotic edema in Graves's disease are well known. The appearance of the syndrome at the climacteric, at puberty, and in relation with the menstrual periods, suggests the influence of the internal secretion of the ovary. Finally, the disappearance of the symptom in hyperthyroidism following operation and in some cases at the menopause after the prolonged administration of large doses of ovarian extract, is confirmatory evidence and indicates that hyperfunction of the thyroid gland and hypofunction of the ovaries (internal secretion) are more than casually related to the development of Quincke's syndrome. Doubtless the influence of the other ductless glands is of importance as well. Inasmuch as there is a familial tendency to dysfunction of these glands as well as to the development of angioneurotic edema, it would be interesting to study cases of familial angioneurotic edema for evidences of endocrine disease with the idea of testing the hypothesis that the familial types of the syndrome are of endocrine origin, a theory supported by the study of Hertoghe.

The thermic group, Type 4, includes the rare cases in which the typical syndrome follows exposure to cold. Cases of this type are described

in the literature, but no satisfactory explanation of their origin is given.

The metabolic group, Type 5, comprises the cases in which the appearance of the symptom complex is dependent upon a disorder of metabolism.

The idiopathic group, Type 6, is really no group at all, but includes those cases in which no proximate cause for the symptom has been found. Further study will steadily diminish the number of patients so classified, registering them as members of one of the classes already recognized or of groups as yet undifferentiated. These patients have no demonstrable foci of infection and show no specific allergy. This group includes, among others, individuals in whom attempts to determine the existence of sensitization by intradermic tests elicit reaction to many or to all of the test solutions. These reactions are nonspecific, the result of trauma, and are simply evidence of an angioneurosis. In such patients it is fallacious to conclude that there is general sensitization with numerous proteins and to withdraw from the diet the many substances incriminated by the tests. Of course, such cases are to be differentiated from those in which there may exist an idiosyncrasy (in the sense of allergy) to several or more proteins, and this may be done by comparing the suggestive reaction with that developing about the site of the control injection, or, in the case of cutaneous tests, about the simple abrasion of the skin. Each individual with angioneurotic edema is a problem unto himself and only careful study will determine to which type he belongs. The facts presented warrant the conclusions that the etiology of Quincke's edema is not unitary and that the edema is a symptom of vasomotor or angioneural disturbance.

Addison's Disease and the White Line Phenomenon—J. C. M. Mussio Fournier (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 13, 1919) reports the case of a girl of eighteen who ceased menstruating and showed some loss of weight. One month later she suddenly began to experience severe pains in the lumbar regions, radiating to the anterior abdominal surface and even to the thighs, which compelled her to walk with her body bent forward to avoid jarring and pain. By the eighth day the pain was so severe that she went to bed. There was also slight headache. Next day there was vomiting, followed by profuse diarrhea. Upon admission to the hospital the patient was found emaciated and exhausted; temperature normal; tongue dry; pulse rate, 120; systolic blood pressure, ninety; diastolic, sixty; abdomen retracted and slightly tender; tenderness more marked over the lumbar region. The skin was for the most part pale, but the areas covered by the corset and garters were markedly pigmented, as were also the sclerae of the eyes. The oral mucous membrane showed two small pigmented spots. A distinct white line on the skin appeared in ten to fifteen seconds and lasted three or four minutes. Tests of the vegetative nervous system with pilocarpine, adrenalin, atropine, alimentary glycosuria, and Aschner's reflex gave normal results, save that neither injection of .003 gram of adrenalin nor ingestion of 200 grams of glucose

brought on glycosuria. The patient was given forty drops a day of the one in 1,000 adrenalin solution. Under this treatment the main symptoms disappeared in twenty-four to forty-eight hours, including the vomiting, diarrhea, and pain, and the pulse rate dropped from 120 to eighty. General bodily vigor returned, the systolic pressure rose to 120 and the diastolic to ninety, and the white line phenomenon could no longer be elicited. The only residual disturbances were the pigmentation already mentioned, a condition of instability of the pulse—the rate rising to 130 or 140 on exertion, or even spontaneously—and evanescent lumbar pains. In none of 250 other patients suffering from various disorders was the white line phenomenon positive. In all cases of influenza associated with low blood pressure and adynamia, however, the author had obtained the white line, which became less distinct and later disappeared under adrenalin treatment. The author believes these observations support Sergeant's view of the value of the white line as an indication of adrenal insufficiency.

Unreliability of Symptoms as Indications of the Actual Condition in Gastric Disorders.—L. Pron (*Bulletin de l'Académie de médecine*, May 20, 1919) points out that certain purely functional disturbances of the stomach may induce severe pain, vomiting, etc. Some patients complain daily of their stomach though it is actually normal and suffers merely by *contre-coup* from a neighboring disturbance, e. g., in the liver. On the other hand, certain long standing and serious gastric affections often exhibit an attenuated, misleading symptomatology. Thus, acid catarrh, frequently associated with ulcer, and comprising the great majority of all gastric diseases, is by no means constantly manifested in attacks of pain and alimentary or acid vomiting. In 152 cases, 102 patients never vomited and sixty-one had no acute pains. In fifteen, the dominant symptom was a postprandial sensation of heaviness, as in hyperchlorhydria. Often the secondary intestinal symptoms seem more important than the gastric. In positive ulcer cases three fourths of the patients who pass blood exhibit neither frequent alimentary vomiting nor hematemesis. The patients appear to suffer from simple hyperchlorhydria, with increased appetite, pain several times a day, or burning sensations of moderate severity. The reason for these discrepancies is that every dyspeptic suffers rather in accordance with the degree of excitability of his nervous system than according to the pathological condition itself. In some patients the solar plexus seems to have lost its sensitiveness by reason of the protracted wear and tear. The cardinal objective sign, permitting of differentiation between the functional and the organic cases, is the ability of patients to produce splashing sounds in the empty stomach. Once this sign has been proved positive, gastric analysis by means of the stomach tube becomes indispensable to trace the condition further. The fact must be borne in mind, however, that apparent intermissions of several weeks' or months' duration may occur, even where complete investigation or subsequent surgical intervention leaves no doubt as to the presence of organic disease.

Peripheral Nerve Injuries.—W. L. Powell (*Southern Medical Journal*, June, 1919) calls attention to the following points: 1. In any peripheral paralysis, whether from injury or disease, a definite diagnosis of the nerve involved can be made only after a careful study of the nerve supply of the groups of muscles affected. 2. There is very little hope of muscles recovering their contractile power unless they are put in an absolutely relaxed position and not allowed to become stretched even for a short time, and their nutrition kept up by the judicious use of massage and electricity. 3. When the contractile power begins to return the patient must be encouraged to exercise that power voluntarily, without ever allowing any stretching of the muscles. 4. Early suture of completely severed nerves is essential if the best results are to be procured. 5. In the search for a nerve embedded in scar tissue, always locate the nerve in the normal tissue and follow it through the abnormal tissue. 6. In injuries of the extremities always make a careful examination for nerve injury during the primary examination and before applying any permanent dressing.

Acute Peritoneal Reaction in Secondary Malaria.—F. Trémolières and G. Leclerc (*Paris médical*, May 17, 1919) note that various observers have reported instances of acute abdominal disturbance, sometimes sufficiently severe to lead to a diagnosis of appendicitis in cases of malaria recently acquired. In the case they report, however, the condition developed when the disease was already of long standing. The patient had been on military service in Macedonia, and soon after returning to France on a furlough one year after acquiring malarial infection, was suddenly seized during a febrile paroxysm with severe abdominal pain and vomiting. On admission to a hospital he was in a state of collapse, with cyanosed lips, cold nose, small and frequent pulse, persistent vomiting, sharp pain above the umbilicus, rigidity especially in the hypochondriac and epigastric regions, tenderness, absolute constipation, and a temperature of 38° C. A diagnosis of diffuse peritonitis due probably to perforated stomach or gallbladder was made and the patient transferred to a surgical service. On the same evening and next day, however, improvement took place. In two days rigidity became limited to the supraumbilical region, fever disappeared, and the general condition was greatly improved. Several days later, under anesthesia, an enlargement suggestive of distended gallbladder was felt, but after three weeks, rigidity having gradually disappeared, a very large, tender liver and a markedly swollen spleen were palpated. During the patient's stay in the hospital he had about ten malarial paroxysms, and received quinine treatment. Subsequently the patient recovered, the liver and spleen, however, remaining large. No sign of any other form of involvement of the abdominal organs being present, and the history being likewise negative, the condition was definitely ascribed to malaria. The patient's former alcoholic tendencies and an attack of amebic dysentery may have been factors in the localization and intensity of the disturbance in this case.

New Incision for Appendectomy.—Leigh F. Watson (*Northwest Medicine*, July, 1919) calls attention to the frequent location of the appendix below McBurney's point, usually about on a level with the middle of Poupart's ligament, and recommends a new incision which he has used for the past nine years with much success. Beginning at a point one and one half inches internal to the anterior superior spine of the ilium, and on a line connecting the two anterior superior spines, a vertical incision is made, extending downward for two to three inches to a point just above and internal to the internal abdominal ring. This incision offers the following advantages: It is through the most resistant structures, the external oblique and its aponeurosis; it lies directly over the base of the appendix; it can be enlarged without weakening the abdominal wall; it does not injure the iliohypogastric or ilioinguinal nerves, and, being made over the cecum, the small intestines do not crowd into the wound.

Neuroendocrine Thermal Instability.—Léopold-Lévi (*Presse médicale*, April 17, 1919) asserts that hypothyroid hypothermia and hyperthyroid hyperthermia frequently coexist in the same subject. The two conditions may either succeed one another in prolonged phases, in brief alternations, or by intercurrent hyperthermia or hypothermia where the opposite condition is the rule; or they may be present simultaneously, the patient exhibiting cold feet and a hot face, or one hand cold and the other hot, cold extremities with a high internal temperature, or feverish extremities with general subnormal temperature. This thermal instability becomes manifest through coexisting thyroid and nervous influences, as is shown by pathological observations, alimentary thyroidism, and regulative thyroid treatment. These thyroid and nervous influences relate to the domain of physiological thermogenesis.

The Relation of the Bacillus Influenza to the Recent Epidemic.—Guthrie McConnell (*American Journal of the Medical Sciences*, July, 1919) shows that although many observers found the *Bacillus influenzae* in cultures in quite a large proportion of cases examined, there were just as many equally skillful men who found the organism in a very small number of cases cultured, or did not find it at all. The serious symptoms were not due to the presence of the *Bacillus influenzae*, but were the result of invasion by secondary organisms, mainly pneumococci and streptococci. Accompanying the disease was commonly a well marked leucopenia, which, however, did not occur when killed cultures of influenza bacilli were injected. The injection of these cultures did not appear either to prevent the disease, or to ameliorate the condition after injection had occurred. The inoculation by filtrates of sputum and bronchial secretions cannot be said to have caused the disease, nor has the infecting of the nasopharyngeal mucous membranes with recently isolated pure cultures of living influenza bacilli given rise to symptoms. The evidence does not seem to be in favor of the *Bacillus influenzae* being considered the etiological factor in the recent epidemic.

Two Cases of Encephalitis Lethargica.—C. W. J. Brasher, J. R. Caldwell and E. J. Coombe (*British Medical Journal*, June 14, 1919) record two cases of encephalitis lethargica, occurring in young adults and following immediately upon an attack of influenza complicated with pneumonia. In the spinal fluid of each patient an organism was found which appeared to be identical morphologically with that which was found by Bradford in the blood, sputum, pleural fluid and spinal fluid in cases of influenza, trench fever and nephritis among the British troops in France. The organism was a minute, gram positive coccus which was chiefly extracellular and which failed to grow aerobically on the usual media. It is suggested that this organism was the cause of the encephalitis in these two cases.

Experiments on the Mode of Infection in Epidemic Meningitis.—Harold L. Amoss and Frederick Ebersson (*Journal of Medical Research*, June, 1919) have attempted to determine the influence of an aseptic meningitis on the intravenous inoculation of cultures of virulent meningococcus in monkeys. Normal horse serum, normal salt solution, and protargol were used to induce the aseptic inflammation. Monkeys are highly resistant to infection with meningococcus cultures introduced into the blood, but are less resistant to cultures injected directly into the subarachnoid space by lumbar puncture. It was impossible to direct the meningococci circulating in the blood into the cerebrospinal meninges of the animals. When rabbits were employed the organisms passed from the spinal fluid into the blood if a physical break in the continuity was made, but when the inflammation was of a chemical nature, this did not happen. The authors state that their work does not lend any support to the theory that an intraspinal injection of antimeningococcus serum early in the disease in man, and possibly at a period when the meninges do not show evidences of inflammation, favors its diversion from the blood stream into the subarachnoid space.

Growth Accessory Substances for Pathogenic Bacteria in Animal Tissues.—I. J. Kligler (*Journal of Experimental Medicine*, July, 1919) describes experiments bearing on the effect of vitamins on the growth of the following pathogenic organisms: Meningococcus, pneumococcus Type 1, Streptococcus hemolyticus, Bacillus diphtheriae, Bacillus pertussis, and Bacillus influenzae. The distribution of these substances in animal tissues and the relative significance of the fat soluble vitamins A and water soluble vitamin B in the cultivation of these organisms is studied. For this work beef heart, goat blood, rabbit and cat tissues, and human secretions were used. The growth of the bacteria was favorably influenced by the addition of small quantities of tissue extracts, the mucosa of various organs, the stomach, liver and spleen, etc., being particularly rich in growth promoting substances, while the muscle was relatively poor. A reduction of lag was also noted. The nasal mucus contained a substance which enhanced the growth of the meningococcus. The water soluble substances are the ones which favor the growth of bacteria; the fat soluble substance had no effect. The substances appear to belong to the class of so-called vitamins.

Clinical Observations Concerning the Fragility of Erythrocytes.—H. Z. Giffen and A. H. Sanford (*Journal of Laboratory and Clinical Medicine*, May, 1919) describe in detail the technic for doing the fragility test, and give their observations in a group of cases of hemolytic jaundice, pernicious anemia, splenic anemia, and myelocytic leucemia. Of twenty-five patients with hemolytic jaundice twenty-two showed a markedly increased fragility, and in only one instance was the resistance normal. After splenectomy a slight increase in the degree of fragility, especially in regard to initial hemolysis, was noted. In twelve cases of myelocytic leucemia the fragility was normal, with slight variations toward increased resistance. In fourteen cases of splenic anemia the patients showed a definitely increased resistance, which was the greater after splenectomy. In eighteen cases of pernicious anemia the resistance of the red blood cells was slightly increased before splenectomy, and more definitely so after operation. Hemolysis was absolutely normal in four cases of purpura. In eleven cases of chronic obstructive jaundice the patients showed an increase of resistance.

Ocular Lesions Following Injections of Antityphoid Vaccine.—R. Pacheco Luna (*American Journal of Ophthalmology*, July, 1919) thinks that, so far as our limited knowledge permits, the following conclusions are justified: 1, There exists no ocular lesion depending directly and exclusively upon the antityphoid vaccine; 2, Herpes febrilis of the cornea is the ocular lesion which is admittedly dependent upon antityphoid vaccine, but in certain cases it deals with a recurrence, and one must admit a predisposition; 3, in like manner the cases of iridocyclitis must be considered in which there is a constitutional defect. A reaction from the vaccine can bring on secondary glaucoma depending on iridocyclitis; 4, pyemia, the cause of which is a fault of asepsis in the technic, can produce grave complications in the form of metastatic purulent iridocyclitis; 5, certain lesions of the optic nerves, the optic tracts, and certain ocular paralyses, of which no observations have been published, could be explained by meningeal reaction; 6, an acute primary glaucoma can develop during the reaction of the vaccine. It is impossible scientifically to express in what manner a chronic glaucoma would be aggravated; 7, to admit the action of the vaccine, it is necessary that the ocular manifestations should present themselves during the febrile reaction, or immediately after; 8, in certain cases it is not possible to attribute to the vaccine any action at all, it is simply a question of annoying coincidences; 9, it is not prudent to vaccinate luetic, tuberculous, and rheumatic subjects, who may have previously had lesions of the uveal tract; 10, there is no reason why subjects who have had no former lesions of the uveal tract and who are exempt from all former ocular affections, should be deprived of the benefits of the vaccine; 11, the patient must be submitted to a previous medical examination, and the eyes examined by an oculist; 12, before judging on a medicolegal matter, due to the vaccine, it is necessary to be circumspect and to have a perfect knowledge of all that has been said on the subject.

Proceedings of National and Local Societies

NEW YORK NEUROLOGICAL SOCIETY.

Three Hundred and Seventy-second Regular Meeting, Held April 1, 1919.

The President, Dr. WALTER TIMME, in the Chair.

The meeting was opened by the reading of two memorial addresses, the first by Dr. EDWARD D. FISHER in honor of the memory of the late Professor William Hanna Thomson, A. B., M. D., LL. D., for many years an active member of the New York Neurological Society, who died in January, 1918; and the second by Dr. CHRISTOPHER C. BELING on the life and character of the late Dr. Sarah R. Mead, for many years a member of the society, who died on March 17, 1918. These memorial addresses are published in full on page 351.

Facts and Fancies in Psychanalytical Treatment.—Dr. A. A. BRILL read this paper, having many reasons at that time for discussing the subject chosen, chief among them being the fact that, though psychoanalysis had become a well known and popular subject in many walks of life, many persons, even those in the highest standing in neurology and psychiatry who were sympathetic to psychoanalysis, often showed a marked ignorance of its basic principles. It should not be forgotten that this form of treatment did not lend itself to the amelioration of acute forms of neurosis; it was, for instance, as impotent in removing so-called shell shock as it would be in removing hernia. Psychoanalytical treatment had its limitations, and the patients selected for this form of therapy should not only be persons of normal intelligence and of good character, but they must have recovered from the acute attacks.

The chronic psychoneurotics of normal mental makeup furnished the best cases and some of the most profound hysterias and compulsion neuroses had been cured after every other form of therapy had been tried in vain. Most of these people showed some sexual difficulty. Looking over records of the patients sent to him during the first years of his practice, Doctor Brill found that over sixty per cent. were referred to him just because the patient spoke of sex or his physician expected it. An enormous amount of nonsense had been said and written about sex and psychoanalysis. To understand the strange manifestations frequently found in man, for example, abnormal fancy formation, or the actual perversions, one had to be aware that the sex impulse consisted of many components and partial impulses which were congenital and developed with the individual. To the cultured person sex stood for much more than the sexual act. Conceived in this broad sense, one had no difficulty in comprehending the existence of an infantile sexuality and realizing that no neurosis, even in a child, was possible in a normal sexual life.

A great many patients sent to psychoanalysts could easily have been cured without this if the family physician had known something about the cause and effect of psychosexual disturbances. A

great many physicians, especially those dealing with nervous patients, also needed to cultivate with them a better *rapproch* similar to that cultivated by psychoanalysts and designated by them as transference, a mechanism of approach concerning which there was considerable misunderstanding. This mechanism of transference was put into operation by the patient continually applying to the physician hostile or tender emotions which had no foundation in the actual relation but were derived from the patient's unconscious fancies. The transference had to be managed with a great deal of tact and skill, for there was a tendency in neurotics with a floating libido to be ever ready to fix it on some one, identifying that person with the good father who spoiled them or with the lost lover, etc., which was absolutely impossible in the relationship existing between patient and physician. The same mechanism was constantly found in normal life and upon it was based attraction or repulsion.

Since many patients who were sent for analysis were not psychic, it was essential that one practicing psychoanalysis should have a thorough knowledge of the mechanism of hysteria and the other psychoneuroses as well as a good knowledge of neurology and psychiatry. Only those possessing these qualifications should prepare themselves for psychoanalytical work. It should not be forgotten, also, that a pathological condition could exist in a neurotic individual, and no analysis in the world would remove symptoms due to an organic disease. Thorough diagnosis in each case was of enormous importance before resorting to therapy, and therefore it was obvious that this was no subject to be played with by laymen. Psychoanalysis was in the strictest sense a part of mental medicine and deserved the sympathetic encouragement of the profession everywhere.

A Psychological Study of Some Alcoholics.—

Dr. L. PIERCE CLARK presented this paper because of the seriousness of the psychological aspect of the problem at the present time and through a realization of the fact that the influence of alcohol upon modern life was not to be disposed of merely by bringing about prohibition. In excessive and habitual indulgences in alcohol there lay a multitude of causes and results for study and analysis. At one time alcohol might serve to bring about harmonious relations in a social group otherwise difficult; at another it might aid to bring about a state of pleasant *rapproch*; while at still another it might make easy for free egress deeper and ill adjusted unconscious motives. Alcohol was dangerous only to those who used it for illegitimate means and ends. In many instances these alcoholic individuals had failed to complete certain emotional cycles of earlier development wherein alcohol prevented proper and satisfactory repression or socially acceptable sublimations. Extreme alcoholic repression called for precise study and analysis and no less insistently than did alcoholic indulgence; it was possible that the ardor of the prohibitionist was a compensatory public inhibition for more intimate

personal liberties denied or repressed. It was often popularly held that a man totally abstinent in one field might be licentiate in another. It might well be that the alcoholic suppressed his libido and only freed it in drunkenness, while a neurotic expressed himself sexually. As eminently practicable as legal prohibition might seem at this time, it must not be forgotten that a signal increase in all sorts of neuroses and psychoses would come about as a result of such measures. Neither individual nor social alcoholism would be cured by prohibition; this could be effected only by careful analysis which by uncovering the fault would open the way to applying a remedy.

All the conscious motives given for alcoholic indulgence were but specious casuistry, or at least inadequate rationalizations. To arrive at any true analysis of the defect, not only the conscious reasonings had to be considered but an investigation conducted by all methods possible of the unconscious strivings met or perverted by alcoholic indulgence. The use of alcohol was proportioned to one's idea of its value, but the habitual alcoholic was especially tormented with and guided by strong and overweighted feelings and representations, the real roots of which lay in the unconscious. In many cases of dipsomania the homosexual component was quite transparent, shown in the wish to treat other men. The fear and restlessness which introduced the so-called dipsomaniac attacks were usually rooted in conflicts and repressions of the homosexual. Starting from the fact of bisexuality of human beings, both of organic and psychosexual attributes, surely the homosexual component must show itself in some way; if it could not be done openly and nakedly, then masks and symbols must be used. It showed itself in different degrees of sublimation. It was not merely chance that men so much enjoyed being among themselves and drinking together. Why did the alcoholic deliriant always see certain animals which were well known as sex symbols in general and, especially when seen by men, as showing homosexual designs? Many alcoholics also had a "reverse Oedipus" complex which showed in delirium.

Unconscious homosexuality was only one factor in the alcoholic psyche; atavistic reminiscences played an important rôle. Atavism occurred in both healthy and abnormal states, but especially in the alcoholic one came close to atavistic remains, and chronic intoxication awakened and cleared the way for the ancient relics. Atavism gained new life in those psychically sick, and the drunken man exhibited unmistakable evidence of the sadistic-masochistic complex. The sadistic component explained numerous delinquencies and crimes that accompanied alcoholism. Alcohol numbed the higher functions. All drinkers did not become criminals, but alcohol certainly permitted hidden criminal desires to work out. The sexual component alone did not explain the behavior of alcoholics; the whole psychic content had to be considered. The unconscious had different levels or depths, and in different degrees of intoxication various levels of unconscious strivings and conflicts were released.

This conception of alcoholism afforded a scien-

tific insight, made obvious the innate fault of the instinctive life, the fixation in the evolution of the emotional life, and showed the pattern plan of what sort of training out and social readjustment were necessary to heal such individuals. Anything less in the way of a comprehensive treatment was doomed to an early failure. In the definite periodical drinker the character usually showed less of the epileptic constitution *per se* and more of the instability makeup of constitutional inferiority. Altogether the study showed the truth of the contention that the line of treatment must always rest upon the individual and social analysis of the particular subject under consideration, and that here, as in other profound neuroses, psychoanalysis might be undertaken. In the majority of cases one might hope for an arrest of the habit if proper precautions and lessened social demands were made upon these special types of inferiors.

Discussion.—Dr. HORACE W. FRINK opened the discussion of these two papers on various aspects of psychoanalysis, taking up first the question of alcoholism, in which though his psychoanalytic experience had not been very extensive it had been very unhappy from the therapeutic standpoint. He found that whenever he reached an important and difficult place in the analysis the patient got drunk and repeated this almost indefinitely and he had never yet been able to finish an analysis of an alcoholic. On the whole, the things Doctor Clark pointed out were more or less confirmed by the speaker's own experience; in some of his cases the homosexual element was prominent, in others apparently almost negligible. There were different types of alcoholics, three in particular. One was the true periodical drinker, a condition related closely to the fugue and to cases of alternating personality. Such types were sometimes observed among clergymen and other people of a pious turn of mind in their ordinary state but who showed in periodical sprees an exactly opposite set of characteristics. Then there were cases of mild psychoneurosis in which drinking began as a drug is taken to allay the fears or depressions but at length became part of the neurosis. Again there was a type that was largely chemical, the men who drank through the external psychological influences that were present and got up a state which called for new doses of alcohol to overcome it. Some of those patients had been successfully handled with hypnosis, which was the only variety of treatment that had been in any way successful in the speaker's experience.

Regarding Doctor's Brill's paper, Doctor Frink recalled ten years ago at a meeting of the Medical Society of the County of New York, that Doctor Fisher read a paper on psychotherapy. The president of the society had prefaced the discussion by stating that psychotherapy having been in existence for some time it was time for final opinion and judgment to be formulated. The various methods were discussed, particularly the psychoanalytical and much invective and sarcasm were let loose against it. For some time it was all one's life was worth to mention psychoanalysis at a medical society meeting, to say nothing of reading a paper on the sub-

ject. But as time went on, through the efforts of a few sincere men who had to endure much in the way of insults and antagonism, psychoanalysis had at length become more or less respected. The battle for its right to exist had apparently been won. On the other hand, in a way the battle had just begun, for the greatest danger was now presenting itself in the form of the undue popularity of psychoanalysis and its practice by the untrained, to which Doctor Brill had alluded. A serious factor, and one largely responsible for this popularity, was the fact that it was being practised by those who possessed no medical degree and had had no medical education. There were many objections of the most serious character to psychoanalysis being practised by nonmedical people. In the first place a non-medical person, even supposing he had a good understanding of psychoanalysis *per se*, could not safely be trusted to practise. A physician was something more than a person who had listened to lectures on medicine and studied medical textbooks. In securing his medical education, in his hospital training, in his association with his professors and fellow practitioners, in the hours spent in studying his cases, something of the ancient ideals and traditions became embodied with the personality of the physician which was not to be found in the layman, an attitude toward patients and toward society in general. Patients of laymen, however well trained, missed that something which was important.

There were still more practical objections of the greatest significance. To do good work in psychoanalysis was enormously difficult; it took years of the hardest kind of application and study to achieve anything approaching decent success. One could not learn to analyze such an enormously difficult thing as the human mind without every advantage and the layman had no such advantage. It was to be regretted that there were certain physicians who not only had worked with these nonmedical people but had sanctioned and endorsed their working alone and had referred patients to them. Such physicians surely could not believe they were doing the right thing by these patients, nor fail to realize that not only were they not helped but possibly seriously harmed. A physician who sent patients to people of this sort was prostituting medicine for some sort of pecuniary profit. There was a still further consideration and one that should give pause to those who regarded this situation lightly. The lay psychoanalyst was not bound by medical ethics as was the physician, and medical ethics constituted a protection to the patient which he should be given. A final objection: the practice of medicine by the non-medical was against the law and it was time that this situation was investigated from that end, for it was getting to be a menace, and if more of it went on the good work that had been done and the high repute that had been won for psychoanalysis by the serious workers would be in jeopardy. Psychoanalysis was not Christian Science and the attitude toward it should not be that accorded Christian Science. It was not a religion; it was a difficult and serious medical procedure, involving medical examination, medical diagnosis, and psychotherapy by a trained physician.

Dr. C. P. OBERNDORF endorsed what Doctor Frink had brought to the attention of the society as to the necessity for medical training in undertaking psychoanalytical work. The question of selecting patients for analysis was sometimes a most difficult one as there were many borderline cases. In some cases attempts at analysis would not only do the patient no good but might be harmful. This was especially true in certain cases of mental disturbance of the manic depressive type where, during the active stage, any interference seemed only to accentuate the patient's sufferings without in any way relieving them.

So far as the speaker's experience with alcoholics went, he believed all that Doctor Clark had said was true psychologically. Alcohol furnished a convenient means of relaxation, but it was of most value in acting as an inhibitory agent over the conscious mental censorship. Because of this, thoughts and actions ordinarily kept guarded were allowed to find egress. Possibly it was because of this being more or less realized, and as such was contrary to one's best interests, that so many excuses had been unearthed for alcoholic indulgence. The relaxation which alcohol afforded was a very desirable one for the community. Prohibition would be a mistake, for though a substitute would probably be discovered, thus far none less harmful had been found. It was very interesting to note the different types of individuals who found over-indulgence in relaxing agents necessary, as they could be observed in the wards of Bellevue Hospital. In the alcoholic ward one would find the northern races, a frank type of people; in the drug ward was found the clandestine individual of the southern races. Many of both types would explain that it was from an unconscious urge they took the drug or drink. If alcohol was taken from these unbalanced individuals the tendency to adjust the emotional defect through drugs or other relief might be great. There was also great likelihood of an increase in neuroses and psychoses. The prohibitionist was putting the cart before the horse when he stated that alcohol was the cause of so many mental disorders; rather was the mental disorder the reason for taking alcohol.

In regard to Doctor Brill's paper on psychoanalytical treatment, the crux of all treatment of this character lay in the handling of transference and resistance and that was difficult to adjust at times. Transference had most of its roots deeply planted; unless unconscious resistances were eradicated analysis could do little good, and unless the analyzer accepted them as the really vital part of his problem, he did not accept his task at all.

Dr. B. ONUF said that he had been so interested in Freud's work that he had been among the first to bring it to the attention of this society and to the profession at large. There were a few points that the discussion had stimulated him to take up. In the first place, if there was any one entitled to give an opinion on psychoanalysis, it was Doctor Brill, who was what the Germans called the *Alt vater* of psychoanalysis in the United States and he was qualified in more than one way to practise it, first and foremost being his experience in psychi-

atry. Doctor Frink's warning as to the peculiar fitness of psychoanalytical work was absolutely in order. Nevertheless, all knowledge of it should not be kept within the medical profession, but it should be spread at large because it was always true that when medical methods were known to the people they acquired a sympathetic understanding of them which promoted a larger application not possible when kept within a small circle. There was no doubt that if an understanding of psychoanalytical theories was spread among the educated, great help would be gained in applying psychoanalysis to the proper purpose. However, there was one thing about psychoanalysis: it took a man's whole time and it required special qualifications, an enormous amount of patience, a fine tact, and other requisites that made for success, to say nothing of a good medical education. Doctor Brill stated that there was no harm in using psychoanalysis in dementia præcox even if there should be no success; this was true in the case of an experienced psychoanalyst, but there was danger in the hands of those whose experience had not been sufficient. He had known of a case of dementia præcox in which the patient made one attempt at suicide after another following certain revelations in the analysis. Doctor Clark stated that most of his patients were constitutionally inferior, but many of the dipsomania cases were really cases of manic depression and the alcoholism was a part of the disease.

Dr. HYMAN CLIMENKO asked what type of patient should be sent to the psychoanalyst for special study and treatment. Psychoanalysis had come to be an important part of medicine but did it cure symptoms or did it cure hysteria? Which were those that could be cured by the shortest route and at the least expense to the patient?

Dr. RUSSELL G. MACROBERT, knowing how careful and painstaking Doctor Frink's work was, said that the very modest characterization of the results achieved with alcoholics tempted him to ask Doctor Frink if he did not consider that the psychogenic symptoms were not only attempted adjustments to real difficulties but very many times, and especially in more serious cases like pathological drunkenness and early dementia præcox, were the most satisfactory adjustments to his real difficulties that the patient could be contented with or was likely to find through psychoanalytical treatment alone.

Dr. MICHAEL OSNATO asked if the impression he had received during this evening was true, namely, that psychoanalysis had retired from the field of psychiatry altogether. Doctor Brill did not think it effective in the treatment of dementia præcox which totalled more than forty per cent. of all cases of mental disease in institutions. Doctor Oberndorf had admitted that in manic depressive psychoses psychoanalysis had little therapeutic effect and these cases totalled ten to fifteen per cent. of all admissions. They must of necessity express great reserve regarding psychoanalysis in general paresis which totalled fifteen per cent. of admissions; they spoke discouragingly of psychoanalysis in paranoia which totalled two per cent. They must admit the same nonsuccess in senile and pre-

senile psychoses. Doctor Frink and Doctor Clark had spoken discouragingly of the psychoanalytical treatment of the alcoholic psychosis which totalled about fifteen per cent. of all admissions to hospitals for the insane. In fact they admitted their lack of success in handling these patients. In the face of this was one right in believing that psychoanalysis had retired from the field of psychiatry?

Doctor Brill said that although his own experience with psychotherapy in alcoholism had been more successful than that related by Doctor Frink, he had nevertheless found the chronic alcoholic, as a rule, to be more or less deficient mentally, and whenever he succeeded in curing the craving for alcohol something worse took its place which changed the individual from a menace to himself to a menace to society. Concerning the treatment by psychoanalysis of dementia præcox, Professor Freud had always maintained that these patients should not be analyzed because the precox mechanisms in themselves were their abnormal adjustment, and in analyzing them that adjustment was destroyed. As a matter of fact the patient with an adjusted precox must eventually be sent to a sanatorium, and the patient with a disturbed precox must also remain in the sanatorium. Incipient cases of precox, however, could sometimes be benefited by psychoanalysis; and last but not least, a great insight was gained by studying these cases, which was an important factor in prophylaxis. Doctor Climenko has asked what patients should be sent to the psychoanalyst. The answer was that only chronic cases in which the patients had resisted all treatment should be sent for analysis, although it would be better for the patients to be analyzed as early as possible. Doctor Osnato's query whether the psychoanalyst had retired from the field of psychiatry was surprising; psychoanalysts were psychiatrists first, and psychoanalysis was only a branch of psychiatry. No attempt was made to treat by psychoanalysis any organic disease, but even in diseases like paresis and senile dementia the patients showed Freudian mechanism in their delusions.

Doctor Clark was very glad to hear Doctor Brill's answer to the question as to whether psychoanalysts had retired from mental medicine. One of the greatest advantages to psychiatry had been the psychoanalytical method of approach, particularly in the benign psychoses and even in acute cases of manic depression. Properly applied in appropriate cases it prevented the recurrence of attacks. It also gave an excellent understanding of the mechanism of dementia præcox and a better insight into what to do for these patients through occupational and social readjustment, helping them even if they continued to follow a dementia præcox career throughout life. As regarded its application in cases of alcoholism, psychoanalysis did not show up brilliantly, but in it lay a method of approach as to the mechanism controlling the condition, and the only way one could do any permanent good was by influencing the unconscious motives in those patients who were clever and resourceful, not at all lacking in intellectual power. It gave an insight into the mechanism and how to help them make their adjustments.

In Memoriam.

WILLIAM HANNA THOMSON, M. D.,

BY EDWARD D. FISHER, M. D.,
New York.

William Hanna Thomson, B. A., M. A., M. D., LL. D., was born in Syria, the son of a missionary, the author of *The Land and the Book*. He was sent to the United States for his education and received the degree of B. A. from Wabash College in 1850, the degree of M. D. from the Albany Medical College in 1859, M. A. from Yale in 1861, and LL. D. from the New York University.

Doctor Thomson was for many years an active member of the New York Neurological Society. He read many papers before it although his practice was in no sense limited to nervous diseases, being from the beginning of his career what we now term an internist, but always interested in diseases of the mind and nervous system. In his early life Doctor Thomson was too busy to write and it was not until later that he found time to publish works which immediately commanded attention. His large experience as a general practitioner and visiting physician at Roosevelt and Bellevue Hospitals and as a teacher at the New York University Medical College, eminently qualified him to summarize his ideas on medical and allied subjects. He had long been recognized as a leader in medicine in New York city and the profession gladly affirmed that opinion by electing him president of the New York Academy of Medicine. His writings represent the result of a mature, well-disciplined mind. They were as follows: *Brain and Personality*; *Some Wonders of Biology*; *Life, Death, and Immortality*, and *Clinical Medicine*.

Doctor Thomson was primarily a clinician, as he so often said: "It is the condition of the living patient which demands exclusive attention. We begin, therefore, with symptoms before we go further in treatment." In my student days under him, he always emphasized infection by living micro-organisms—that is, the germ theory. At that time, 1875-6 that theory was not established nor accepted. Lister had just stepped into the arena and (a Scotchman) was opposed and ridiculed by the English profession. Professor Thomson was indeed ahead of his time and generation. His office was a busy one, and a general practice combined with a large obstetrical practice occupied him until late in the night, while in the full exercise of his powers and activities. He was essentially a thinker and to the last, at the advanced age of eighty-five, remained a thinker.

He was much interested in religious matters, giving lectures Sunday afternoons at the Young Men's Christian Association which for years were largely attended. He was a scholar in the best sense, familiar with the Sanscrit and Hebrew languages from childhood and also with French. His association, however, with English literature, especially medical, made him essentially English in his line of medical thought.

Doctor Thomson was most successful in winning the confidence of his clientele, in relieving them of suffering and indefinitely prolonging their lives.

SARAH R. MEAD, M. D.,

BY CHRISTOPHER C. BELING, M. D.,
Newark, N. J.

Dr. Sarah R. Mead was born at Newark, N. J., April 23, 1847, and died on March 17, 1918, at the Mountainside Hospital, Montclair, N. J. Returning from a professional call she was struck by an automobile, sustaining injuries which resulted in her death the following day.

Doctor Mead was educated in the schools of Newark, and graduated in medicine from the Woman's Medical College of New York in 1883. She began the practice of medicine in Newark, associating herself with Dr. Emma Edwards, and devoting her time especially to the study and treatment of nervous diseases. She was physician in charge of the Home for Incurables at Newark for over twenty years and was instrumental in founding its hospital and training school for nurses. Her practice, which later became more generalized, was extensive. She was an indefatigable worker, thorough and painstaking in all she undertook, and extremely charitable, with a heart full of love and sympathy for all her patients without any distinction of race, class or creed. She continued in active practice up to the time of her death at the age of seventy-one. The secret of her good health and longevity lay perhaps in an unfailing habit of working in her garden from five to seven o'clock every morning, cultivating flowers which she carried to her numerous charity patients.

Doctor Mead was a member of the New York Neurological Society for many years.

Letters to the Editors.**PROTEST AGAINST SEA VIEW HOSPITAL
FOR DRUG ADDICTS.**

NEW YORK, August 8, 1919.

To the Editors:

On August 6th nearly all the daily papers contained lengthy articles on Health Commissioner Copeland's plan to evacuate Sea View Hospital for the Tuberculous on Staten Island, so as to make room for the many drug addicts whom Dr. Copeland wishes to treat and take care of. No one can possibly have more sympathy for the unfortunate drug addicts than the physician who has seen the sufferings of such persons when deprived of their accustomed dose of opium, morphine, cocaine, or allied products, and I have witnessed such sufferings. Hence I sincerely hope that Commissioner Copeland's praiseworthy efforts to help these unfortunates may receive from His Honor the Mayor and the Board of Estimate and Apportionment the desired financial support, either by the creation of a new institution, or (what would seem far more economical) by accepting the buildings of the Rockefeller Foundation, which in my judgment seem admirably adapted for that purpose.

As an antituberculosis worker in this city for well nigh a quarter of a century, having been intimately associated with the work of the Health Department of the City of New York under the

leadership of Hermann M. Biggs and his successors, I beg leave to enter as strong a protest as I possibly can against the utilization of Sea View Hospital on Staten Island for the treatment of drug addicts. Here is the finest building of its kind in the world, having been erected at a cost of \$5,000,000 for the exclusive use of patients suffering from tuberculosis, especially designed and equipped for this purpose. It is the only institution which not only takes care of patients afflicted with tuberculosis of the lungs in all stages of the disease, but also of orthopedic cases, that is to say, tuberculosis of the bones and joints, and of maternity cases, that is to say, tuberculous mothers for confinement. All other institutions are either limited to adults or children, to joint or lung diseases only, or again only to patients in the first, second, or last stages of the disease.

Sea View Hospital on Staten Island has established an enviable reputation because of its admirable work and excellent management. And now it is suggested to turn over this valuable plant to the use of drug addicts, the tuberculous patients to be turned out and distributed among other institutions. Many of the 700 patients now at Sea View are in a condition where removal would mean death, and all this for the sake of treating drug addicts for an indefinite and relatively short period of time. What would be the result? Our tuberculosis clinics are already hampered by the work for drug addicts; they will be at a loss where to send maternity or orthopedic cases. Sea View Hospital as a tuberculosis institution is visited by physicians from all over the United States and Europe who pronounce it the best of its kind in the world. Patients eagerly flock there in the hope of improvement and cure.

Sad as it is, there is a stigma connected with even the most innocent victim of the drug habit. Crime and drug addiction are always associated in the public mind, and I fear that with the peculiar psychology of the tuberculous patient, few would be willing to enter an institution which has or has had the stigma of a hospital for drug addicts.

I am entering this protest as an individual, but I know that all the coworkers with whom I have discussed this matter are of the same opinion, and I have no doubt that similar communications will reach His Honor the Mayor and Commissioner Copeland. I trust that the latter in his enthusiasm for the unfortunate drug addict will not allow his judgment to be clouded for he must realize that the tuberculosis problem is as important as the treatment of drug addicts.

I hope His Honor the Mayor, as well as Health Commissioner Copeland and Charity Commissioner Coler, will realize the truth of what has been said and preserve Sea View Hospital for the worthy consumptive poor for whom it was created. I hope the city will accept the Rockefeller Foundation gift, transfer these buildings to Warwick, thus save unnecessary expense, and preserve the good name of Sea View Hospital and the enviable reputation of the New York Health Department as the best and most efficient in the world in dealing with the tuberculosis problem. S. ADOLPHUS KNOPP, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Refraction of the Eye. A Manual for Students. By GUSTAVUS HARTRIDGE, F. R. C. S., Consulting Surgeon to the Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to the Westminster Hospital, etc. Illustrated. Sixteenth Edition. Philadelphia: P. Blakiston's Son & Co., 1919. Pp. xii-280.

When a textbook which has proved its excellence for thirty-five years presents its sixteenth edition there is little for the reviewer to do except to mention the fact and to note any changes that may happen to catch his eye. The book remains of about the same size, although the author tells us in the preface that every page has been carefully revised and various additions made. The largest addition noted is a brief mention of a few of the many new kinds of glass which are now being used in making spectacle lenses. As a whole the work maintains its character as one of the best small books published on the subject of refraction.

Chosen Peoples: The Hebraic Ideal versus the Teutonic. By ISRAEL ZANGWILL, Author of *The Principles of Nationalities*, etc. With a Foreword by the Right Honorable HERBERT SAMUEL, M. A., M. P., and an Afterword by Dr. ISRAEL ABRAHAM, M. A. Reader in Talmudic and Rabbinic Literature in the University of Cambridge. New York: The Macmillan Company, 1919. Pp. 116.

It is difficult to conceive that Zangwill, the man who wrote *The Melting Pot*, should adopt the racial viewpoint which he has done in this book. But the war has done strange things and many supposedly clear thinkers and writers have swerved so completely from the paths which they previously followed that they are found wandering aimlessly about in directions far removed from where they originally started. The book is evidently not meant to be a literary production so it would hardly be fair to compare it to the earlier writings of the author, such as *The Children of the Ghetto*.

Births, Marriages, and Deaths.

Married.

FETTERHOFF-BURTON.—In Washington, D. C., on Wednesday, August 13th, Dr. Ira Lincoln Fetterhoff and Miss M. Alice Burton.

Died.

ALLEN.—In Louisville, Ky., on Thursday, July 31st, Dr. William Muir Allen, aged ninety years.

BENNETT.—In Wakers, N. Y., on Wednesday, August 6th, Dr. Matthew L. Bennett, aged seventy-three years.

DICKSON.—In Gettysburg, Pa., on Thursday, August 14th, Dr. John R. Dickson, aged sixty-six years.

GRAVES.—In Concord, N. H., on Tuesday, August 5th, Dr. Eli Edwin Graves, aged seventy-two years.

KNOLL.—In Buffalo, N. Y., on Monday, August 11th, Dr. Louis P. Knoll, aged forty-two years.

KRUMME.—In Indianapolis, Ind., on Tuesday, August 5th, Dr. Gustave Krumme, aged sixty years.

PETTIT.—In Buffalo, N. Y., on Friday, August 1st, Dr. John A. Pettit, aged seventy-seven years.

SAMPELL.—In Ashland, O., on Wednesday, July 23rd, Dr. William H. Sampsell, aged sixty-six years.

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WHOLE No. 2126.

Original Communications

REMOVAL OF FOREIGN BODIES FROM THE BLADDER BY THE NATURAL ROUTE.

By GEORGES LUYIS, M. D.,
Paris, France.

(Translated by Gregory Stragell, M. D.)

The danger of allowing foreign bodies to remain in the bladder is not to be ignored. They always become encrusted with calcareous salts and are constantly the origin of vesical calculi.

A curious collection of varied and unexpected objects may often be found in the bladder. While we can easily explain the presence of a fragment of sound or bougie which may have been introduced during a therapeutic manoeuvre, we are surprised at sometimes discovering hairpins, beans, peas, pencils, penholders, sticks of sealing wax, needles, and even pipe-stems. It is useless to insist upon a surgical motive for the introduction of these objects. During hostilities many projectiles of war were found to have penetrated the bladder, swelling the already long list of foreign bodies which have been discovered in the bladder.

However it may be, the foreign body having penetrated the bladder, what should be done to extract it? First of all we must make sure of the presence of the foreign body in the bladder, either by the use of an ordinary or a metallic explorer, or, better yet, with a direct vision cystoscope.

The removal of the foreign body, however, is more difficult. When it is small, the ingenious extractor of M. Collin may be used or more often a lithotomy forceps. While it is possible to remove most of the small bodies with this instrument, particularly if they are hard, it is much more difficult to grasp a soft body in the jaws of the lithotomy forceps. In the case of an irregular bladder with ridges in its wall it is often difficult to distinguish between the wall of the bladder and the foreign body. When the foreign body is larger, its removal is even more difficult. The position which long and rigid foreign bodies almost constantly assume in the vesical reservoir corresponds, for those not exceeding seven or eight centimetres in length, to the transverse diameter of the bladder, the only one which does not vary with the fullness or emptiness of the bladder. A direct grasp of these foreign bodies is unsuccessful in bringing them out. They present themselves transversely, and in order to

make them come out by the natural aperture it is necessary to change their position from transverse to anteroposterior, so that they may be made to follow the same pathway by which they entered, but in the opposite direction.

Working in the "dark" is not adequate to achieve this, and though it is sometimes possible to remove foreign bodies with an ordinary *crochet*, introduced into the ureter, only by direct vision can the foreign body be grasped rapidly, surely, and effectually.

Up to this point only simple means have been tried, but another method remains—that is, to open the bladder by a hypogastric incision. It is certain that, although not dangerous in the hands of an experienced operator, the remedy is in this instance disproportionate to the severity of the case.

It appears at the present time that the direct vision cystoscope should become a valuable adjunct for the removal of foreign bodies from the bladder. This method permits the operator to see the foreign body clearly, take note of its exact position, grasp it effectively under direct visual control, and remove it rapidly.

CASE I.—Referred by Doctor Bosquette, of Montbéliard. A woman, aged twenty-six years, had inadvertently permitted a celluloid hairpin to enter her bladder. The patient told me of her "accident" which had occurred nine days previously. The hairpin had been introduced head foremost with the convex portion in the ureter, had passed through the sphincter, and was lying lengthwise in the bladder. The patient since then had experienced pain on urination and had complained of difficulty and frequency of micturition. There was no hematuria but the urine was distinctly cloudy. I easily introduced my direct vision cystoscope into the bladder and with the aid of illumination I saw the hairpin which, as always, occupied the classical transverse position in the bladder.

In order to change the position of the hairpin from the transverse to the anteroposterior position and bring the curved portion foremost, I first tilted the instrument to the right, then introduced a pair of forceps into the tube of the cystoscope and grasped the curved portion firmly in the centre, swinging the hairpin around and bringing the convex portion near the internal orifice of the ureter. It was then a simple matter to withdraw the instrument, followed by the hairpin which came easily and without causing any pain to the patient. In coming out of the bladder the hairpin followed the

same route as in entering but in the opposite direction. The time required for the extraction, from the introduction of the cystoscope to the removal of the hairpin, did not exceed five minutes. The hairpin, examined after its extraction, proved to be an ordinary fork-shaped celluloid hairpin seven and

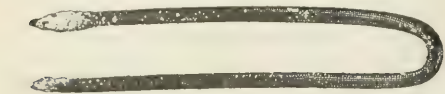


FIG. 1.—Celluloid hairpin, which remained nine days in a bladder and was removed by the use of a direct vision cystoscope. The points of the pin are already encrusted with calcareous salts.

one-half centimetres long. It already showed well marked calcareous incrustations, principally at the points. The patient, happy at being relieved without undergoing a more serious surgical operation, was able to take the train for her home that evening. For the extraction of smaller bodies, like the tip of a sound, for example, this method is also extremely practical and expeditious.

CASE II.—Woman, aged forty-seven years, referred by Doctor Auvrey, had undergone a vaginal hysterectomy in the service of Professor Reclus at the Hôpital de la Charité, and after this operation a Pezzer sound was placed so as to remain in the bladder. When this sound was being introduced into the bladder, the tip broke off and fell into the bladder, and it could not be recovered by any of the methods tried. By the use of my direct vision cystoscope I was immediately able to locate and remove the tip of the sound without any difficulty.

It is easy to understand the extreme facility with which foreign bodies are located when seen directly, grasped between the jaws of a forceps and removed. Here, as everywhere, the principle of all rational surgery is to see the lesion directly in order to treat it.

Another example of special interest is the following case which I observed in the service of Professor Pozzi at the Hôpital Broca:

CASE III.—A woman had been operated upon in another hospital for a vesicovaginal fistula. During the operation it had been necessary to use a silk ligature, and afterward the patient presented urinary disturbances. The first time I used the direct vision cystoscope on this woman I discovered a small white mobile calculus in the bladder, and also a silk thread on the side of the bladder as shown in Fig. 5. It is interesting to note that here, as in almost all similar observations, the silk threads

evidently the result of the piece of silk which had remained in the bladder. The calculus was eliminated some time afterward during natural micturition. The silk thread was seized at the knot with a foreign body forceps and after slight traction was easily extracted with the knot intact.

Many interesting cases of a similar nature have been noted by various authors. The principal ones are the following:

Professor Boari of Ancona used my direct vision cystoscope successfully in a particularly important case. During an abdominal hysterectomy for the removal of a fibroma, the left ureter was injured. He placed a No. 9 urethral sound in the ureter so that the tip penetrated the bladder, and then he made a continuous circular suture in the ureter. Twelve days later, the condition of the patient being normal, Professor Boari easily removed the urethral sound through the natural passage by using the direct vision cystoscope (1).

Doctor Gauthier, of Lyons, with the aid of my direct vision cystoscope removed a broken sound from the bladder in a man under local anesthesia. The following is the interesting case report (2):

CASE IV.—X, aged forty years, entered the Hôpital de Sainte-Foy-lès-Lyon, in the service of Doctor Gallois, February 20, 1909. The patient was suffering from a syphilitic myelitis which for the last month had caused an almost complete paraplegia and an absolute retention of urine. A Nélaton sound was passed. This sound broke in the canal the day it was introduced; the portion remaining outside was kept. It was the tip of a No. 16 red rubber sound measuring sixteen centimetres. A similar sound was measured and found to be thirty-two centimetres in length. Sixteen centimetres of the broken sound therefore remained in the bladder of the patient. The end of the sound which remained was hard, cracked, and had lost its flexibility. Time had "cooked" it. It was easily broken into two pieces. The unexpected accident was easily explainable by this fragility. The following day a Collin sound was introduced and an effort made at extraction, but the sound broke and only two fragments with a total length of two centimetres could be removed. The apparatus used had not accomplished its purpose.

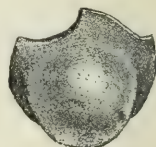


FIG. 3.—Piece of a Pezzer sound (twice natural size), broken in the bladder, removed with the direct vision cystoscope of Luys.

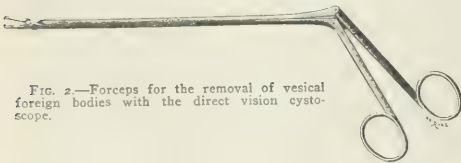


FIG. 2.—Forceps for the removal of vesical foreign bodies with the direct vision cystoscope.

which bind together the vesicovaginal wall and which have been knotted well on the side of the vagina, frequently become twisted, the knot always appearing on the vesical side. This is what had occurred here. The small white vesical calculus was

My friend Gallois then asked me to examine the patient. This examination took place February 28th. I found cystitis present with cloudy urine and a heavy precipitate, a common occurrence in the case of vesical foreign bodies. After prolonged lavage of the bladder, I made a second tentative extraction, this time with a flat-jawed lithotomy forceps. Anesthesia was unnecessary, for the myelitis had produced sufficient analgesia of the urethra and bladder. I was not more fortunate than Doctor Gallois, for I removed only three centimetres of non-incrusted sound in three pieces. I did not persist for there was danger of traumatizing an already infected bladder. Moreover, it was extremely diffi-

cult to catch hold of the foreign body, for the sensation when the body was grasped was akin to that felt in seizing a fold of mucous membrane. I discontinued the manipulations for a few days, allowing the bladder to rest. Lavages of nitrate of silver were given twice a day.

On April 1st cystoscopy with a prismatic instrument revealed the sound incrustated with calcareous salts; this gave it a white appearance and increased its visibility. One extremity was near the summit to the right, the other to the left of the neck of the bladder. This oblique orientation in the vertical direction gave the foreign body, according to the law of accommodation of Guyon and Henriet, a superior length of nine centimetres.

What should be done? The attempts at removal made with the usual instruments had given an incomplete result because of the friability of the sound. It was not encouraging to try again, especially as the incrustation had increased the size of the object and it was rendered more offensive by

time that I had occasion to perform this operation on a man. It was also, as far as I know, the first time such surgical intervention had been attempted in Lyons. The different stages of the operation were as follows:

Thorough lavage of the bladder with potassium permanganate; removal of all fluid; anesthesia of the urethra with cocaine (the patient had improved with the use of mercury and had recovered his uretrovesical sensibility; introduction of Béniqué's, sounds Nos. 50 to 60, injured the meatus causing it to bleed a little. This was followed by the introduction of a cystoscope with a movable arm, which was greatly facilitated by depressing the preputial tissue, causing the relaxation of the suspensory ligament of the penis (method of Guyon); elevation and ablation of the arm, replacement by electric light, and the aspiration of urine by the water drip. The patient was placed in the Trendelenburg position and an endovesical examination made.

The sound appeared heavily incrustated with calcareous salts, resembling the stem of a clay pipe. A fragment of about ten centimetres remained. It was shown to be in the oblique position in a vertical direction, as had already been revealed by the prismatic cystoscope. To break up the sound it was cut into small fragments, beginning at the inferior extremity, and removed easily through the endoscopic tube. The vesical extremity of the sound was easily liberated and passed through the tube. It proved to be six centimetres long and including the incrustations the diameter was equal to No. 22 Charrière. An examination of the bladder led to the discovery of two small fragments. The bladder mucosa was highly inflamed, small ulcerations and dark areas of infiltration were present in places, and a fetid odor was given off through the endoscopic tube.

the presence of urethral mucus. The idea which naturally came was to remove the sound by an incision. This should be done preferably by the perineal route, that being the one of choice in order that the extremely infected bladder could be better drained. But we were dealing with a sadly depleted patient, suffering from a subacute myelitis, in whom the iodine injections caused a constant diarrhea. In such a case it is permissible to hesitate before administering anesthesia preparatory to a bloody operation. So it was decided again to attempt removal by way of the urethra but with the modern appliance, the direct vision cystoscope of Luys. If it was successful we would be well repaid; if it failed, an operation would be performed immediately.

On March 8th, having procured the necessary equipment, I proceeded to utilize it. It was the first



FIG. 3.—Vesical mucus affected with bulbous cystitis, accompanying a foreign body in the bladder. (This cystitis spread over two thirds of the bladder.) (Le Fur.)

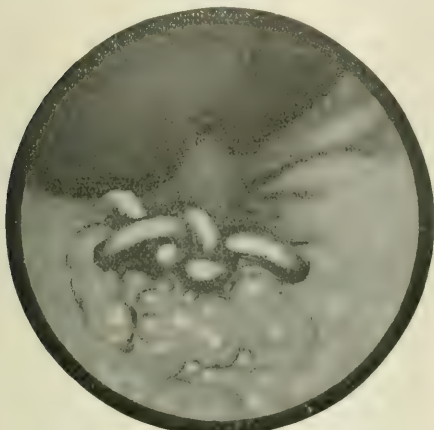


FIG. 4.—Silk thread seen in the bladder. This silk thread had been used in the cure of a vesicovaginal fistula which had followed childbirth. It is surprising to note that the knot of the silk thread is found on the vesical side and that it did not remain on the vaginal side where it had been tied.



FIG. 6.—Three silk threads the ends of which projected into the vesical cavity. (Le Fur.)

The patient was replaced in the horizontal position and the bladder thoroughly washed out with a potassium permanganate solution. He had borne

the operation well and with the local application of cocaine did not suffer greatly. The results were good.

On March 15th, eight days after the operation, the urine was much less cloudy and there was no longer a sediment. There was no elevation of temperature, and the tongue was moist. The reconstructed sound was complete. If to the eighteen centimetres outside of the bladder are added the five centimetres removed by the first attempt, the four centimetres of small pieces, and the six centimetres of the fragment removed by the cystoscope, the total of thirty-one centimetres is very close to the amount of thirty-two centimetres measured by the control sound.

Another case is the following, as reported by Doctor Ferron (3):

CASE V.—Working girl, aged sixteen, who had been admitted to the service of Professor Pousson with symptoms of acute cystitis. The patient attributed her symptoms to overwork in the factory, but upon further questioning finally admitted that some time previously she had permitted a wire hair-pin to enter her bladder. Ferron made an examination

with the direct vision cystoscope and discovered the object in question. In this case the prismatic cystoscope was impossible because of the existing cystitis.

Another interesting case is the following, presented by Doctor Le Fur (4):

CASE VI.—The patient had been operated upon by a hospital surgeon and a subtotal abdominal hysterectomy had been performed for a fibroma of the uterus. After this operation the patient continued to suffer constant abdominal pain, and three months afterward the surgeon found an inflammatory condition of the vaginal cul de sac, for which he prescribed hot vaginal douches. The pain persisted in spite of these, and the diagnosis then made was of an abscess of the broad ligament. A vaginal incision was made in February, 1909, and in August, 1909, another abdominal incision was made by the hospital surgeon. In the meantime the patient had begun to suffer from pain in the bladder, in April, 1909, and the pain increased in spite of the vaginal injections and the internal treatment.

Doctor Le Fur saw the patient for the first time at the end of the year 1909. The urine was extremely flocculent, leaving a heavy sediment on standing. Cystoscopy revealed a bladder affected with acute cystitis which might have been caused by a cystic neoplasm. Under the action of local treatment the cystitis improved and permitted another cystoscopic examination. This revealed a mass of fibres which appeared to be of silk, situated on the

posterior wall of the bladder. There were at least four or five of these in a tangled bundle. Others were covered with a veritable veil of white mucus; the ends of some of the fibres could be seen, others were concealed in the knot of silk. Direct vision

cystoscopy with a Luys cystoscope enabled Doctor Le Fur to find and remove the mass of silk which was a thread thirty centimetres long, saving the patient from a hypogastric operation and considerably improving her condition.

This interesting case of the removal of a silk

thread of this length, drawings of which are given herewith, by the use of a direct vision cystoscope shows the advantages to be derived from perfected instrumental technic in cystoscopy.

Other cases in which direct vision cystoscopy was used are those of phosphatic calculi in the bladder. These calculi are found in the bladder with relative frequency and occur principally in women. At times they form around a foreign body which has accidentally penetrated the bladder. Sometimes the foreign body may have been introduced during a surgical operation, and at other times the foreign bodies are introduced through carelessness. After



FIG. 7.—Three other silk threads with knot projecting into the bladder (enlarged by cystoscopy). (Le Fur.)

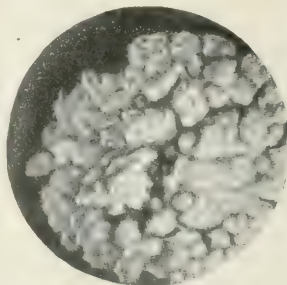


FIG. 8.—View of a phosphatic calculus seen with the direct vision cystoscope of Luys.

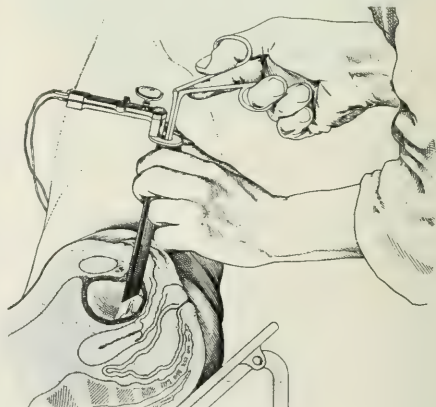


FIG. 9.—Removal of phosphatic calculi by the natural route, by means of the direct vision cystoscope of Luys.

even a short time they become incrustated with calcareous salts and after a certain interval the body is completely covered and hidden.

The best treatment for phosphatic calculi of the bladder is their removal under visual control with the aid of the direct vision cystoscope. This treat-

ment is radical for it permits of complete removal; it is simple, for it does not require general anesthesia, and permits the patient to continue his occupation even on the day of the operation; finally, it is absolutely free from danger.

My direct vision cystoscope is introduced into the bladder and the phosphatic deposits reveal themselves as white calculi of various forms: round, oval, pointed, in the shape of stalactites. A pair of forceps (Fig. 3) is introduced through the systoscopic tube and the fragments are grasped and lifted outside the tube. The postoperative procedures are extremely simple, consisting of copious irrigations of the bladder with a warm boric acid solution, on account of the small hemorrhages which may occur. It is not necessary to install a sound. The patient goes to his home and drinks a quantity of warm water with a little urotropin, and no other treatment will be required. In addition it may sometimes be useful to make a cystoscopic verification six or ten days after the operation.

I frequently have occasion to apply this mode of treatment. The cases are all similar in the simplicity of the operation and the satisfactory results obtained. During hostilities the direct vision cystoscope was extremely useful for the extraction by the natural route of metallic foreign bodies which had penetrated the bladder.

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2. GAUTHIER: *Lyon médical*, April 11, 1909.
3. FERRON: De la cystoscopie à vision directe in thèse de Paul Jardon, 1912, p. 157.
4. LE FUR: 'Extirpation d'une soie de Om. 30 par la cystoscopie à vision directe. Communication faite à la Société des Chirurgiens de Paris, June 30, 1910, p. 618.

THE POLLENS IN HAY FEVER.

By WILLIAM SCHEPPEGRELL, A. M., M. D.,
New Orleans,

President, American Hay Fever Prevention Association; Ex-President, American Academy of Ophthalmology and Otolaryngology; Chief, Hay Fever Clinic, Charity Hospital.

Some years ago, while explaining to a mountaineer in North Carolina the rotation of the seasons due to the motion of the earth. I was somewhat startled by the query, "How do you know that the earth moves?"

Those of us engaged in the research work of hay fever, have passed through the successive stages of the investigations establishing the relationship of pollen to hay fever. These facts having been substantiated as definitely as the relation of the plasmodium to malaria, the comma bacillus to cholera or the tubercle bacillus to tuberculosis, we have given our attention to other matters, such as the proteolytic action of the cells and immunizing methods, overlooking the fact that the rôle of the pollens is still *terra incognita* to many who are not familiar with these investigations. That the causative relation of pollens to hay fever is not yet well understood, even by the medical profession, is demonstrated by statements made in our most prominent medical journals, in which hay fever is

called a mysterious disease of unknown origin, and the influence of the pollens doubtful.

Were it only a question of treatment, such statements would have little effect. In applying for immunizing treatment at the hay fever clinic of

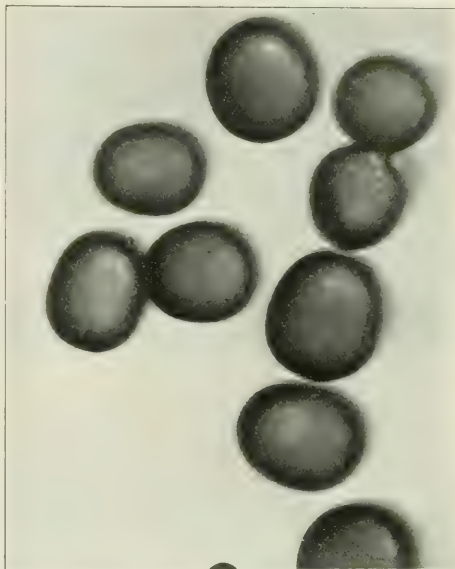


FIG. 1.—Pollen of Johnson grass, *Holcus halepensis*. X 500

the Charity Hospital, the patients are little concerned regarding the influence of the pollens, as long as they are benefited by the treatment (1). The real harm is in the effects of such statements in the preventive methods against hay fever. The entire campaign against this disease in all parts of the country, and the enactment and enforcement of grass weeds laws for its prevention, is based on the etiological rôle of the pollens in hay fever. To dispute or disparage this is to discourage such efforts and to reduce public cooperation, without which such measures cannot be successfully enforced (2). It is therefore a matter of importance, at this time, to review the facts which have definitely established the relation of pollens to hay fever.

The term hay fever has been considered a misnomer, as it is not due to the effects of hay as formerly supposed. On this account, the word pollinosis is sometimes used. The words hay fever, however, represent a combination of symptoms well known to the public, and the fall hay fever develops about the time of the hay making season. No one has suggested the changing of the name of malarial fever, because the bad air (Italian *mal*, bad, *aria*, air) is no longer considered responsible. For these reasons, the term hay fever has been retained in our reports.

POTANICAL PROOFS.

The simplest methods of demonstrating the relation of pollen to hay fever is by watching the rag-

weeds, the principal cause of fall hay fever in the Northeastern and Southern States. As soon as these weeds reach the stage of pollination, the first active wind distributes the pollen into the air, and fall hay fever develops at once in susceptible sub-

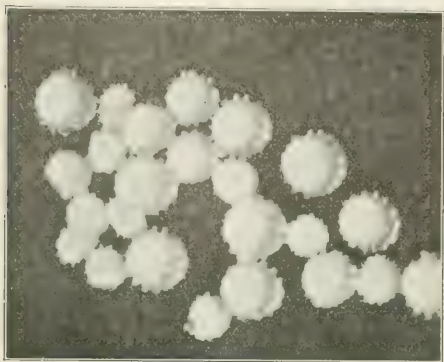


FIG. 2.—Pollen of common and giant ragweed, *Ambrosia elatior* and *Ambrosia trifida*, X 500 (reflected light).

jects within the potential area of these plants. When the pollination of the ragweed is over, either by maturity or the effects of a frost, fall hay fever at once disappears over the affected territory. Before the establishment of more scientific methods, the field observations on the ragweeds formed the basis of reports, in the laboratory of the American Hay Fever Prevention Association, of the beginning and ending of the fall hay fever season.

The beginning of the spring-summer hay fever season may also be observed in this manner, but the relation is not quite so apparent. The principal cause of this form of hay fever is the pollen of the grasses. These vary from thirty to eighty microns in diameter (Fig. 1) as compared with fifteen microns in the common ragweed (Fig. 2), and they have therefore a much more limited potential radius. On account of the buoyancy of the ragweed pollen, it usually is distributed uniformly over a large area, and the development of the fall hay fever season is fairly uniform. With the grass pollen, however, on account of its lesser buoyancy, the infestation varies greatly in different localities, resulting in considerable variations in the time of the beginning and ending of the resulting hay fever.

That the golden rod is not responsible for hay fever, is demonstrated by the fact that many varieties bloom before the opening of the fall hay fever season and the Canadian golden rod, *Solidago canadensis*, is the most conspicuous flower for three or four weeks after the hay fever season is over (3).

PERSONAL DEMONSTRATION.

For many years, our research work in hay fever was conducted at Laurelia, the author's summer home near Asheville, N. C. When it was decided to open the campaign against hay fever in New Orleans, we found a community skeptical as to the relation of pollen to hay fever, which was con-

sidered, as in the case of some of our contemporary medical confrères, a mysterious disease of unknown origin. It was during the middle of August in 1916, when the giant ragweed, *Ambrosia trifida* (Fig. 3), which in New Orleans replaces the common ragweed, *Ambrosia elatior* (Fig. 4), the principal cause of hay fever in other sections, had just commenced to pollinate. A party of investigators was arranged, including a college professor and a public accountant, both of whom were fall hay fever subjects. These were taken in an auto to the suburbs, and escorted to a field with a fine crop of the giant ragweeds in the pollinating stage. Within five minutes, both of the hay fever subjects had developed severe attacks of hay fever, which in one of the cases lasted until the following morning. This method of demonstration, while rather radical, has been utilized in numerous instances, and has been a convincing factor in educating the public in the causative relation of the pollens to hay fever.

INHALATION PROOFS.

The most conclusive proof of the relation of pollens to hay fever, is in the inhalation test. If



FIG. 3.—Giant ragweed, *Ambrosia trifida*.

a fall hay fever subject (Eastern and Southern States) is allowed to inhale the ragweed pollens, an attack of hay fever is invariably produced, the intensity and duration of the attack depending upon the number of pollens inhaled. Not only may

this reaction be produced during the normal hay fever season, but at any time of the year. This is therefore a most convincing evidence of the etiological relation of the pollens to hay fever. All the most common pollens are kept in the laboratory of

the pollens of the wormwoods. The ignorance of this distinction is one of the causes of calling hay fever a mysterious disease.

CHARACTERISTICS OF HAY FEVER POLLENS.

Before explaining the more scientific methods of determining the relation of pollens to hay fever, it is well to explain what kinds of pollens may cause hay fever. The only plants that need be considered in connection with hay fever are those that are wind pollinated, which means that fertilization is effected by the pollen being distributed by the wind, and the atmosphere infested with the pollens in this way. In insect pollinated plants, the pollen is not carried into the air, and it can cause hay fever, if at all, only by direct application to the nostrils. The characteristics of wind pollinated plants are that their flowers are inconspicuous, without bright color or scent, and the pollen is formed in great quantities. This is noticeably the case with the ragweed and grasses. All wind pollens, however, are not responsible for hay fever, as for instance, those of the pines, whose pollen (Fig. 6) is formed in enormous quantities.

SCIENTIFIC METHODS.

For the past four years, the physical reports of our laboratory have been based on the records of our atmospheric pollen plates. These are glass slides, coated with a thin film of glycerine, which



FIG. 4.—Common ragweed, *Ambrosia elatior*.

the American Hay Fever Prevention Association, and this test is used as a check on other methods of diagnosis.

OPHTHALMIC AND DERMAL TESTS.

The effects of the pollens on susceptible subjects may not only be demonstrated by inhaling the pollen, but also by applying it to the conjunctiva, or to the scarified skin. For practical purposes, however, such as in testing the sensitization of the patient or for developing active immunization, the extracts of the pollens are used.

VARIOUS FORMS OF HAY FEVER REACTIONS.

There are various forms of hay fever due to reactions to different pollens. Many persons, for instance, who are sensitive to the grass pollens and have hay fever in spring and summer, are not affected by the ragweed, and therefore do not suffer from fall hay fever, and *vice versa*. Persons in California (4), for instance, who suffer from the wormwoods, *Artemisia*s (Fig. 5), may not be sensitive to the ragweed, and therefore are relieved in the East, while in persons East, who are not sensitive to the ragweed, hay fever may develop from



FIG. 5.—Wormwood, *Artemisia frigida*.

are exposed in the open air. A definite proportion of the atmospheric pollens are deposited on these plates. These pollens are stained, and traversed before the field of the microscope, and counted on a basis of the number to the square centimetre. By

means of a table, based on the diameter of the pollens, their number to the square yard of air can be determined (5). These plates are exposed at various stations, and at all seasons. The approach of the spring-summer and fall hay fever is determined as definitely as by a field inspection or the clinical reports. When the ragweed pollens, for instance, begin to be deposited (Fig. 7) the fall hay fever season is at hand, and as soon as the number reaches a definite number, numerous cases are reported. These records and the clinical reports of our hay fever clinic synchronize at all seasons.

CAUSES OF VARIATIONS OF INTENSITY.

Not only do the records of the atmospheric pollen plates show the presence of atmospheric pollens, but also the varying waves of the hay fever attacks. Table I (6), which shows the influence of wind and rain on the distribution of the pollens, also indicates the variations of the hay fever attacks:

TABLE I.

HAY FEVER POLLENS IN RELATION TO WIND, TEMPERATURE, AND RAIN.

	Grass pollens.	Artemisia pollens.	Other pollens.	Number of pollens to the square yard of air.	Maximum wind.	Mean wind.	Direction.	Mean temperature.	Rain.
1016.							N. W.		
9 22 . . .	4	5	2	29	10	3.8	S. E.	78	0.0
9 25 . . .		7		22	14	5.4	S. E.	80	0.0
9 26 . . .	1	0		31	16	6.0	S. E.	80	0.01
9 28 . . .		15		48	15	4.3	N. E.	82	0.02
9/29 . . .		114		305	22	13.4	N. E.	68	0.0
10/1 . . .		30		118	16	7.5	S. E.	68	0.0
10/2 . . .		10		61	14	7.4	S. E.	73	0.0
10 3 . . .		6		10	12	5.9	E.	72	0.0
10 4 . . .		7		22	12	6.2	N. E.	74	0.0
10 5 . . .		11		35	21	10.7	N. E.	73	0.01
10 6 . . .	2	7	2	29	17	7.2	N. E.	78	0.01
10 7 . . .		7		20	17	7.4	N. E.	76	0.02
10 8 . . .				6	12	4.3	S. E.	80	1.85
10/9		8		26	7	2.9	N. W.	80	0.0
10 10 . . .		12		42	18	9.6	N. E.	74	0.0
10 11 . . .				35	18	7.7	N. E.	73	0.0
10 12 . . .		3	1	13	7	4.3	S. E.	77	0.0
10 13 . . .		9	2	37	10	5.0	S. E.	78	0.0
10 17 . . .				25	14	0	E.	72	2.58
10 18 . . .		4		16	24	11.5	N. E.	74	0.10
10 19 . . .	23	5	9	90	15	7.9	N. E.	70	0.0
10 20 . . .	5	5	32	23	13.4		N. W.	62	0.0
10 21 . . .	12	2	15	15	8.5		N. W.	58	0.0
10 24 . . .		2	6	8	4.2		E.	67	0.0
10 25 . . .			6	15	7.1		N. W.	70	0.0
10 26 . . .	8	2	32	17	10.1		N. E.	72	0.0
10/27	1	3	13	15	8.5		N. E.	66	0.0
10/28 . . .	1	8	29	12	6.5		N. E.	67	0.0
10/29		1	3	9	4.5		N. W.	70	0.0
10 31 . . .		2	6	8	3.7		N. W.	72	0.0

EFFECTS OF WIND AND RAIN.

It is well known that hay fever patients improve during a rain of several days' duration, and that their symptoms become more marked during the prevalence of high winds. The former is due to the fact that pollens floating in the atmosphere are precipitated by the rain and that no more pollen rises until it ceases. This has been clearly shown by our pollenometric records. During high winds, on the other hand, not only are more pollen grains shaken from the plants, but the liberated grains are carried to proportionately greater distances. These records also demonstrate that there is a definite relation between the wind velocities and the amount of pollens in the air, the clinical reports proving that there is a similar relation between the resulting pollen in the air and the symptoms of hay fever subjects.

Our clinical records show that the most severe symptoms of fall hay fever were on September 20th, 30th, 31st, and October 1st, which corresponds with the high wave of the recorded pollen count. After the nostrils have become irritated by a large number of pollen grains, they become sensitive to a smaller number than under ordinary conditions. Thus, each period of increased hay fever was followed by symptoms in excess of the record of the pollen counts. As will be noted, these counts are influenced not only by the wind velocity, but also by its direction, this being regulated by the locality of the nearest large weed areas. September 22d, there were eleven pollen grains to the square centimetre with a wind of ten miles from the northeast, while on September 25th

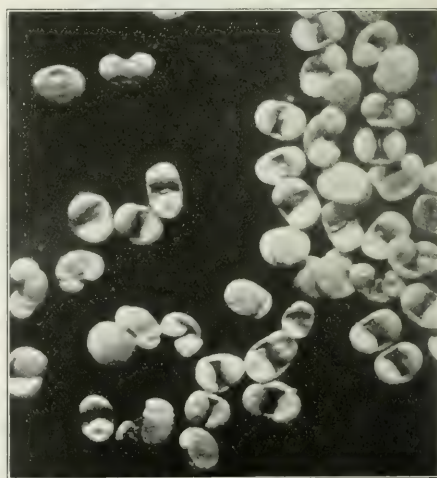


FIG. 6.—Pollen of pine, *Pinus coulteri*, X 125. (Reflected light.) The wings enable it to traverse great distances.

there were only seven with a wind of fourteen miles from the southeast.

Toward the latter part of October, the pollination of the ragweed was reaching its limit, which explains the irregular count after October 15th.

October 29th, the ragweed pollens were no longer recorded on our plates, and our clinical records show that the fall hay fever season has passed. The effect of rain on the pollen was also clearly indicated. October 17th, the rain of 2.58 inches caused

from the land, which in most places is infected with hay fever weeds, they have shown an abundance of pollen and, consequently, hay fever is common. This relation has been demonstrated in numerous instances and is easily confirmed.

CORN AND HAY FEVER.

Since the pollen of the grasses is the principal cause of summer hay fever, comment has been made that corn, which, botanically belongs to the grass family, is so rarely the cause of hay fever. We have demonstrated that the pollen of all the grasses, while differing in degree, have a similar hay fever reaction (8), and this also applies to the corn. Its pollen, however, is relatively very large, being eighty microns (Fig. 8) in diameter as compared with fifteen microns in the ragweed. As a result of this, the potential radius of the corn is limited. Under wind conditions (9) that would carry the ragweed pollens nearly a mile, the corn pollen would traverse only fifty-four feet. In fact, under ordinary conditions, the corn pollen may be seen falling almost perpendicularly, while the ragweed pollen floats off into the distance in such a manner that many farmers refer to it as smoking. The cause of the rarity of hay fever from corn is therefore apparent. It is well to remember, however, that planting corn in the back yard of patients subject to summer hay fever, may bring them within the potential area of the pollens and should therefore be avoided.

ATYPICAL FORMS.

In addition to the typical forms of hay fever, we have occasional cases due to other proteins, the most common being the dandruff of horses. These

the ragweed pollen to disappear from the plates during that day, and also the following (one to the square cm.) in spite of the fact that the wind had reached a velocity of twenty-four miles an hour and was from a northerly direction. Local showers have little effect, as shown on September 26th and 28th, and October 5th, 6th, and 7th.

EFFECTS OF OCCUPATIONS.

In one of the leading papers of the country, a satirical article appeared on the subject of hay fever pollens. It stated that it was remarkable that the "city youth, who remains in his office all day and never sees a ragweed," is the greatest sufferer, while the hayseed who lives among the weeds, is never affected. The article was quite amusing, but unfortunately was not based on facts. The ragweed pollen is very buoyant, and, under favorable wind conditions, will traverse several miles of territory, so that the proportion of this pollen in cities is usually quite high, and hay fever proportionately common. Regarding the immunity of the former from hay fever, the *questionnaire* of the United States Public Health Service in Louisiana in 1916, demonstrated that the highest rate in Louisiana was among the farmers, being thirty-eight per cent. of all cases (7).

HAY FEVER AND THE SEA COAST.

Considerable comment has been made on the apparently erratic development of hay fever on the sea coast. A patient will remain at one of these resorts for a week, and be entirely free of hay fever. During another visit, he will have attacks every day. The apparently irregularity of hay fever in these cases, forms an excellent confirmation of the relation of pollen to hay fever. Our atmospheric pollen plates have shown the self-evident fact, that when the wind is from the water, there are no pollens in the air, which explains the absence of hay fever. When, however, the wind is

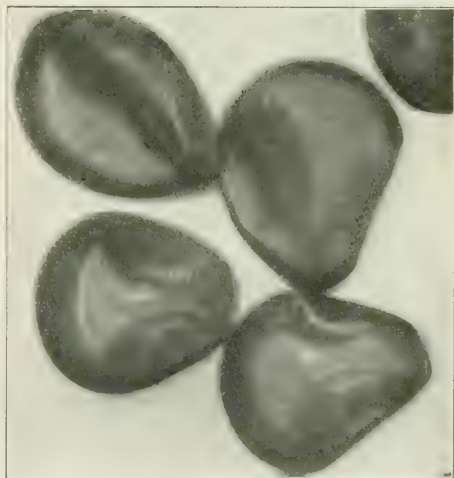


FIG. 8.—Pollen of corn N 500

form less than one per cent. of our total number of cases. These patients rarely require treatment, the advice usually being to avoid the specific exposure. In one of these cases, a private in the artillery, which brought him in contact with horses,

the attacks were accompanied with asthma which necessitated the patient's transfer to the infantry branch of the service.

CONCLUSION.

To those engaged in hay fever work, and who are daily noting the direct relation of the number and varieties of atmospheric pollen to the recurrences and varying intensities of hay fever attacks, the review of the facts on which the relation of pollens to hay fever has been established, may appear superfluous. The recrudescences, however, of literature indicating ignorance of these investigations is still sufficiently frequent to justify the enumerations of the essential facts. When these have become well recognized, the campaign for the control of hay fever weeds will receive a new impetus, with corresponding benefit to the large army of hay fever sufferers.

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844 AUDUBON BUILDING.

FAVUS IN AN ADULT.*

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Investigating the literature I find that there have been reported few cases of favus of the scalp with active manifestations in adults. The case I am about to report is of interest from the viewpoint of therapeutics, the application of strong antiparasitics in lotion or ointment form having had no effect in destroying the offending parasite. Another point of unusual interest is the fact that the patient is an American by birth. The statistics compiled by the American Dermatological Association show that favus is a rather rare disease, the proportion being 0.35 per cent., and furthermore the patients are for the most part foreign born. Stout reported a case in 1908 of generalized favus, involving the scalp, arms, legs, and nails in a native born American.

The case I am reporting is that of a soldier, twenty-eight years old, born in the State of Ore-

gon. As far back as he could remember he had had trouble with his scalp. At the age of fourteen the patient entered upon a seafaring life, in which he continued until the outbreak of the war. On questioning whether other members of his family had had the disease, the answer was negative. The patient had sought treatment in civil life for favus, but was discouraged over the inability of physicians to cure him. For the last four years he had had no treatment, having decided to allow the disease to take its natural course.

This condition passed unnoticed when he enlisted in the army, for he allowed the hair of the nonaffected part to grow luxuriantly, thus concealing the disease area fairly well. However, at one of the monthly physical inspections the regimental surgeon discovered the condition and the soldier was sent to the Walter Reed General Hospital, where he came under my observation. On examining the scalp one immediately noticed the abnormal length of the hair. Spreading the tufts of hair apart, the scalp showed confluent patches of thick, heaped up, crusted scales, grayish yellow in color, with typical scutella interspersed. There were small atrophic areas over the vertex resulting from the destructive action of the acorion *Schönleini*.

The diagnosis of favus was made clinically and confirmed by microscopic examination. Figure 1 shows the typical thickened mortarlike scales with numerous cup shaped depressions. A not infrequent occurrence is the absence of any musty straw, mousy, or any other abnormal odor, often stated as being characteristic of favus. In this case the patient presented no odor whatsoever. No other part



FIG. 1. Shows the mortarlike scales and cup shaped depressions.

of the general surface showed any lesions, but the patient stated that he had had several circinate lesions at various times on the back of the neck just below the hair line. These healed spontaneously and were in all probability favus lesions.

*Publication authorized by the Surgeon General, U. S. Army.

When the question of treatment came up, it caused me no little concern, as the patient was recalcitrant, refusing to submit to x ray treatment. We therefore had to temporize by employing various strong antiseptics without any effect. The pa-



FIG. 2.—Appearance of scalp two months after treatment. A few spots are still seen.

tient then gave his consent to the x ray treatment and I gave him one epilating dose, measured by a Holzkecht radiometer. Figure 2 shows the appearance of the scalp two months later, a few spots still being present. These areas subsequently cleared up completely, leaving a perfectly bald head. New hair appeared and the soldier was returned to duty.

SUMMARY.

The interesting features of this case are: 1. The presence of favus in a native born American. 2. The failure of the disease to be arrested spontaneously. 3. No apparent results from the use of antiseptic drugs. 4. A probable cure from the application of one erythema dose of x ray.

I WEST EIGHTY-FIFTH STREET.

HOW TO EXAMINE THE RECTUM AND INTERPRET THE FINDINGS.

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It is a deplorable fact that many general practitioners overlook details and only make a cursory examination of patients suffering from rectal disorders. The practitioner who wishes to retain the confidence of his patients must examine the rectum as carefully as he would any other part of the body, because the time is past when patients will be satisfied with a placebo. The authors of all modern text books on surgery have found it necessary to incorporate a chapter on diseases of the anus and rectum.

Before we can diagnose or intelligently treat dis-

turbances within the pelvis, we must not only inspect and palpate the exterior surfaces, but we must also explore its hollow cavities. A thorough examination of the rectum does not merely consider the coats of the last few inches of the alimentary tract, but the digital exploration determines the condition of all of the organs and structures within the true pelvis. The rectal examination confirms the vaginal findings in the female pelvis and in the male pelvis it is the only method of actually feeling the parts in question. The importance given today to toxemias, especially when due to intestinal stasis, requires an examination of the feces.

We cannot go into details here, but doubtless every physician has patients where the weight of what has been said will be appreciated, and I urge the reader never to forget, when exploring these parts, that all the pelvic organs are bound together by one grand nerve plexus, and nowhere else in the body are there so many nerve impulses. Frequently a robust man is invalidated by direct or reflex disturbances when very little pathological change can be found.

Rectal diseases are always progressive, and an early diagnosis may mean a slight operation with perhaps no absence from business, while later the condition may become worse and so confine the patient to his bed for weeks or months. Almost every patient who realizes that he has rectal trouble informs his physician that he is suffering from piles, and, sometimes the doctor accepts the patient's diagnosis without an examination.

The symptoms of rectal abnormalities sometimes draw the patient's attention at once to this particular organ, but in other instances because of the intimate nervous connection between the rectum and other pelvic and abdominal organs, the symptoms may be so obscure or the onset so insidious that reflex disturbance elsewhere is first complained of and the patient is treated for some other disease. While the symptoms may refer in general to this part of the body, they by no means indicate the specific disease. The odor of cancer or the pain of fissure are characteristic, but they do not in any way exclude the presence of other associated conditions.

THE GENERAL PHYSICAL EXAMINATION.

The examination of any patient is incomplete unless we go into the family and personal history. Often it is tedious and much time is wasted on irrelevant matter; yet, frequently it emphasizes idiosyncrasies. The preliminary interrogation of the patient should be systematic, so as to cover carefully and completely the whole case without repeating. It is a good plan to let the patient tell his own story, and then the physician bring out the patient's age, physical condition and nervous temperament, the duration of the disease and the progress of the symptoms since their appearance, together with whatever effect they have had on the general health. This often determines how much of the complaint is real and how much is imaginary.

The occupation or mode of life of the patient may not have been a factor in causing the disease; nevertheless it may be important in mapping out his future mode of living. Does he use enemas frequently or take his pipe and daily paper to the

water closet with him? If a female and married, how many children or miscarriages has she had and was there any rupture of the perineum? Is there any uterine or ovarian pain, any vaginal discharge,

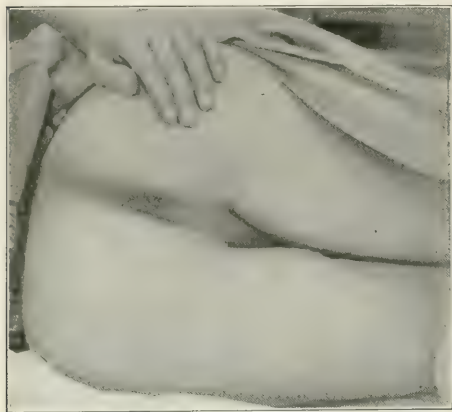


FIG. 1. Normal anus.

prolapse of the uterus or difficulty in urinating. Inquire as to the menstruation, whether regular, painful, scant or profuse. Severe cases of angulation of the intestines resulting in colitis and constipation may be the result of inflammation of other pelvic organs. In the male abscess of the prostate may cause pelvic abscess or an enlarged prostate may cause constipation. Certain digestive disturbances cause diarrhea or constipation, i. e., excess of fatty acids or lack of pancreatic juice in the stool due to hepatic insufficiency will cause diarrhea. Chronic appendicitis may produce obstinate constipation. I have also had several patients where obstipation and other gastric troubles were wholly due to chronic tonsillitis and were promptly relieved by removal of the diseased organs. It must also be remembered that even though the troublesome symptoms refer to the rectum cardiac insufficiency, digestive disturbances, cirrhosis of the liver, or arterial degeneration may contraindicate operative procedure. Any evidence of anemia, tuberculosis, or syphilis must be taken into consideration; and whether the patient has had gonorrhea or has a urethral stricture. Rectal tenesmus may occur when a stone is moving in the lower portion of the ureter and occasionally the stone may be palpated rectally.

Pain.—This is often the symptom which brings the patient to the physician and because of the abundant nerve supply to these parts many lesions cause agony. The patient's statement that he has pain in the rectum must be qualified. A feeling of fullness after the evacuation or a desire for further action may indicate proctitis, or a noninflammatory tumor such as a hemorrhoid or polypus. Pain coming on with defecation and lasting for some time afterward, especially if sharp and cutting, suggests ulceration of the anus. A throbbing pain indicates abscess. A dull aching pain increased by exercise or mental worry and shooting toward the prostate

means congestion about the anus and probably hemorrhoids, and the prostate may not be at fault. This same neuralgic pain may follow any pelvic operation when congestion occurs. Pain over the coccyx increased by pressure upon or movement of the coccyx suggests coccygodynia. Pain in the back may mean prolapse, fecal impaction or cancer. Painful points on either side of the sacrum at its junction with the lumbar vertebrae, especially if associated with a dragging and burning sensation in the left iliac region or lower abdomen, indicates intussusception of the sigmoid. A burning pain indicates ulceration or acrid stool or free bile in the stool. Pain shooting down the legs and in the lumbar region indicates cancer or ulceration of the rectum. Sharp cutting pain occurring during a constipated evacuation and followed by a swelling at the anus indicates a thrombotic hemorrhoid. Pain on standing or walking indicates fistula.

Discharges.—The functions of the colon, sigmoid and rectum are now to be inquired into. The character, amount, and consistency of the feces are important and also the color, whether grey, brown or black, and the regularity and frequency of the evacuations, whether constipated or diarrheal, or if there is straining at the stool. Discharges of blood, mucus, or pus are next considered and whether they are mixed with the feces or streak its surface. Blood occurs in the feces in a great many conditions and its character and color are important. Blood forcibly projected, red in color and occurring with the bowel movement indicates an ulcerated hemorrhoid. Blood dripping, bright in color, occurring with the bowel movement indicates a venous hemorrhoid or an ulcer. Blood occurring in small amount on the toilet paper after the bowel movement indicates an ulcer or a fistula. Blood dark in color and occurring mixed with the feces suggests a cancer high up. Blood with constipation especially if the symptoms are relieved after the hemorrhage indicates acute intussusception. Blood with pus, mucus and tenesmus indicates cancer, stricture and ulceration. Blood streaking the feces, with diarrhea and a frequent desire to defecate, indicates polypus. Free hemorrhage suggests ruptured varicose vein, injury, foreign body in the rectum or intussusception.

Protrusion at the anus.—This may be due to several conditions. It is therefore essential to know whether the tumor recedes of itself or must be replaced and whether the replacement is difficult or painful, and also does the extrusion occur only during defecation or is it continually exposed or can it be produced at will by straining? It is important to ascertain the character of the protrusion, whether smooth or nodular, hard or soft or covered with rugæ and whether it is tender or sensitive to the touch, and if there are any ulcers. The protrusion may be a hemorrhoid, the sentinel pile of a fissure, polypus, prolapse of the rectal wall, papilla, villous tumor, carcinoma or sarcoma.

An external hemorrhoid is small, bluish, and tender, arises suddenly and cannot be placed within the rectum. A venous hemorrhoid must exist a long time before it will prolapse. Therefore a large tumor of recent appearance cannot be a

venous hemorrhoid. A polypus usually comes down when the patient strains, and when replaced is not expelled until further straining. Prolapse of the rectal wall, either complete or partial, may or may not remain within the rectal cavity when replaced, but in prolapse there is always an associated straining pain and a feeling of fullness in the rectum.

It is convenient for those treating rectal diseases to have a water closet adjoining the examining room, so that patients may empty their bowels just before the examination. When this is not practicable, or only a few rectal cases are seen, a commode, which can be screened or easily pushed aside when not in use, will serve the purpose. If possible, a cathartic should be ordered the day before, and the rectum washed out with an enema just before proceeding to examine. This procedure is absolutely necessary when the upper part of the rectum is to be examined, as otherwise, when the speculum is introduced, the field may be obstructed with feces and a thorough inspection is impossible; also because the straining during defecation brings down hemorrhoids, polypi, or a prolapsed bowel and thus assists in the diagnosis. Still, even with these precautions, you occasionally encounter a case of fecal impaction is occasionally encountered where the rectum is lined with inspissated feces. Fecal stasis in the rectum or sigmoid may be the cause of backache or legache and is also a frequent cause of tubal and ovarian disease and a dragging ache in the perineum and prostate.

Occasionally I prefer to make an examination without this preparation so that I may find the rectum nearer to its customary condition, when any pus, blood, mucus, or hardened feces may be more readily found. Small protrusions or prolapses often retract within the anus when the patient walks a little; hence, it is sometimes necessary to examine the patient on the commode or just after arising, before he takes a step. All constricting bands, clothing, or corsets, must be removed or loosened, for they have a tendency to force the bowels into the pelvis. The bladder must also be empty. It is sometime necessary to administer an anesthetic to permit of a thorough examination of all parts and to completely relax the sphincter. Gentleness is important in making an examination of the rectum, as thus much pain may be avoided and spasm of the sphincter prevented. Very much also depends upon the skill of the examiner, because sometimes the ordeal may be very painful and more so if carelessly performed.

For convenience I have arranged all the items of the examination in abbreviated but comprehensive form on my record sheet, but of course each history naturally requires emphasis on individual matters. I want to remind the reader of the importance of keeping these records in even the simpler cases because an apparently minor case may become important at some future time.

RECORD SHEET.

THE LOCAL EXAMINATION.

The positions of the patient.—The Sims left or right, the knee chest or the exaggerated lithotomy

(the patient's hips being supported upon a cushion), each has its special advantages in particular instances. The ordinary dorsal may be satisfactory for external work at the anus, but you cannot examine or operate upon the rectum with the



FIG. 2.—Digital examination of anus.

patient in that position. The Sims position, with the thighs strongly flexed, the breast upon the table, and the left arm hanging over the edge, inverts the pelvis and allows the contents to fall upon the front wall of the abdomen; the lumen of the rectum tends to gap, and the mucous membrane falls away from the end of the speculum. The knee-chest position, however, is the only position that permits an examination of the higher portions of the rectum or sigmoid flexure.

Inspection.—I ordinarily use the left Sims position and note the presence or absence of the normal amount of adipose tissue and the shape of the anus, whether normal, protruded, or drawn in (funnel shaped, suggestive of low seated cancer). The color of the integument and the degree of pigmentation must be observed, a pinkish tint with long lanugo hairs suggesting tuberculosis. Evidences of abrasions, scratches, pediculi, or worms may be seen on the skin about the anus; also signs of inflammation or scars, or the external opening of a fistula. The sphincters are examined to determine whether they are relaxed or abnormally contracted. When a spasmodic condition of the sphincter exists the feces are expelled in a thin, ribbon like form. A prolapsed rectum may be the cause of prolonged vomiting or pertussis. An ulcer fissure or pruritis may excite rectal tenesmus and also produce scybalous stools. Protruding tumors, condylomata, hemorrhoids, polypi, or malignant growths may be seen. Very often a distinct fullness or bulging of the anus is seen where internal hemorrhoids are present, even though they do not protrude. Where epithelioma exists at or outside of the anus, a small piece may be clipped off for microscopic examination without causing any discomfort to the patient by applying a little local anesthetic. While the patient bears down, the anus being watched carefully, a fissure, hemorrhoid, or hypertrophied papilla may come into view, a polypus on a long pedicle may pop out, a pro-

lapsing rectal wall may slip out, or pin worms may be seen in the folds of the mucous membrane, and a diagnosis be easily made, or factors causing neurasthenia or anemia may be elicited. Sometimes the internal opening of a fistula is situated immediately within the external sphincter and may be seen by this procedure.

Palpation.—After carefully inspecting the anus and perineum, the field may be widened by gently pulling the anus open, a hand being placed on each buttock, the fingertips pointing toward the anus. If the patient bears down at the same time, a considerable portion of the mucous membrane will be everted, the extent depending upon the relaxation of the sphincter. During this maneuver any tender or indurated areas may be mapped out, or an abscess outlined, fistulous tracts followed up without the use of a probe, a fissure located, a tumor of the lower rectum felt, or a hypersensitive sphincter determined which precludes a digital or instrumental examination without an anesthetic. In women who have relaxed sphincters a portion of the interior of the rectum may be everted by introducing the index finger into the vagina and pressing the rectal walls through the anus.

Digital examination of the interior of the rectum follows inspection, and is the most important of all procedures. The practitioner who is familiar with the digital examination of these parts can diagnose better with his finger than by any other way. Fully eighty per cent. of all rectal disorders may be recognized with the finger. Digital exploration not only confirms the opinion regarding the local conditions found by inspection but also confirms other conditions to which the attention may have been directed. The finger nail should be well trimmed and the finger annointed with olive oil; this not being as easily rubbed off by the sphincter as is soap or vaseline. Whatever lubricant is used must be kept in collapsible tubes, as this is the only way of having a clean sterile lubricant at all times. The cost is little and the advantages great over the old fashioned jar of vaseline into which fingers and instruments were repeatedly dipped, thus carrying infection from one patient to another. For esthetic reasons, the rubber tissue finger cot may be worn, but do not be afraid of soiling your hands. The rectum can be washed out. The rubber glove gives complete protection but dulls the tactile sense.

The finger prepared is gently insinuated through the anus, with a rotary or boring movement, the patient being instructed to bear down at the same time, and the rectum is systematically palpated as high as the finger will reach. The introduction of the finger will be made much easier if the normal direction of the rectum is remembered and the finger is directed first up and forward toward the neck of the bladder, until the sphincter is passed and then backward toward the sacrum. The sphincter is very sensitive, and any undue haste or roughness may induce spasm of the muscle, which will make the examination very painful and unsatisfactory. The site of the trouble can often be determined by the earlier part of the examination and by crowding the finger away from this portion of the anus or rectum the patient may be spared much suffering.

The iliac fossæ should be firmly explored, to determine whether there is any tenderness or tumor. The finger should be introduced its full length, and, by passing the other fingers of the hand back into the intergluteal space instead of doubling them into the palm, an increased reach is obtained; also, if the patient bears down or strains during the examination, one or two inches more of the rectum can be examined. The condition of the sphincter should be noted: whether it is relaxed, suggesting a debilitated system, cancer or large internal hemorrhoids, which latter weaken the muscle by frequently protruding; or contracted, signifying acute disease in the anal canal, anal fissure or a nervous patient; or whether hypertrophied, denoting chronic disease; or finally whether it is atrophied. The spasmodic action should be overcome by slow, steady pressure, as the sphincter is always forcibly contracted upon attempting examination. Frequently the internal opening of a fistula is found, just within the sphincter, as a rough, indurated and sensitive spot which may be elevated or depressed (ulcerated); or the path of the sinus is felt by its cordlike resistance.

If a tumor is felt, its size, shape, location, movability, and resistance are to be ascertained, and if possible, a small piece removed for microscopic examination. Hypertrophied papillæ, polypi, stricture, abscesses, gallstones, and foreign bodies may be felt. Fecal impaction of the rectum or colon has often been mistaken for cancer. The tumor of appendicitis may sometimes be felt in the right pelvic fossa if the appendix is low, and rectal palpation should be practised in every case of suspected appendicitis. Malignant disease of the rectum or pelvis, the tumor of intussusception or an infected lymph gland may also be felt. Induration or constriction of the walls of the rectum and the condition of the other pelvic organs is to be determined. An enlarged cervix or retroverted uterus or an enlarged prostate pressing on the rectum will be plainly felt and to the uninitiated may be mistaken for a stricture or tumor of the rectum. Prolapse of the rectum or intussusception of the sigmoid will readily be made out, by the examining finger pressing on the coccyx and the finger of the left hand counter pressing on the outside. The bone may be thus palpated and moved to determine any painful point or abnormality upon or about it.

EXAMINATION OF THE MALE GENITOURINARY ORGANS.

Digital manipulation through the rectum is the only way in which the prostate gland, deep urethra, Cowper's gland and the seminal vesicles can be palpated. The findings furnish much valuable information and this is a necessary procedure. Vesical irritation is a frequent source of reflex disturbance, hence, the bladder should always be examined. A calculus may be the origin of the trouble although no bladder symptoms are complained of. The rectal examination should be made both when the bladder is full and when empty, for the findings may be entirely different. The bimanual examination, one finger in the rectum and the other hand sweeping the pubes and then the perineum, should be undertaken immediately fol-

lowing. When the bladder is distended its outline can be elicited, but following catheterization and emptying of the bladder, if a hard, nonresistant, rounded or unequal mass can be felt, a median lobe enlargement or a tumor of the bladder may be suspected. During the rectal examination an instrument, a sound or a cystoscope, should be in the bladder.

An enlarged prostate means hypertrophy, tumor, cyst, stone, inflammation or an abscess. In true hypertrophy of the prostate, if the lateral lobes are not particularly involved, the prostate may not bulge toward the rectum. If moderately enlarged, the lobes may vary in size and be unequal and even nodulated. The prostate may be fairly firm or somewhat soft but in true hypertrophy it is never doughy or extremely hard. A small prostate signifies atrophy, failure of development, or destruction of the gland. Increased hardness indicates cancer, tuberculosis, inflammation or stone. Softening of the gland shows chronic atony or an abscess. That part of the surface of the prostate which may be felt per rectum is usually smooth, round but not nodulated. In cancer of the prostate the consistency is hard even to a stony hardness. All cases of cancer of the prostate may not reach this firmness but when the gland is hard it indicates advanced cancer. This hardness may vary in different parts of the surface of the gland, and it may only be hard and nodular in places. Localized soft bulging probably indicates a cyst. Enlargement of the whole lobe with firmness points to parenchymatous prostatitis. A small hard nodule refers to follicular, inflammatory, or tuberculous foci and if soft an abscess of the node is developing.

Stone in the prostate can sometimes be determined by a crackling or crepitus imparted to the examining finger. These grains, sometimes the size of a very small pea, grate upon other stones confined within a sac and produce this peculiar and characteristic sensation. These pseudocysts may become infected, and with the presence of these foreign bodies, may cause marked urinary symptoms. The seminal vesicles, if they assume the same consistency as the mass which is considered as the prostate, and particularly if nonsensitive, are often infiltrated with carcinoma. In seminal vesiculitis one may feel the atonic vesicles which are more or less sensitive to the touch. Chronically inflamed and thickened walls may give rise to considerable hardness but they are painful to the touch. Cyst of the utriculus presents an enlargement situated in median line, taking the course of the urethra. If the cyst is large fluctuation may be felt. Rectal examination is far more painful in hypertrophy or acute inflammation of these organs than in carcinoma.

These rectal findings are practically the same whether the bladder is empty or full. When the bladder is full a degree of firmness is imparted to the prostate. Some of the points are more readily determined when the bladder is distended but the examination is more painful. A more accurate interpretation of the findings is obtained with a metal sound through the urethra into the bladder and also any infiltration of the urethra may be discovered, which is so significant of cancer of the prostate.

When a distinctly hard or stony prostate with a similar infiltration of the urethra at the neck of the bladder or even along the course of the urethra is found it practically establishes a clinical diagnosis of cancer. When contracture of the neck of the bladder and a sclerotic prostate is suspected this procedure is invaluable. Without an instrument in the bladder one might believe considerable prostatic tissue to be present, but with the staff in place, it is possible to learn the exact condition. Finally tumors and abscess of the peritoneal cavity, dislocation of the femur, ischial hernia and aneurysm of the gluteal artery may be found. Very little information is gained by digital examination regarding hemorrhoids, except in rare cases where much hypertrophy has occurred in the mucous membrane; otherwise, the hemorrhoid, being covered with nearly normal mucosa, gives no differential tactile sensation. Thus, we see, a digital examination through the rectum is imperative whenever symptoms indicate disease below the pelvic brim.

Upon withdrawing the finger, it may be covered or streaked with blood, pus, or mucus, each with its own significance. If a stricture is so small as not to admit the passage of the finger easily, force should not be used, as rupture of the bowel has followed such an attempt.

Introduction of the whole hand into the rectum and sigmoid for diagnostic purposes was suggested and used by Simon of Heidelberg in 1872, but, as the walls are so crowded upon the fingers and the folds of the mucous membrane fall in between the fingers, very little knowledge is obtained, while there is always danger of rupturing the bowel. Tuttle says only those wearing less than a seven and a half glove should attempt this method, but even with this precaution deaths have occurred, and it is not recommended. A laparotomy and intra-abdominal palpation is preferable when the disease is high up in the rectum or in the sigmoid flexure.

INSTRUMENTAL EXAMINATION.

The speculum corroborates the digital findings, and aids in the diagnosis where the finger fails; but it by no means supersedes the latter. Resort to it is indicated where obscure hemorrhage, pain or discharge is an important symptom. The internal openings of fistulae may be seen, especially if the discharge escapes during instrumentation. Internal hemorrhoids usually drop into the instrument and are easily seen. No single instrument suits all kinds of work and of the bivalve variety much depends upon which one the operator is most familiar with. The smooth blade bivalve causes much less pain than the wire bladed, but it obstructs the field of vision and exposes only a small area at one time; and therefore must be rotated.

The cylindrical speculum permits of the most thorough work. With the patient in the knee-chest position, the chest well down on the table and all constrictions at the waist removed, with a speculum five inches long and one inch in diameter, the whole length of the rectum may be examined. Such a speculum is provided with an obturator to facilitate its introduction, which may be accomplished without pain, when the knack of inserting it is learned. The handle of the obturator rests against the thumb, index and middle fingers to prevent its slip-

ping while the instrument is being introduced. The left index finger and the tip of the instrument being lubricated, the left index finger is introduced into the rectum, the patient bearing down at the same time. The speculum is slipped into the rectum along the palmar surface of the finger and the finger withdrawn as the speculum enters. The obturator is now withdrawn, and the air rushes in and dilates the bowel, and the whole rectal wall may be inspected by moving the introduced end about, at the same time gradually withdrawing or advancing the instrument. The mucous membrane directly in front of the speculum is flattened out, and can be viewed easily by gently pushing the speculum up after the obturator has been removed. A very slender instrument is to be used in tuberculous disease to determine how far the stricture exists and to note the condition of the mucosa above. At the rectosigmoidal junction the sigmoid turns to the right or left and joins the rectum at an acute angle, and at this point one of Houston's valves obscures the lumen of the bowel, and it may be difficult even to an experienced examiner to advance the tube. Caution must be exercised here or the mucosa may be damaged. The passage must not be forced but the patient asked to take a few deep breaths, the instrument moved from side to side, the canal inflated, and the bowel moved away. If spasm occurs we must wait until it subsides. Before withdrawing the speculum the obturator is to be replaced as otherwise the sphincter gripping the speculum will be painful as it passes over the end of the instrument. A speculum ten to thirteen inches long may occasionally be needed to explore the sigmoid flexure; but as the majority of rectal troubles are near the anus, a short and wide speculum is preferable. In many instances, owing to local disease or reflex nervous excitement, we find the sphincter abnormally contracted, making an examination very painful, and often impossible without some previous preparation. By administering a general anesthetic many of the obstacles to the examination are removed and the field may be explored thoroughly; the sphincter completely relaxes, pain is obviated but it is well to be prepared to do any necessary surgical treatment in order to avoid the second anesthetic. When the patient is anesthetized an ordinary flat retractor makes a very satisfactory speculum.

30 NORTH MICHIGAN AVENUE.

Effect of Heat on the Antiscorbutic Properties of Some Milk Products.—E. B. Hart, H. Steenbock, and D. W. Smith (*Journal of Biological Chemistry*, June, 1919) state that commercial condensed milks, commercial milk powders, and milk sterilized for ten minutes at 120° C. have suffered the destruction of their antiscorbutic vitamin, as determined experimentally in the guineapig which was fed on a diet of rolled oats and dried hay. To this diet was added one of the milk preparations mentioned in a quantity equal to the amount of raw milk which will prevent scurvy in guineapigs on this diet. The prevention of scurvy by the use of raw milk will depend on the amount of raw milk allowed.

INFLUENZA PNEUMONIA AT CAMP GREENE, N. C.*

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(Concluded from page 321.)

PROPHYLAXIS OF PNEUMONIA.

A month or more before the epidemic of influenza reached Camp Greene, N. C., Brown, while looking for meningococcus carriers in one of the organizations in the camp, was impressed by the number of plates on which the pneumococcus predominated. Having in mind the work of Lister (1) who studied immunization with pneumococcus vaccine among the natives of South Africa in which a high degree of protection was shown, plans were made to inoculate the men in that organization against the pneumococcus. Through the courtesy of Major George C. Beach, camp surgeon, we inoculated 2,029 men of the 810th Pioneer Infantry during the months of October and November. The supply of lipopneumococcus vaccine (Army Medical School) for this immunization arrived after the influenza epidemic had made its appearance as a complicating factor and the epidemic may have modified the results by increasing the incidence of pneumonia; however, the results seem to show an influence of the inoculation on the occurrence and course of pneumonia that is worthy of notice. The temperature was taken of each man as he came into the room for inoculation; those showing any temperature above normal were not inoculated. Temperature and pulse were taken at twenty-four and forty-eight hour intervals after inoculation. The number showing a reaction as manifested by rise in temperature and increase of pulse rate was negligible. The inoculations were begun about the time the epidemic had reached its crest but were not completed until shortly before demobilization was begun.

This colored regiment had a total strength on October 17th of 2,496; on October 31st, 2,591; on November 22d of 3,664 (date of most inoculations); on November 30th of 1,470; completely demobilized December 21st. From October 1st to October 17th, the most active stage of the influenza epidemic, ninety-five cases of pneumonia occurred from this organization. On October 17th, 261 men received lipopneumococcus vaccine. Up to November 17th, pneumonia developed in but one of these men, an incidence of 3.8 to the 1000. Among the uninoculated men in the same period, approximately 3,000, there were twenty-one cases, an incidence of 7.0 to the 1000.

Encouraged by this result between November 17th and November 25th, 1,768 additional inoculations were given, a total of 2,029, so that out of a total strength of 3,664, 55.4 per cent. were inoculated and 44.6 per cent. not inoculated. From No-

*Permission to publish granted by the Surgeon General, U. S. Army.

vember 17th until the date of complete demobilization forty-three cases of pneumonia occurred. Thirteen of these were in inoculated men, and thirty were in uninoculated. Thus whereas less than half the command remained uninoculated, nearly two and a half times as many cases of pneumonia occurred among these as in the inoculated.

TABLE VII.

STRENGTH OF ORGANIZATIONS.

Company.	Oct. 17.	Oct. 31.	Nov. 22.	Nov. 30.	Number inoculated.
A.....	198 (115)	219	273	81	115
B.....	213	229	276 (234)	63	234
C.....	224	246	276 (203)	98	203
D.....	233	226	276 (235)	77	235
E.....	243	234	276 (237)	98	237
F.....	295	260	273 (198)	144	198
G.....	70	107	276 (204)	153	204
H.....	0	0	276 (217)	149	217
I.....	242 (140)	230	274	78	140
K.....	194	225	274	61	...
L.....	210	248	275	103	...
M.....	22	12	275 (240)	116	240
M. D.....	35	44	41	3	...
Headquarters.....	199	192	187	59	...
Supply.....	126	144	131	127	...
Ordnance.....	2	0	3	0	...
Totals.....	2,496	2,591	3,664	1,470	2,020

Figures in parenthesis show number of men inoculated in each company.

Cases occurring between the time the first two companies were inoculated and the date the other inoculations were given..... 19 — 1 inoculated

Cases occurring in November after second list were inoculated..... 32 — 9 inoculated

Cases occurring in December..... 14 — 4 inoculated

Totals..... 65 14

The period between inoculation and the beginning of the disease must here be taken into consideration in drawing conclusions as to the value of immunization.

TABLE VIII.

DAYS AFTER INOCULATION THAT DISEASES OCCURRED.

Company.	11 days..	1 case	Company.	4 days..	1 case
A.....	11 days..	2 cases	D.....	6 days..	1 case
B.....	8 days..	1 case	D.....	10 days..	1 case
B.....	8 days..	1 case	D.....	12 days..	1 case
B.....	9 days..	1 case	F.....	5 days..	2 cases
B.....	14 days..	1 case	F.....	10 days..	1 case
H.....	8 days..	1 case	F.....	10 days..	1 case

It will be seen from Table VIII that eleven of the fourteen cases occurred on or before the tenth day, one occurred on the eleventh day, one on the twelfth day, and one on the fourteenth day after inoculation.

In Table IX arabic numbers are type of pneumococcus.

U—Undetermined.

O—Not made.

— Negative.

Days—Days between time of inoculation and admission to hospital.

Six cases showed pneumococcus Type I, one Type I and II and Type I and IV, two Type II, two Type I and III, and two undetermined; one of these showed only hemolytic streptococci in the mouse heart blood. Eight cases of the fourteen received polyvalent antipneumococci serum after type determination had been made; of these four were Type, one Type II, one Type I and II, one I and II, and one undetermined. There were no deaths among the fourteen cases of pneumonia in inoculated men. Three cases showed agglutination with serum collected at the time blood culture was taken. The result of agglutination after crisis is invalidated in some cases

Company.	A	B	C	D	E	F	G	H	I	K*	L*	M	U	D	Hill.	Sub.*	Ums.*	Total.
Date of inoculation:																		
October.....	17	17	19	20	21	22	23	25	18	1	1	25	1	1	1	1	1	1
November.....	16	12	19	10	9	5	0	1	11	4	0	1	1	1	1	1	1	1
Cases before any inoculations were given in October.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cases after inoculations were given, but not in inoculated men.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cases in inoculated men.....	18	12	21	11	9	5	0	1	11	4	0	1	1	1	1	1	1	1
Total.....	18	12	21	11	9	5	0	1	11	4	0	1	1	1	1	1	1	1
Cases before date company was inoculated.....	0	2	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	13
Cases after date company was inoculated.....	5	3	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Cases occurring in companies not inoculated.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Cases occurring in noninoculated men, total.....	5	3	2	1	0	7	0	2	3	7	1	1	0	0	0	0	0	26
Cases occurring in inoculated men.....	0	1	0	2	0	2	0	1	0	0	0	0	0	0	0	0	0	4
Total.....	5	4	2	3	0	9	0	3	3	7	1	1	0	0	0	0	0	45
Cases in inoculated men.....	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	4
Cases in uninoculated men.....	0	0	0	0	0	0	0	2	1	2	2	0	0	0	0	0	0	10
Total (66).....	1	1	1	1	0	0	0	3	2	2	2	0	0	0	0	0	0	14

*Companies not inoculated.

Total number of cases occurring in 810 Pioneer Infantry, October to January..... 160

Total number of cases occurring after October 17, 1918, when the first lot of men were inoculated, and up to January 1, 1919..... 65

Total number of cases occurring in inoculated men..... 14

Cases occurring in K Company not inoculated..... 9

Cases occurring in L Company not inoculated..... 3

Cases occurring in medical depot company not inoculated..... 0

Cases occurring in headquarters company not inoculated..... 2

Cases occurring in supply company not inoculated..... 1

Cases occurring in casual company not inoculated..... 3

Total cases occurring in companies not having any protective inoculation..... 18

Total cases occurring in companies inoculated..... 47

PNEUMOCOCCUS TYPE DETERMINATION IN THESE CASES.

Type I pneumococcus..... 30 cases

Type II pneumococcus..... 8 cases

Type III pneumococcus..... 0

Type IV pneumococcus..... 0

Type I and II pneumococcus..... 10 cases

Type I and III pneumococcus..... 1 case

Streptococcus viridans..... 2 cases

Hemolytic streptococcus..... 1 case

Nonhemolytic streptococcus..... 2 cases

No specimens received..... 6 cases

Total..... 65 cases

The blood agar plates made from the sputa showed practically pure cultures of these organisms and agglutinations with antipneumococci serums were negative.

In one of these patients epidemic cerebrospinal meningitis developed.

because of the administration of polyvalent antipneumococcus serum.

A study of the effect of the inoculation with lipopneumococcus vaccine by the agglutination test, with known cultures of pneumococcus.

For this purpose the blood of ninety-four men was tested against Type I and II. The results are as follows:

TABLE X.

Date of inoculation.	Comp. p.m.v.	Results Type I			Results Type II		
		Positive.	Doubt.	Neg. ative.	Positive.	Doubt.	Neg. ative.
10/17/18.....	A	5	1	1	1	2	4
11/17/18.....	B	4	2	4	4	1	5
11/10/18.....	C	4	3	2	4	1	4
11/20/18.....	D	1	4	5	2	2	6
11/21/18.....	E	7	1	2	2	2	6
11/22/18.....	F	5	3	1	3	4	2
11/23/18.....	G	4	3	3	5	1	4
11/25/18.....	H	4	0	6	3	1	6
11/25/18.....	M	7	1	2	6	0	4
Control not inoculated.....	L	5	2	2	0	1	8
.....		46	20	28	30	15	49

RESULT.

Number.	Type I	Per cent.	Number.	Type II	Per cent.
N.....	40	36	38	38	38
X.....	20	21	14	15	15
.....	28	30	44	47	47
Total.....	94	100	94	100	100
X, Positive.....			X, Doubtful.....		
.....				
.....				

TABLE IX.
PNEUMONIA OCCURRING IN SIXTH PIONEER INFANTRY IN INOCULATED MEN.

Company.	Name.	Blood count.	Date of inoculation.	Date of diagnosis.	Days.	Agglutination after admission.	Agglutination after crisis.	Avery method.		Mouse.		Urine.	Blood culture.	Serum administered, cc.	Result.
								Sputum.	Throat swab.	Heart.	Peritoneum.				
A.....	J. P.	21,700	10/17/18	10/28/18	11	0	0	11	0	0	0	0	0	0	Recovery
A.....	P. D.	49,500	11/25/18	12/2/18	8	I-II	0	0	0	0	0	0	0	300	Recovery
B.....	T. M.	14,500	11/17/18	11/22/18	5	0	0	I-II	I-II	0	0	0	0	0	Recovery
B.....	W. C.	53,400	11/17/18	11/30/18	13	0	0	II-III	I	III	III	0	0	200	Recovery
B.....	G. E.	33,500	11/17/18	12/25/18	8	0	I-II	I	I	0	0	0	0	300	Recovery
B.....	S. H.	18,000	11/17/18	11/21/18	4	0	I-II	I	I	U	U	0	0	0	Recovery
D.....	P. J.	25,000	11/17/18	11/21/18	4	0	I-II	I-II	I-II	U	I	I	0	150	Recovery
D.....	P. E.	21,000	11/20/18	11/25/18	5	0	I	I	I	0	I	0	0	100	Recovery
D.....	M. P.	24,000	11/20/18	11/29/18	9	0	I-II	I	I	0	I	0	0	100	Recovery
D.....	H. L.	15,500	11/20/18	12/2/18	10	I	I	I	I	0	I	0	0	100	Recovery
F.....	B. C.	30,000	11/22/18	11/28/18	6	0	I-II	U	U	I	I	0	0	0	Recovery
F.....	M. O.	25,000	11/22/18	11/28/18	6	I	I	U	U	I	U	0	0	0	Recovery
F.....	P. D.	16,000	11/22/18	12/1/18	9	0	I-II	U	U	U	U	0	0	0	Recovery
H.....	M. W.	30,000	11/25/18	11/28/18	3	0	I-II	U	U	I-II	U	0	0	0	Recovery

We found in checking cultures preparatory to the agglutination work with Type III that recently isolated cultures carried as stock cultures did not agglutinate, but upon passage through a mouse prompt agglutination occurred. The loss of agglutinability of pneumococcus when carried as stock cultures may be mentioned in the literature, but as library facilities are not available we are unable to give proper credit.

The sera of these men was not suitable for agglutination tests by the time further tests could be made with Type III pneumococcus, so were not made.

Complement fixation tests were made with some sera in which the agglutination tests were positive; slight in-

TABLE XI.

Result.	No.	Type I Per cent.	No.	Type II Per cent.	No.	Type III Per cent.
XX.....	8	20	8	19.5	0	0
X.....	8	15	8	19.5	0	0
N.....	3	12.5	3	7.5	0	0
.....	20	52.5	22	53.7	42	100
Total.....	40	100	41	100	42	100

hibition occurred in a few specimens, but nothing of definite value was obtained.

Our plans to test the serums of other men in this organization inoculated with Type I, II, and III lipopneumococcus vaccine, using strains of these organisms after animal passage (peritoneal washings), could not be made, as most of the men had been discharged, and the serums

used in the above tests were not available for the purpose.

Table from the work of Cecil and Austin (2) is shown here for comparison, the serums of sixteen men having been tested previous to inoculation with negative results.

Controls, nine men, shown in this table, were from a company in the same organization as those inoculated; no one in the company, however, received protection inoculations. Five of these men showed agglutinins for Type I, two doubtful, and two negative, one doubtful for Type II and eight negative.

DEATHS AND POSTMORTEM FINDINGS.

Deaths occurring September 1st to February 23, 1919, numbered 308, of which 141 came to necropsy. It is to be noted that 72.34 per cent. were due to lobar pneumonia. Lobar pneumonia, 102 cases; bronchopneumonia, twelve cases; miscellaneous (influenza was the primary cause for admission in fourteen of these cases, and thirteen deaths from other causes, twenty-seven cases. The 167 cases on which necropsy was not performed were diagnosed almost entirely as lobar pneumonia, and in practically all in which autopsy was not performed autopsy was dispensed with under stress of the epidemic because of the fact that the clinical signs were considered sufficiently clear to render it unnecessary.

Of the 141 autopsies, in 102 cases the lungs showed the pathology of lobar pneumonia. Complications occurred as follows:

TABLE XII.
LOBAR PNEUMONIA.

No. of autopsy.	Name.	Type.	Lobes.*	Complications.
221	B. A.	4	2	Cirrhosis of liver (Laennec).
222	A. W.	1	1	Old pleurisy left.
227	T. R.	Bi.	1	Many small cavities containing necrotic material; old adhesions right and left
226	K. L.	1	2	
228	A. A.	0	4	
229	T. N.	0	5	Empyema, old adhesions left, fresh adhesions right.
230	M. L.	0	4	Old adhesions; nephritis.
231	Y. J.	0	4	Empyema.
232	F. J. J.	1	3	
233	M. L.	2A	2	Pleurisy, with effusion.
234	J. T.	0	2	Old adhesions.
235	J. W.	3	4	
236	C. L.	0	3	Old adhesions.
237	N. L.	0	2	Fibrinous pleurisy right and left.
238	W. A.	0	2	Serofibrinous pleurisy.
239	W. J.	0	3	
240	W. S.	0	4	Old adhesions left.
241	J. J.	0	4	Old adhesions.
243	W. C.	0	3	Fibrinous pleurisy right.
244	C. A.	4	3	Old adhesions.
245	W. L.	3	5	Few small areas containing caseous material.
246	B. S.	0	4	Adhesions right.
249	R. A.	0	4	Pleurisy, with effusion.
250	W. W.	2A	4	Serofibrinous pleurisy right
251	S. E.	Hemolytic streptococcus.	4	Old pleurisy right.
252	B. H.	0	4	Purulent bronchitis.
253	P. M.	0	4	Old adhesions right and left.
254	T. N.	0	4	Pericarditis, mild grade.
256	K. E.	3	2	Empyema, right and left; necrosis in portion of one lobe.
257	M. A.	0	4	
258	J. H.	4	3	Old adhesions entire right, fresh adhesions left.
259	G. H.	4	3	Old adhesions right upper, fresh adhesions left lower.
260	M. L.	4	4	Old adhesions right upper; purulent bronchitis.
261	A. T.	3	4	Old adhesions right, fibrinous exudate left. Tuberculosis: Caseous nodules lower right, cavity upper right; purulent bronchitis.

LOBAR PNEUMONIA.

No. of autopsy.	Name.	Type.	Lobes.*	Complications.
262	C. S.	0	2	Purulent bronchitis; few abscesses.
263	K. M.	0	2	Old adhesions left.
264	W. J.	3	2	Pleurisy, with effusion.
265	P. J.	0	4	Fibrinous exudate; few cavities; purulent bronchitis.
266	M. H. A.	0	2	Old adhesions right and left.
267	H. L.	4	3	
268	M. R.	0	3	Serofibrinous pleurisy right and left, with many hemorrhagic areas.
269	H. A. D.	0	2	
270	J. J. W.	Undiagnosed.	5	Pleurisy, with effusion.
271	K. M. C.	4	3	Empyema, few abscesses.
272	D. T.	0	1	Old adhesions right.
273	F. A.	0	4	Empyema right, fibrinous exudate.
274	W. A.	0	2	Old adhesions left.
275	A. D.	0	2	Empyema right.
276	R. R.	0	4	
277	M. S. A.	0	4	Empyema right and left.
278	H. H.	0	4	Old adhesions right; purulent bronchitis left lower foci of necrosis; acute ulceration of stomach.
279	B. J.	0	1	
280	R. D.	1	1	Pneumothorax left, empyema right; purulent bronchitis.
281	K. C.	0	2	Old adhesions right and left.
282	P. N.	0	2	Fatty heart.
283	S. J.	0	5	Hemorrhage into pericardium.
284	L. W.	0	4	Adhesions left; pneumothorax, extensive visceral pleura; thrombosis pulmonary artery.
285	O. J. J.	4	5	Pericarditis, with old, well organized exudate.
286	B. I.	0	3	
287	U. O.	0	3	Purulent bronchitis; small ulceration on heart; thickening of coronary arteries.
288	K. H. L.	0	4	Pleurisy, with effusion.
289	S. C.	0	4	Empyema right and left, with fibrinous exudate over both lungs; purulent pericarditis, small abscesses in upper right lobe.
334	Mc. D.	0	4	Purulent bronchitis.
335	S. R.	4	4	Acute fibrinous pericarditis.
336	W. J.	0	0	Fibrinous pleurisy right and left; fibrinous purulent pericarditis, peritonitis, purulent bronchitis.
337	M. J.	0	3	Old adhesions left.
338	W. F.	0	3	Purulent bronchitis.
340	F. E. J.	0	4	
341	K. F. C.	0	5	Old adhesions right and left; pleurisy, with effusion.
343	O. G.	3	3	
353	C. F.	3	1	Purulent bronchitis.
354	Mc. W.	0	4	Old adhesions right and left.
355	P. J.	3	4	Empyema, old pericarditis, purulent bronchitis.
356	M. J.	0	-	Fresh adhesions left; empyema left; large pale kidney; early pneumonia, death from pulmonary edema.
373	G. F.	3	2	Empyema and pulmonary edema.
374	T. G.	0	5	
375	T. L.	0	0	Purulent bronchitis.
396	H. H.	0	4	
397	H. T.	0	2	Empyema right and left; purulent bronchitis, some abscess formation
398	W. J.	0	-	Old adhesions right and left; pneumothorax left; lakes of blood at site of adhesion left; edema.
399	O. T.	4	4	Fresh adhesions left.
407	A. E.	0	3	Hemorrhagic infarcts throughout.
408	W. C.	0	1	Empyema, purulent bronchitis, fibrinous exudate containing much <i>v. r.</i> , hypertrophied right heart.
416	R. G.	0	4	Pleural effusion left.
411	M. B.	2	4	Old adhesions right and left.
412	P. F. D.	3	4	Fresh adhesions right and left; scattered abscesses, some cavities, and caseous areas.
413	B. W.	0	1	Fresh adhesions left, old adhesions right; mild peritonitis.
414	F. J.	2-3	3	Fibrinous exudate right and left; multiple abscesses right and left; kidney, parenchymatous changes.
415	P. F.	Streptococcus viridans.	3	
428	J. C.	0	2	Peritonitis, gangrenous areas in left lung; purulent bloody fluid 250 cc. in left pleural cavity, fibrinous exudate right pleural cavity.
429	W. J.	3	2	Fibrinous exudate right and left; empyema right (two litres); old abscess right lower lobe.
430	L. W.	0	2	Empyema left, 200 cc.
431	T. O.	0	2	Cirrhosis of liver.
444	S. L.	3	1	Pneumothorax, mild.
445	G. R. S.	3	4	Empyema right and left.
511	J. C.	Nonhemolytic streptococcus	3	Peritonitis, mild; pleurisy, with effusion.
515	J. F. L.	0	3	Empyema right.
516	B. R.	0	4	Empyema and edema; lungs collapsed.
521	T. H. H.	0	1	Pleural effusion, 500 cc.; parenchymatous nephritis.
527	S. M.	0	2	Old and fresh adhesions; liver, petechial hemorrhages beneath capsule.
530	B. L.	0	2	Peritonitis, mild (streptococcus).

(*) Signifies number of lobes involved.

(-) Specimens not sent for type determination.

BRONCHOPNEUMONIA.

278	W. E.	-	-	Purulent bronchitis.
282	A. A.	-	5	Calcified tubercles throughout two lobes; syphilitic aortitis.
370	B. A.	0	-	Old adhesions; pulmonary edema.
409	W. R.	0	5	Fibrinous pleurisy right and left, empyema right (one litre); purulent bronchitis.
437	R. E.	3	-	Purulent bronchitis; peritonitis, mild; liver shows small petechial hemorrhages beneath capsules.
472	D. G.	0	2	Calcified tubercles throughout lower right, old adhesions left.
492	I. J.	3	-	Empyema right and left; hemorrhage into alveolar tissue around the right kidney; spleen three times normal size; adhesions right.
491	P. D.	Streptococcus.	-	Empyema and edema; lungs collapsed.
503	W. J.	3	-	Purulent bronchitis, pneumothorax.
504	B. A.	2-3	-	Empyema, purulent bronchitis; empyema right and left; thickening of heart valves; kidney shows cloudy swelling, mild pericarditis.
518	J. C.	-	2	Empyema left, collapsed lung, pericarditis, serofibrinous.
MISCELLANEOUS.				
225	C. C.	-	-	Influenza; heart hypertrophy twice normal size; mitral and aortic insufficiency; pericarditis adherent.
242	E. K.	-	-	Tuberculosis with cavity formation.
339	P. W.	2	-	Acute miliary tuberculosis; hypertrophy with dilatation of heart; acute pericarditis.
395	S. C.	-	-	Pneumothorax right, collapsed lung; pleural effusion left (one litre); purulent bronchitis.

BRONCHOPNEUMONIA.			
No. of autopsies.	Name.	Type.	Lobes.*
488	E. F. F.	—	—
489	S. H.	3	4
501	W. J.	3	—
502	B. J.	2-3	—
503	C. W.	—	—
504	M. J.	—	—
505	S. W.	—	—
507	D. J.	—	—
520	P. H.	1	—
528	M. P.	—	—

Complications.

Chronic glomerular nephritis; lobar pneumonia right lower; mitral insufficiency; appendix shows small abscess.
Tuberculous bronchopneumonia, cavity in right upper.
Adhesions right and left, empyema right.
Tuberculous bronchopneumonia.
Tuberculous lobar pneumonia; tuberculous cavities throughout right upper, old adhesions right and left.
Miliary tuberculosis, purulent bronchitis, large cavity left lower lobe.
Miliary tuberculosis, purulent bronchitis, empyema left.
Transverse myelitis following influenza.
Pneumothorax right and left; miliary tuberculosis; cavity filled with cheesy material right lower, also abscess.
Pneumococcic septicemia, followed by meningitis empyema.
Pneumococcic meningitis; lungs, state of resolution.

COMPLICATIONS.

Pleurisy	29	Empyema	19
Purulent bronchitis	15	Abscesses in lungs	6
Pericarditis	7	Peritonitis	5
Nephritis	4	Cirrhosis of liver	2
Tuberculosis	4	Pneumothorax	4
Acute ulceration of stomach	1	Gangrene of lungs	1
Thrombosis	1		

Complications found at autopsy in cases in which the lungs showed the pathology of bronchopneumonia occurred as follows:

Purulent bronchitis	5	Empyema	5
Pericarditis	2	Peritonitis	1
Pneumothorax	1	Pulmonary edema	2
Nephritis	1	Emphysema	1
Septilic aortitis	1		

Deaths following influenza, but in which influenza was only the contributing factor:

Mitral and aortic insufficiency	1
Pericarditis (adherent)	1
Tuberculosis with cavity formation	1
Tuberculosis, acute miliary, with cavities and pneumothorax	1
Tuberculosis, acute miliary, dilatation of heart, and acute pericarditis	1
Tuberculosis bronchopneumonia	1
Tuberculosis, many cavities, lobar pneumonia	1
Tuberculosis, acute miliary, and purulent bronchitis	1
Pneumothorax with purulent bronchitis	1
Nephritis, acute, with lobar pneumonia, two lobes involved	1
Nephritis, chronic glomerular, with lobar pneumonia, one lobe, mitral insufficiency	1
Transverse myelitis following influenza	1

Had a complicating pneumonia involving two lobes, mild or low grade peritonitis, and petechial hemorrhages into the pericardium.

It is commonly believed that tuberculosis is present in a large proportion of the negro race. There were forty-five white men and ninety-six negroes among cases which came to postmortem. The eight cases in which tuberculosis was undoubtedly the immediate cause of death all occurred in negroes.

SUMMARY.

The etiological organism in this epidemic is not shown to be the *Bacillus influenzae*, according to our cultural work.

The white blood counts did not show a leucopenia as might be expected in an influenza due to the bacillus of Pfeiffer.

The pneumococcus or streptococcus or both were present in a large proportion of all cultures, made from cases clinically diagnosed as influenza. The complications were due almost entirely to the pneumococcus.

Lobar pneumonia was the cause of the deaths in 72.35 per cent. of our cases. Type determination in 444 cases of pneumonia showed pneumococcus Type I in 25.5 per cent., Type II in 17.1 per cent., Type III in 19.1 per cent., Type IV in 22.7 per cent., more than one type 9.3 per cent. and undetermined, including streptococcus, 6.3 per cent.

Pneumococcus vaccine (Ipo) given as a prophylactic has a very definite value in lowering the incidence of pneumonia.

We wish to express our appreciation of the hearty cooperation of Lieutenant F. A. Wolf, Sanitary Corps, West Raleigh, N. C., and other members of the laboratory staff whose untiring efforts during the strenuous days of the epidemic made these studies possible.

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CLINICAL AND PATHOLOGICAL REPORT OF A CASE OF INTRAOCULAR TUMOR.

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The paper read before this society at its meeting last year by Dr. Harry Friedenwald and the discussion thereof call attention to the difficulties in the diagnosis between malignant and nonmalignant inflammatory tumors in the vitreous chamber. The practical question intimately connected with the determination of the diagnosis is the line of treatment to be adopted in an individual case. Rarely may the growth, before enucleation, be declared malignant. The exceptions are those cases in which growth is rapid, with perforation of the coats of the ball, and extension to neighboring tissues. It is in the early stages, when enucleation will prevent metastasis, that the diagnosis is most important. The ocular conditions which interest us in this stage are:

Separation of the retina.—Our first thought in the presence of retinal detachment, in which high myopia or traumatism have no causative influence, is of choroidal sarcoma. The retina when detached by a growth presents characteristic appearances which need not be dwelt upon. The difficulty in making a positive diagnosis lies in determining whether the floating and undulating retina may have been originated by a tumor which has become concealed by edema or extensive serous exudation. The extent and situation of the detachment are of only slight diagnostic value. On the other hand close observation of the course of the detachment extending, if possible, over several weeks or even months and including frequent measurements of the visual fields is most helpful. A gradually increasing area of blindness almost positively indicates tumor, whereas extensive fluctuations or an unchanged area point to other causes.

Intraocular tension.—Difference of opinion prevails as to the diagnostic value of this sign. It may be assumed that until the lens is pushed forward, the anterior chamber shallowed, the iris dilated and unresponsive, in other words the glaucomatous stage, the tension is normal or nearly so. It is true that the intraocular contents are increased by the extraneous tissue, at least in number, but that there is actual or permanent increase in tension by this new tissue is subject to question. The condition is not unlike that in retinal or vitreous hemorrhage. Here the blood is actually an additional content, but unless its volume is excessive and has disturbed the relation of intraocular secretion and excretion, plus tension has not been noted. The intraocular changes incident to or causative of hemorrhage may easily lead to minus tension. Almost uniformly spontaneous retinal detachment in which the subretinal space is occupied by fluid the tension is below normal and yet new material has been added to the intraocular contents without increasing the sum total of contents, if one may depend either on the tactile sense or the tenometer. Only when the normal relation between intraocular secretion and excretion is altered, or when the ball contains more than its normal capacity (which is subject to slight variation), in other words, when the eye becomes glaucomatous, is tension permanently increased. In the diagnosis of tumor, therefore, plus tension is not primary but secondary to the glaucomatous stage.

Transillumination.—In making use of the transilluminator the room should be dark and the observer must critically study the pupillary reflex from every direction. It is not enough that he should make his decision from the most accessible or comfortable position, especially in the case of small tumors. This observation, I believe, has not been made previously or at least it has not been emphasized. Without changing the contact of the transilluminator the pupil may appear dark to one observer and show the reflex to another. The explanation is to be found in the lack of uniformity in the density of the tumor and the condition of applying the light at or near its edge. The test is of great diagnostic value only in those cases in which the tumor lies in the anterior half of the ball, for one outside the accessibility of the instrument will, of course, cast no shadow.

Metastasis to the skin and internal organs has been noted in one third to one half of the cases. Early enucleation is no preventive. Recurrence of the growth in the orbit is uncommon provided the ball has been enucleated before its external walls have been broken through. After the orbit has been invaded, recurrence, especially in the small round cell form, is to be expected. My own experience has been particularly fortunate in that I have not seen a single case of metastasis from the eye to any of the internal organs and I am inclined to believe that the fear of metastasis is exaggerated.

Clinical history of case.—Mrs. P., aged thirty-nine, came to the Jefferson Hospital in October, 1918, complaining of loss of vision in left eye during the past few weeks. She had had no pain or headache or disturbance of general health and had suffered no traumatism either to the eye or to the

body. The eye was not injected, the cornea clear, anterior chamber of normal depth, the iris slowly responsive to light directly and consensually, the lens clear, tension normal and the ciliary region not sensitive to touch. The retina was detached in its entire extent except upward and inward. The perception of light was confined to the lower temporal field. During the next six months the patient was observed every few days and the following changes noted: From the beginning there was evident a large number of small straight vessels just behind the lens and in the lower part of the detachment, which during the course of the disease did not change in number or position. The retina remained fixed throughout. No tremulousness or waving could at any time be noted. The anterior chamber gradually decreased in depth until at the last the iris was in contact with the cornea in many places. The pupil was small and immobile, dilating slightly under a mydriatic. Tension remained unchanged until toward the last it gradually rose, the ball becoming undeniably hard before enucleation. The eye was singularly free from injection until the last week when the deep ciliary vessels became prominent. From the first observation until the last transillumination a tumor in the temporal fundus was indicated. When the light was applied to the temporal area of the ball no reflex could be seen; at all other points the reflex was distinct. During the last week the patient complained of deep seated pain in the eye and adjacent temple and forehead. Dr. G. Oram Ring, who had observed the case with me almost from the beginning, agreed with me that the time had come for enucleation. On April 3d the eyeball was removed and a gold ball implanted in Tenon's capsule.

The pathological examination was made by Dr. E. D. Funk, to whom I am indebted for the following report:

Specimen consists of an eye measuring 2.5 by 1.3 cm.; weight 9.5 gms. The cornea is somewhat hazy, protrudes, and appears to be under increased tension. The lens appears as a grayish opaque body when viewed through a magnifying glass. Iris manifests no macroscopic change. Under transillumination half of the eyeball appears relatively clear, while the other half is dark. After fixing the eyeball in a hardening solution, a cross section reveals a rather extensive detachment of the retina covering more than half the eye. Midway between the cornea and the entrance of the optic nerve is a pigmented, rather soft mass arising from the choroid coat and extending out into the vitreous humor for .5 cm. at its farthest point. On serial sectioning, a number of pinpoint hemorrhagic areas are seen. The growth has pushed the retina forward.

Fixation, formalin; usual laboratory stains.

Histology: The growth has displaced the basal lamella and retina into the vitreous; it is very vascular and composed mostly of large collections of spindle cells closely arranged and within a very fine and scanty intercellular stroma. In some places the cells appear polyhedral in type and here they suggest an alveolar arrangement. The vessels are fairly numerous, small and well filled with red

cells. Near the edge of the growth are a few small hemorrhagic areas. Pigmentation is patchy throughout the tumor, being most marked along its origin. This pigmentation appears to be primary and not hematogenous.

Diagnosis: Melanotic sarcoma.

1528 WALNUT STREET.

JUVENILE DIABETES.

Report of Three Cases.

BY PHILIP HOROWITZ, M. D.,
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The following cases are reported because of their extremely interesting character; first, because the oldest patient was only about three years of age, and the youngest slightly over two years; secondly, because they show the value of institutional over home treatment; and finally, because of a definite history of an intestinal toxemia preceding the onset of the disease.

Cases I and III were discovered from one to two months after the children had had an intestinal disturbance. In both cases it was noticed that the children had recovered from what appeared to be an acute intestinal toxemia and after a few weeks the children began to wet the bed, lose considerable weight, had a marked polydipsia and polyphagia. An examination of the urine showed the condition. Case III was the most serious of the three as it was complicated by a severe nephritis.

Case II was peculiar inasmuch as nothing was suspected nor did the child have any symptoms pointing to diabetes. Her twin sister died of diabetes and the parents, becoming alarmed, had the urine examined and sugar was found.

In Case I the Allen method of treatment was used up to the sixth day when the patient suddenly became edematous, stuporous, and went into a state of semicomma and the method of treatment had to be changed. In Cases II and III the patients were treated by restricted diet instead of starvation, and it was proved conclusively that although the patients were very young they could be placed on a green diet and trained to eat and tolerate green vegetables with little or no discomfort. Cases I and III were treated in the hospital and Case II at home, and although the mother of this patient devoted all her time to the child, in Cases I and III the patients were brought to a far better diet than in Case II.

Of the three cases reported, the greatest results were accomplished in Case III. The patient was put under treatment about six or seven weeks after the trouble was diagnosed and he is now not only free of sugar, albumin and casts, but has increased almost ten pounds in weight. The patient in Case I has since died of a probable pulmonary infection, and in Cases II and III the patients are alive and well.

CASE I.—M. D., aged three years came under treatment in December, 1915. Excepting a grandfather on the maternal side dying of diabetes, the family history was negative. The child had an attack of bronchitis a year previous to the present

trouble, and an occasional attack of indigestion. She was, however, subject to slight colds and marked constipation.

In the middle of September, 1915, the child became very ill with an acute attack of intestinal toxemia, after eating some fruit cake. During this illness she was greatly prostrated, but in the course of three or four weeks was well again. In the middle of October the mother noticed that the child lost weight, became irritable, began to wet the bed, had marked thirst and hunger and complained of severe headache. The polyuria was very marked, as much as a gallon of urine being passed in twenty-four hours. The sugar index ranged from four to six per cent.; no tests were made for acetone or diacetic acid. The child's diet was reduced and she was given yeast tablets. At the end of three or four weeks, the sugar index became lower and then rose again to four per cent. and remained there. When I saw her on December 30, 1915, she was thin, very drowsy, slept poorly at night, had a sugar index of 4.16 per cent. and a large amount of acetone and diacetic acid.

The child was sent to a private hospital and put on the starvation treatment. She was drowsy and listless but after two or three days seemed to clear up mentally somewhat, but on the sixth day she suddenly became stuporous again, markedly edematous and began to vomit. The urine was sugar free but the amount of acetone and diacetic acid was greatly increased. She was given immediately sixty grams of oatmeal, 200 grams of five per cent. green vegetables, and a Murphy drip of bicarbonate of soda. At the end of twenty-four hours the edema had gradually diminished and she became brighter. From that time on the diet was gradually increased and by the end of January she was so much improved as to be able to get out of bed, was less irritable, slept better and lost the drowsiness. Her diet consisted of seventeen ounces of green vegetables, fifteen ounces of broth, six ounces of oatmeal (cooked), two teaspoonfuls of sweet cream, one ounce of chicken, two teaspoonfuls cream cheese, one slice of luft bread one inch thick, and one egg. She also took six c. c. of culture of *Bacillus bulgaricus*, four times a day and her bowels were kept open by means of an enema. She continued to improve during February and March, and skimmed milk and chocolate were added to the diet, as well as lamb chops and steak. She got along fairly well from then on. The oatmeal was changed to farina and wheatena from time to time. Grape fruit juice and strawberries were given and tolerated. The child gradually improved and tolerated her food very well. However, she lost weight, about two pounds in all. She showed traces of sugar a few times during her treatment, when she had taken cold, but this disappeared promptly under treatment.

When she left for home her diet consisted for twenty-four hours of fifteen ounces of green vegetables, four and one half ounces of luft bread, (forty per cent. starch and fifty per cent protein), one ounce of either chicken, steak or lamb chops; six teaspoonfuls of cheese, one teaspoonful of cream, ten teaspoonfuls of milk, two teaspoonfuls

of cream cheese, one teaspoonful of unsweetened chocolate, six strawberries, four teaspoonfuls of grape fruit juice, and one egg.

In December, 1917, after an illness of less than a week, she died suddenly.

CASE II.—B. G., aged two years and eight months, one of twins, came under my care September 6, 1916. Twin sister died of diabetes, otherwise the family history was negative. She gave no history of any previous trouble, excepting this present illness, which was discovered by uranalysis after the twin died of diabetes on December 27, 1915. She had been on a milk diet since then with large quantities of oatmeal. She was sugar free a number of times but this lasted only a short time. The sugar index at present is eight per cent. and there is a pronounced trace of acetone. The child is fairly well nourished, weighs twenty-six and one half pounds, has a moderate appetite, drinks little water and the bowels are in fairly good condition. The blood sugar is .24 per cent. The diet ordered consisted of 200 grams (five per cent.) green vegetables, one pint Kalak water, one egg, five teaspoonfuls whiskey, and three cups of chicken broth. Three days later the child appeared listless and tired. The urine was sugar free but there was a moderate amount of acetone. The weight came down to twenty-five pounds eight ounces. The same diet was continued with the exception of a reduction in the amount of whiskey. The child also received five c. c. of a culture of *Bacillus bulgaricus*, three times a day.

The diet was gradually increased until she was given three tablespoonfuls of oatmeal, with one teaspoonful of cream, one slice of luff bread to a meal, fifteen ounces of green vegetables, one ounce of chicken and a teaspoonful of milk to the coffee. On this diet the child improved and became more talkative, the urine was sugar free and also free of acetone. Her weight likewise increased with this diet going up to twenty-eight and one half pounds.

On October 5, 1916, the diet consisted of sixteen to eighteen ounces of green vegetables, three ounces of well cooked oatmeal, two cups of chocolate, made of unsweetened chocolate, five teaspoonfuls of cream, two of milk, one ounce of lamb chop and one egg. On October 13th a trace of sugar appeared but no acetone. The oatmeal and chocolate were discontinued and the sugar cleared up. The diet was varied from time to time as sugar would appear.

The child, while she improved and felt well, was very much bloated, but this condition disappeared later on with a gradual reduction in weight. By the end of January she was reduced to twenty-one and a half pounds. During the next two or three months the child had trying times. She took cold off and on and sugar and acetone would appear in the urine and the diet would have to be reduced. At the present time, April, 1919, the child is getting along fairly well. She has not gained any flesh, but she talks and is not listless, runs around and does not tire so easily. She is getting twenty-two ounces of green vegetables, four cups of broth, one and one-half eggs, one ounce of either chicken, lamb chop or steak, from one to three soya bean

muffins and occasionally a cup of chocolate, tea or coffee.

CASE III.—W. N., male, aged two years, first came under my care January 17, 1917. His family history has been negative to diabetes. He was always a healthy, well developed, robust child and had never been ill before. During the early part of October, 1916, he had an acute attack of intestinal toxemia and about four weeks later when he had fully recovered from the intestinal trouble, sugar was discovered in the urine. In two months the child lost considerable weight and strength. The urine showed a large amount of sugar and acetone, but no diacetic acid. When I first saw him, he looked very badly—a typical picture of a marasmic child. He was thin, with the skin drawn tight over the little frame and very red. He was also very irritable with a sort of a whine instead of a cry. The heart and lungs were normal. The urine showed about four per cent sugar, a large amount of acetone and diacetic acid, a large amount of indican, .02 per cent. albumin, occasional hyaline and numerous finely granular casts.

He was sent to the hospital where he remained until the middle of May. He was put on a diet consisting of six ounces of five per cent. green vegetables, two teaspoonfuls of whiskey, a cup of broth, a bottle of Kalak water and five c. c. of *Bacillus bulgaricus* culture. After three days the child felt much better and was less irritable. His diet was increased as he could tolerate it and his condition improved. In November, 1917, he looked much better and felt well. He had gained weight, weighing then twenty-two pounds. I saw him again in January, 1918. He looked very much better, having filled out, he had a good color, slept well, and was not irritable. His weight had increased to twenty-six and one quarter pounds. His urine was entirely negative, being free from either sugar, albumin or casts. By this time the diet had increased to twenty-four teaspoonfuls of well cooked oatmeal, sixteen ounces of green vegetables, two cups of broth, two teaspoonfuls of unsweetened chocolate, one ounce of chicken, two eggs, five teaspoonfuls of sweet cream, and twice a week he had lamb chops.

The culture was given twice daily. In May, 1918, the child weighed twenty-seven and one-half pounds and the urine was normal. His diet was increased to two ounces of chicken, one teaspoonful of grape fruit juice and rhubarb sweetened with saccharine. The cultures were discontinued. On February 2, 1919, the child looked the picture of health and was absolutely normal. He now weighs twenty-nine pounds eleven ounces, a gain of practically ten pounds, since the beginning. The urine is normal.

In Cases I and III the patients were treated in the hospital and improved very much more rapidly than did the patient in Case II, who was treated at home.

From the reports of these cases, we see that diabetes in children is not necessarily fatal, as we have been led to believe. I feel sure that if they can be tided over for a certain length of time, they will outgrow the tendency entirely. Cases I and III

exemplify a typical infection of intestinal origin and if in such cases the patients can be put under treatment early enough, before the toxins can cause actual tissue destruction, they may become absolutely normal.

65 WEST SEVENTY-THIRD STREET.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

THE HYPERTHYROID THEORY OF BASEDOW'S DISEASE.

In 1895 Notkine, of Kiew, isolated a substance from the thyroid gland belonging to the group of proteins, which he called thyroproteid. His experiments proved that this substance could produce myxedema in animals and still more quickly in those who have undergone thyroidectomy.

This substance is supposed to be a waste product resulting from intraorganic metabolism, and by accumulation in the blood it provokes symptoms of myxedema. The substance can be destroyed or neutralized by the true product of the thyroid secretion, which contains a special enzyme. The thyroid gland stores up this thyroproteid, neutralizes it, and, having rendered it inoffensive, throws it into the blood. Basedow's disease is therefore due to an intoxication by the thyroid enzyme produced in excess and should be favorably influenced by the exhibition of small doses of thyroproteid.

Brissaud maintains that the thyroid gland transforms thyroproteid into a useful product called thyroïdin. On account of the hyperfunctioning of the thyroid gland the organism becomes completely deprived of thyroproteid and saturated with thyroïdin.

In the normal animal it may be assumed that the proteins are decomposed to a certain extent into aminoacids. Under certain conditions—in the presence of iodine compounds—these acids became deamidized and the products directly burned into CO₂ and water or employed for the production of fats, carbohydrates, etc. If the quantity of intracellular iodine compounds becomes exaggerated, these reactions occur more quickly, in which case there arises a disequilibrium between the quantities of proteins and aminoacids; the latter predominate and the proteins end by completely disappearing, while the aminoacids are superabundant. As a result, there is an acceleration of the oxidations and the formation of carbohydrates and fat. There is no change in the reactions but merely acceleration. The thyroid secretion is consequently the catalyser influencing the rapidity of the reaction. The excess of active secretion causes metabolism to get out of gear by increasing its activity, and death is the final outcome.

The purely hyperthyroid theory may be applied in the case of those writers who maintain that iodine plays an important part in the genesis of certain forms of exophthalmic goitre. Prevost, Senn, and Röser were long ago of the opinion that iodine exercised a special action on goitre; according to them it provoked the absorption of certain injurious elements which in turn acted upon the

organism, setting up the clinical symptoms characteristic of Graves's disease. More recently, Professor Mayor, of Geneva, compared the clinical symptoms of constitutional iodism with those of exophthalmic goitre and by an analysis of the appearance of the iodic accidents questioned whether there really did not exist a close relationship between these two states. In point of fact he noted that all constitutional iodic subjects are either averred or unsuspected goitrous subjects.

Following the ingestion of therapeutic doses of iodine (ingestion which takes place on account of a goitre or accidentally) the goitre disappears and intoxication commences. It would seem that a certain substance stored up in the goitrous thyroid gland is set at liberty by iodine and thrown into the general circulation. The accidents arising from thyroid therapeutics in myxedema have confirmed this theory. In point of fact the symptomatology of these accidents is similar to that of so-called iodism. Examining the pathogenesis of the thyroid accidents more closely, Mayor remarked that usually subjects sensitive to iodine were corpulent goitrous patients with flabby fat, in whom the subcutaneous cellular tissue seemed to fill with fat with an abnormal facility. This corpulence has been explained as being due to a slowing down of combustion on account of insufficient oxidation, and Mayor very properly raises the question whether these obese subjects are not victims of their thyroid gland, which stores up, instead of delivering to the circulation, the substance which we now know to be necessary for the maintenance of the subcutaneous cellular tissue in its normal state. The iodine which causes it to enter in excess in the vessels produces sudden emaciation.

Kocher also noted that a typical case of Basedow's disease could be produced by the exhibition of either the thyroid gland or iodine, a fact which appeared to him to be in favor of the hyperthyroid theory. He says that the thyroid gland stores up iodine and from it forms a substance capable of provoking the Basedow syndrome. After a careful study of one hundred and sixty exophthalmic goitres Kocher found that in reality they did store up iodine. On the other hand, according to Gley, the normal thyroid gland contains ten times more iodine than the hypertrophied glands of subjects with Graves's disease.

Jaunin, of Chexbres, Switzerland, has studied the analogies which unite the three terms: iodism, thyroidism and exophthalmic goitre. So far as iodism is concerned, he admits that it is the disturbance brought about by iodine—an occasional cause—in the thyroid function which is the real cause of the accidents met with. The hyperthyroid origin of exophthalmic goitre seems to be a settled matter for Jaunin on account of the results obtained by surgical treatment, thyroid intoxications, and the cures obtained by treatment with Notkine's thyroproteid.

Finally, Jaunin reports five cases of patients who presented all the symptoms of exophthalmic goitre following iodine treatment, exophthalmus having been present in three of them, and he concludes from all the data that in these patients there

existed a thyroid disequilibrium and that iodine, even in minute doses, might play the part in them of the straw which broke the camel's back. Gautier, who has met with a large number of such cases in the population of Geneva, concludes in favor of the rôle of exciter played by iodine, which acts as a disturber of the thyroid function. Goebel is of the opinion that exophthalmic goitre is the result of a superproduction of iodothylin. The organic iodine compounds are derived from the iodine contained in food and transformed by the thyroid gland. The milk of women who have undergone thyroidectomy should therefore, according to this writer, be deprived of all iodine in organic combination, which causes him to advocate the use of such milk as a therapeutic measure.

Besançon and de Jong have studied somewhat more than forty cases of thyroid in rabbits which has been submitted to iodine medication, either by ingestion or by subcutaneous injections. In these animals a distinct hyperplasia was found, made evident by an increase in the weight of the gland and histological changes corresponding to those which Roussy and Clumet regard as characteristic of hyperplasia.

In the same order of ideas, Lublinski has met with a case of marked uniform hypertrophy of the thyroid gland in a female fifty-two years of age, following the exhibition of a solution of potassium iodide. When the drug was stopped the hypertrophy disappeared and reappeared when exhibition of the salt was again resorted to.

A short time ago, Oswald, of Zurich, stated that iodine provokes symptoms of what is generally called constitutional iodism quite as much as the typical syndrome of exophthalmic goitre and, on the other hand, constitutional iodism is above all met with in regions where goitre is endemic. Taking up Mayor's theory, Oswald supposes that iodine, by special action on the thyroid gland, provokes the absorption of deleterious elements, and he points out that the proof of this is to be found in the fact that the exhibition of thyroid juice may produce a group of symptoms similar to those of constitutional iodism and to those of exophthalmic goitre.

This thyroid intoxication from the exhibition of iodine may be explained by the fact that thyroglobulin is an iodic substance, all the more active the richer it is in iodine. The numerous recorded cases in which intoxication coincided with the retrogression of a goitre produced by the administration of iodine or the x rays are proof of this. Therefore Oswald substitutes the name of iodism for that of iodic iodothyroidism or iodothyroidism.

Now, between this iodothyroidism and exophthalmic goitre there is no distinct line of demarcation; on the contrary, there exists an insensible transition. Both may be derived from a common cause, namely, hyperthyroid intoxication. Nevertheless the entrance *en masse* into the circulation of the thyroid substance is not always sufficient to set up disturbances of iodohyperthyroidism.

We in Switzerland all know of cases in which the absorption of a goitre or the exhibition of large doses of thyroid extract have resulted in no morbid symptom. On the contrary, in other instances

even minute doses have given rise to characteristic thyroid accidents. But clinical observation shows that subjects with iodic hyperthyroidism, alimentary hyperthyroidism, or exophthalmic goitre have all offered symptoms of nervous changes in their past history. The results obtained by Oswald in a series of experiments on cats, dogs, and rabbits, show that thyroglobulin is a stimulant of nerve excitation. Following an injection of thyroglobulin, the sympathetic, the pneumogastric and the depressor nerve all become more excitable to the electric current. The phenomenon is seen in man.

We also know that thyroglobulin acts on the general metabolism, that it favors combustions, and that it likewise acts on the cerebrospinal nervous system, increasing its excitability and giving rise to nervousness, insomnia, and nervous mobility. Therefore it appears logical to regard the thyroid body as a multiplier of nervous impulses, interpolated in the nervous system.

The thyroid gland receives its impulses from the nervous system by way of the laryngeal nerves, and by its activity it produces a substance which in turn reinforces the activity of the nervous system by increasing its susceptibility. A normal nervous system would perfectly well support a reinforcement of its excitability and would not react by any apparent symptomatology. There would be a disproportion between cause and effect, this being made evident at points particularly sensitive to thyroglobulin, that is to say in the domain of the sympathetic and cerebrospinal system.

The clinical symptoms can be readily surmised. They consist of cardiovascular symptoms (tachycardia, palpitation, vascular erethism, sensation of heat), polyuria, polydipsia, bulimia, emaciation, profuse sweating, nervous disturbances (nervousness, insomnia, tremor, headache). However, while in constitutional iodic subjects a predisposed nervous system is attacked by thyroid intoxication (provoked by iodine), in patients with exophthalmic goitre it is on the contrary the seriously changed nervous system which acts on the thyroid gland by the intermediary of the laryngeal nerves, causing hyperfunctioning which reacts on the nervous system. Thus a vicious circle becomes established. Surgical treatment breaks this vicious circle but does not cure the diseased nervous system. A morbid change of the nervous system and an increase of the thyroid secretion are the two conditions *sine qua non* of the morbid symptomatology. In the first, iodic thyroidism, the nervous changes preexist; iodism gives rise to thyroid intoxication; both conditions being manifested.

In true exophthalmic goitre, the nervous system, more profoundly changed, is the only *primamovens* which starts up thyroid hyperactivity and creates the vicious circle in which the nervous system excites the thyroid secretion, rendering the nervous system more excitable, and so on.

Finally, in the third, Basedow's disease, thyroid hypersecretion preexists, and it is this which creates the nervous lesion by a long continued irritation. One of the best arguments in favor of the theory of thyroid hypersecretion is the success obtained by various serotherapeutic measures based upon this hypersecretion.

Editorial Notes and Comments

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RECOGNITION OF PARTIAL RESPONSIBILITY BY THE UNITED STATES COURTS.

Those of us who have been called at any time to testify as to the legal accountability of a defendant in a criminal action have been fortunate indeed if we found the case in question such an "open and shut" one that we were able to say without hesitation "responsible" or "not responsible," confident that our reasons were convincing to the lay mind. Those of us who are psychiatrists and have been called many times to pass upon such questions have often seen persons accused of crime who, we knew, should be held responsible in some degree and yet who, we felt, should not be judged by the same standards which we would apply to a person of sound and vigorous mind. Such types we call for want of a better name constitutional psychopaths, moral imbeciles (an objectionable term), morons, certain epileptics, drug addicts, and persons in the various borderline conditions, such as hysteria and the psychoneuroses.

The difficulty the medical witness encounters is largely in regard to the legal aspects. In our social dealings with an individual belonging to one of the classes mentioned above, allowances are made for his obvious peculiarities and lack of judgment. A tolerant attitude is assumed by his lay associates. His employer does not burden him with tasks beyond his capacity, his friends excuse breaches of decorum they would not overlook in others, and his relatives learn where to avoid undue pressure. But when such a person commits an offense against the

law, his counsel, especially if there is but little chance of avoiding conviction from the facts, is likely to set up the defense of insanity. If the charge is murder, he is almost certain to do so. The medical witness then sooner or later finds himself compelled to answer yes or no, so to speak, as to whether the accused is responsible. The consequences are various, depending as they do on the nature of the crime, the laws of the State in question, and the personal equations presented by the judge, attorneys, jury, and the expert himself. It quite often happens that the doctor feels that the accused is responsible to some extent, that he realized that what he was doing was wrong and against the law, but he also feels that by reason of a constitutional defect of one sort or another he should not be judged too sternly. However, the expert also knows that should he say that the man is responsible he may influence the jury to a verdict of guilty, leaving the judge no option but punishment, and this may be too severe. Hence he is likely to permit these considerations to influence him to say "not responsible," feeling that if he err at all it should be on the side of mercy.

There are two remedies: The first is the appointment in each legal jurisdiction of a commission, paid by the State and free from mercenary considerations, to which should be referred every defendant whose mental integrity is called into question. After sufficient observation and examination this commission should make a full report covering the accused's mental condition, and this should be used without modification as evidence in the trial.

This scheme is doubtless too radical to be put into force for many years, but we have another remedy which might be adopted and which would probably meet with less resistance. This is the establishment and recognition in law of a "partially responsible" class. This method has been found satisfactory in certain foreign countries, notably France.

Briefly, such a system would permit an alienist to state that such and such an individual was partially responsible, instead of his being obliged to say that he was entirely or not at all responsible. Then when asked why he placed him in that class he could give his reasons, which would of course amount to a full description of the defendant and his peculiarities of character, and thus there would go before the jury an informing picture of the accused upon which it could act with intelligence.

CANADIAN DOCTORS AND UNCANADIAN DISEASES.

It is generally conceded that the medical curricula of the several universities in Canada, with extended courses of from four to five and prospective six year terms, embrace a comprehensive scientific and practical knowledge of every day medicine as seen in that country. Doctors heretofore have not given much attention to those diseases which might occasionally invade the Dominion and which have been looked upon as curiosities of medicine rather than as ailments demanding a knowledge of pathology and treatment equal to that required in the commoner diseases seen weekly or monthly.

The ordinary range of medicine in recent times has often been considered burdensome—even the specialist being unable often to keep pace with the advances in his own particular sphere. The general practitioner plodded along, garnering a bit here and a bit there. In many cases he had to be content with a smattering of knowledge; for the demands of a busy general practice left mighty little time for thorough study, even of the ordinary diseases of his own particular environment. The medical student simply sweated with the curriculum in the fond hope that, after the expiration of his term at college, it would be all over and he could quietly glide into the less strenuous days of doing for himself.

Increased study, however, in medicine is never to end so benignly. Now comes Dr. John L. Todd, of McGill University, Montreal, himself an adept in tropical diseases in so far as a Canadian physician can be, with a plea for a more practical acquaintance with the diseases other than those which usually affect the inhabitants of the Dominion and especially the locality wherein he practises. [*Canadian Medical Association Journal*, August, 1919.]

He gives two reasons for the faith that is in him, first, because the development of rapid transportation has so placed the Canadian doctor that he cannot limit the diseases which may come to him; and second, which he considers more important, because increased knowledge of diseases prevalent in unstudied areas has thrown, and is throwing, light upon many of our daily problems of pathology which have been unperceived, misunderstood, or unexplained.

Canadian universities attract students from many climes—a score of men from tropical countries are studying medicine at McGill alone—and Canadian graduates of medicine go into all the regions of the habitable globe. McGill can count at least three

hundred graduates who live in warm climates. Universities, therefore, who command these students must give them ample instruction in the diseases which after graduation they are to encounter in daily practice. Even the diseases themselves are not unknown in the urban life of the Dominion—malaria, hookworm, sleeping sickness, elephantiasis, and relapsing fever have been occasionally treated in Montreal.

The immigrant brings to Canada with its two persons to the square mile the diseases of the foreign countries having as high as 665 persons to the square mile. What the future policy of the Federal government with regard to immigration will be has not been disclosed, even if it has been formulated, which is doubtful; but it may be depended upon that it will be a watchful policy, even though with the most careful scrutiny, persons will occasionally slip in who are the subjects of diseases unfamiliar to the Canadian practitioner.

The possibilities of aerial travel will have to be reckoned with; the competition of steamship lines for increased business; the acquisitiveness of the various provincial governments with their own agents general, perhaps stationed in the future in many foreign countries, as well as in the component parts of the British Isles; this competition, striving against the United States, Africa, Australia, and South America, cannot but fail to increase the incidence of diseases unfamiliar to the Canadian practitioner. Hence the plea for preparedness.

A knowledge of tropical diseases in temperate climates is a growth of the last quarter of a century. It has piled up an enormous literature to its credit, which has been printed in an extraordinary number of languages; and there is no doubt that the study of them has widened our understanding of health and disease in temperate zones. A study of them will tend to the adoption of similar methods of study in Canada. Little, almost nothing in fact, is known of the protozoan parasites of Canadian fauna and flora. For instance, it is not known how ticks paralyze children and lambs in British Columbia.

No serious students of medicine in Canada, graduate or undergraduate, will be fully equipped to practise intelligently without possessing a knowledge of the pathology of the diseases affecting men and animals in other parts of the world. He may at any time be called upon to treat patients with such diseases. It will give him a better insight in general into human pathology and will often enable him to make a differential diagnosis where otherwise he would be confused.

EVACUATE THOROUGHLY.

This advice, given in a book on health problems which has been widely read, is characteristic of an age which is far less interested in what goes out of its intestines than in what goes into them. This counsel has the support of the medical author of the book and it is more than echoed by another prominent health adviser who would have the bowels (other men's bowels probably) move three times a day. The laxative and enema habits are probably the most vicious of the time and, directly or indirectly, receive altogether too much support from the medical profession. Unhappily, it is affecting all ages, for even active children are too often given their daily dose of laxoria or purgatoria. What other animal must be given laxatives throughout its days? None at any time, save where it is improperly fed. And here is the key to the situation. Where the food is of the right kind and of the right amount there is no good reason why a laxative or cathartic should ever be needed except in an emergency. So far as children are concerned, the character of the food is of most importance, for they do not overeat. Even if the bowels do not move every day or even every other day, where the food is of the right character there is no danger of toxemia. There are those in excellent health, children and adults, who do not have a movement for several days.

As for evacuations three times a day, the absurdity of it must impress the average mind. The large intestine was developed for the purpose of allowing the body some surcease from too frequent closeting, and the hastening of the intestinal contents also causes a serious waste of enzymes as well as of undigested food. Still, with all the array of laxatives which every drug store contains there is one sign of progress and that is, the emetics have practically ceased to exist. Neither the profession nor the laity now need to discharge excess food from both ends of the food tube as was the case two centuries ago. Emetics have gone out of style, and for the reason that men have ceased to stuff themselves as they did in those good old days.

There is no doubt that many people are benefited by laxatives, and that they need to evacuate more or less thoroughly, but it is the place of the health teacher and physician to take care first of the other end of the alimentary canal. If their advice as to feeding is sound, and is followed, the evacuating can safely be left to take care of itself. Alas, personal advice of this sort is seldom available. It is so much easier to give cascara, which leaves the patient (unless something else is done) just where he was before, or maybe worse off. If the physi-

cian's duty is to be done, his word to the seeker after health must be not "evacuate thoroughly" but "eat sensibly," and he should be prepared to outline a sensible diet, as to quantity, quality and preparation. The patient may not always follow the advice, but he is more likely to do so than ever before, and the physician has done his best in the case.

MALARIA WITHOUT THE ANOPHELES.

It is now generally admitted that paludism is the result of an infection transmitted by anopheles. Various opinions on this point have been maintained, however, and certain medical men in malarial countries believe that the mosquito is not absolutely necessary for the transmission of the disease. Whatever may be thought of this theory, it is interesting to be conversant with the arguments in its favor.

Doctor Roux, formerly chief physician to the St. Louis Hospital, in Jerusalem, is among those who believe that the mosquito does not always play a part in the transmission of malaria. He bases his supposition on his personal experience of twenty years and upon the results of his inquiries among colonial physicians. The facts he presents are varied and appear plausible. For example, he refers to the Reunion and Sené, districts which are infested with malaria but in which the anopheles has never been found. Of two neighboring localities in the Tonkin united by railroad, one is renowned for malaria, while in the other the disease is unknown, although the same mosquitoes are found in both places. At St. Rose (Reunion) the time of the year when malaria becomes rampant is just the season when mosquitoes do not exist. To explain malarial infection under these circumstances, Roux resorts to the old theory which supposes that the agent comes from the ground and that epidemics are caused at the time when the soil is being worked. At Hatou (Tonkin) natives living beside a marsh infested with mosquitoes do not contract malaria, while those working the soil some distance away on the hills are victims of the infection. During the campaign of Madagascar, cases of malaria were infinitely more numerous among the soldiers who built the road to Tananarive than among others. At Maurice the first phase of the sugar harvest occurs without the development of paludism among the workers, but during the second phase, that of sowing the seed, the disease appears. Everywhere in malarial countries paludism occurs when the soil is broken for planting, giving rise to severe epidemics.

Roux and his correspondents do not deny the transmission of malaria by the anopheles, and they merely say that this is not the only means of infection. They believe that all measures should be taken to destroy the mosquito, but they do not deny the reality of the older explanations of infection. Roux sums up by saying that the old theory of the etiology of paludism, which has stood the test of years of observation, should not be rejected with disdain. To it should be added the part played by the anopheles in the transmission of malaria from the diseased to the healthy subject, and thus we can be assured of exact knowledge of the various ways of propagation of the disease.

FRANCO-AMERICAN MEDICAL RELATIONS.

The need for immediate organization of facilities for postgraduate instruction in Paris and throughout France is emphasized in a report by M. Tuffier to the Académie de Médecine, Paris. The report deals with a memorandum by Doctor Dehelly on the best means for establishing medico-surgical relations with the United States. M. Tuffier deprecated placing any dependence upon Government cooperation, which might be long delayed, or waiting for the establishment of new university organizations. The postgraduate visitor needed a place at which he could ascertain what was going on from day to day. An association for the development of Franco-American medical relations already existed; foreign visitors could attend the courses of instruction given in medicine, surgery, and the specialties. At the Saint Louis Hospital there was a very complete program—clinical practice, theoretical lectures, demonstrations, and laboratory work. The *Collège des Etats-Unis d'Amerique* already provided a central office. A list could be found there of all the courses in progress in Paris or elsewhere in France, and the addresses of laboratories where instruction could be obtained or researches carried on. It was intended to establish a club in connection with the college. An office on the same lines was to be organized in New York for French students.

News Items.

Millions Asked for Tuberculosis Fight.—An appropriation of \$3,000,000 for a nationwide campaign against tuberculosis is provided in a bill introduced in the Senate recently by Senator France, of Maryland.

Red Cross Workers Decorated.—A number of Red Cross workers have been decorated by Prince Alexandria, of Serbia. Dr. Regina F. Keyes, of Buffalo, received the Order of the White Eagle for services in establishing and maintaining a hospital at Monastir. Dr. Frances M. Flood, of Buffalo, who was associated with Doctor Keyes at Monastir, was awarded the Order of St. Sava.

Postgraduate Course.—The first postgraduate course of the University of Oregon Medical School was held during July in Portland.

Health Department Course.—The Chicago health department is giving a course in Home and Public Health Nursing to more than 1,000 women.

Cholera at Harbin.—An epidemic of cholera is reported to have broken out at Harbin, Manchuria, where it has caused 150 to 200 deaths, mostly among the Chinese. The American Red Cross is assisting the local authorities.

The Safe Vacation.—The United States Public Health Service has published a booklet entitled *The Safe Vacation* to warn vacationists of the dangers that beset them. It contains information on first aid, resuscitation of the drowning, and the treatment of bites, stings, and minor bruises.

Indiana State Medical Association.—The annual meeting of the Indiana State Medical Association will be held Wednesday, Thursday, and Friday, September 24-26, at Indianapolis, under the presidency of Dr. W. H. Stemm, of Mount Vernon. Dr. Charles N. Combs, of Terre Haute, is secretary.

Mosquito Offensive.—Another offensive against mosquitoes is being launched in New Jersey, where health authorities are endeavoring to secure a fund of \$750,000 through public subscriptions of twenty-five cents a person. It is estimated that ninety per cent. of the mosquitoes are bred in the 300,000 acres of marshes along the coast.

Industrial Hygiene Bureau Sought.—The health department of Newark, N. J., is seeking an appropriation for the establishment of a bureau of industrial hygiene. Although the State Department of Labor endeavors to enforce sanitation in the various industries, it is thought that a municipal bureau could maintain closer watch and lessen the danger of disease.

Pennsylvania State Society.—The annual meeting of the Medical Society of the State of Pennsylvania will be held in Harrisburg, September 22d to 25th, under the presidency of Dr. Frederick L. Van Sickle, of Olyphant. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, is secretary of the society.

Suit Ends Hospital Drive.—Residents of Bay Ridge, N. Y., attempted to raise \$100,000 to complete and equip the new Bay Ridge Hospital as a memorial in honor of soldiers and sailors from that section of New York. When \$50,000 had been secured Bay Ridge stopped raising, and now the campaign has terminated in a suit for \$2,000 alleged to be due for the work of the campaign director.

Typhus on Incoming Ship.—Two passengers on the steamship *Regina d'Italia*, which arrived in New York from Genoa early in the week, are being detained at Swinburne Island to ascertain if they are victims of typhus fever. Advised of 6,000 cases of typhus in Italy, Federal health authorities took every precaution against the possible introduction of the disease here. A man among the first-cabin passengers and a girl in the steerage were reported by the ship's surgeon as having typhus. The rest of the passengers were removed to Blackwell's Island for observation, the crew was put through a careful examination, and the ship was thoroughly cleaned.

Universal Licenses to Practice.—A bill granting licenses which will permit physicians to practise in any State in the Union has been introduced in Congress by Representative Mason. The bill provides that any person who has taken a full four year course in a recognized medical school and who has been granted a State license, or any person who has practised medicine for at least five years, may obtain a license to practise in any State on the payment of \$10 to the Secretary of the Interior.

Occupational Therapy Congress.—The National Society for the Promotion of Occupational Therapy will hold its third annual conference September 8th-11th in Chicago, under the presidency of Dr. W. R. Dunton, Jr., of Towson, Md. Headquarters of the society during the conference will be the Henry B. Favill School of Occupations. Among those who will deliver addresses are Dr. H. Canby Robinson, dean of the medical school of Washington University; Lieutenant Colonel H. M. Evans, chief of the division of physical reconstruction, Office of the Surgeon General, Washington, D. C., and Dr. Theodore Werle, director of tuberculous sanatoria in Wisconsin.

Conference of Industrial Physicians and Surgeons.—The ninth Conference of Industrial Physicians and Surgeons of Pennsylvania will be held on September 22d at the State Capitol, Harrisburg, under the direction of the State Department of Labor and Industry. The conference will be held in cooperation with the Medical Society of the State of Pennsylvania, which will hold its annual meeting at Harrisburg during the week of September 22d. Dr. Francis Patterson, chief of the Division of Industrial Hygiene and Engineering of the department, will be chairman of the meeting, and the speakers will include Dr. Frederick L. Van Sickle, president of the Medical Society of the State of Pennsylvania; Dr. Alice Hamilton, of the United States Bureau of Labor Statistics, and John B. Andrews, secretary of the American Association for Labor Legislation.

American Röntgen Ray Society.—The twentieth annual meeting of this society will be held in Saratoga Springs, N. Y., September 3d to 6th, under the presidency of Dr. David Ralph Bowen, of Philadelphia. The headquarters of the society will be at the Grand Union Hotel, and all scientific and executive sessions, as well as the commercial exhibit, will be held in the Casino. An interesting program has been arranged. Wednesday morning's session will be devoted to a consideration of technical topics; in the afternoon a symposium on the x ray in bone diseases will be presented, and in the evening the annual address of the president will be delivered. Among the topics selected for consideration on the following days of the meeting are therapy and physiological action of the röntgen ray; the x ray in lung and thorax conditions; x ray work in the Canadian and American armies; technic of radiosurgery with special reference to adaptation to civil life. Dr. Earl H. King, of Saratoga Springs, is chairman of the local committee of arrangements and will be glad to furnish full information regarding the coming meeting.

Personal.—Sir Shirley Murphy, formerly Health Officer of London, is now in this country studying advanced methods in preventive medicine and public health, as an official delegate of the British Government.

Dr. Alphonse Raymond Dochez, of the Rockefeller Institute for Medical Research, has been appointed associate professor of medicine at the Johns Hopkins University.

Dr. Charles J. Whalen, of Chicago, has been appointed managing editor of the *Illinois Medical Journal*.

Lieutenant Colonel H. L. K. Shaw has resigned as director of the Division of Child Hygiene, New York State Department of Health, and will devote all his time to private practice.

Dr. Ralph C. Matson, of Portland, has been placed in charge of the United States Tuberculosis Sanatorium at Colorado Springs.

Jacobi Memorial Hospital.—Plans for the memorial hospital in honor of Dr. Abraham Jacobi have been expanded to include a nationwide campaign for \$1,000,000. Various trades will be appealed to, and 140,000 physicians will be asked to contribute. Local teams will canvass New York city, and it is proposed to introduce a resolution before the Board of Aldermen declaring the week of November 15th to be Hospital Week to aid the fund. Former Health Commissioner J. Lewis, Amster, Dr. John Riegelman, Dr. Henrik G. MacAdam, and others will take an active part in the campaign. The memorial hospital, which will be for children only, will probably be erected as an annex to the Jewish Memorial Hospital, but will be nonsectarian in character. A large part of the fund is to be devoted to endowment of the institution after it is built, as a tribute to Doctor Jacobi's labors among the poor.

Riverside Hospital for Drug Victims.—Because of pressure exerted by residents of Staten Island, Health Commissioner Copeland has abandoned the plan to treat New York city's drug addicts at Sea View Hospital. The Health Department is utilizing the 700 beds at Riverside Hospital, North Brother Island, for the treatment of drug cases. Patients hitherto occupying the hospital have been removed and the hospital staff has been increased. Doctor Copeland has asked the Board of Estimate for an appropriation of \$75,000 to care for drug patients at Riverside until January 1st. It is planned to give every patient a certain amount of outdoor work, so far as possible, in addition to setting up exercises and gymnasium work. The routine work of the island will be carried on by such patients as are able to work for a few hours a day. This was the third disappointment suffered by Doctor Copeland through the collapse of projected schemes for the care of addicts. The first was the rejection of the Warwick Farm proposition, the second the Pelham Bay Naval Training Station. When it was learned that injunction proceedings would follow the attempt to install drug addicts at Sea View the Health Commissioner determined to go ahead on his own account, use the Board of Health's own hospital on North Brother Island, and forestall further delay or opposition.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

WHEN AND HOW TO USE DIGITALIS.*

BY ROBERT ABRAHAM, M. D.,

New York,

Associate Professor of Medicine in the New York Postgraduate Medical School and Hospital; Consulting Physician to Manhattan State Hospital.

(Concluded from page 339.)

DIGITALIS IN HEART DISEASE.

The judicious use of digitalis in cardiac disease predicates an intelligent understanding of pathological conditions and clinical manifestations translated in terms of dynamic and functional disturbance. The murmur no more sways and warps the doctor's mind in his cardiac therapeutics. The murmur is no more considered "the rift within the lute that shall make the music mute" and as a consequence assail the heart with powerful drugs in order to beat the murmur to submission. The reign of the murmur as an index to therapy is fast disappearing although it still remains, and forever will remain, an important sign of disease of the heart, the dictum of modern cardiac iconoclasts to the contrary notwithstanding, for we must always remember that a sound heart, like a contented human being, never murmurs.

CHRONIC MYOCARDITIS.

We are warned from time to time not to use digitalis in myocardial degeneration. The warning is based on the assumption that the degenerated muscular fibres are likely to rupture under the increased tonicity and contraction brought about by the action of digitalis. Practice runs counter to this theoretical caution. Patients affected with old myocarditis can stand digitalis in doses of fifteen or twenty minims of the tincture three times a day. The fact of the matter is that such patients should be given digitalis as a part of their necessary medication. My patients demand it, if by chance or oversight the drug is omitted from their stock of remedies.

AURICULAR FIBRILLATION.

It is perfectly possible that the success which William Withering, a Birmingham practitioner, achieved with foxglove away back in 1785, was in the treatment of auricular fibrillation, for digitalis in that cardiac disturbance is a positive specific. And since the publication of Withering's *Account of Foxglove*, lady's finger, another name for the plant, was kissed and caressed by many a cardiac sufferer. Auricular fibrillation is a condition of turmoil, riot, and delirium producing rapidity, irregularity and a host of distressing sensations. Digitalis sets the riotous heart at peace, produces order out of chaos, but the dose must be heroic. I give a dram of the tincture three times a day until the orderly action of the heart has been reestablished and then the dose is reduced to half or less and continued indefinitely. To attempt to treat this

heart condition with homeopathic doses would be a flagrant abuse of the drug.

VALVULAR LESIONS.

In using digitalis in the treatment of valvular disease of the heart it is essential to ascertain to what extent the valve or valves are damaged; to what extent the damaged valve influences the integrity of the muscle, and to what degree the function of the heart is disturbed. To facilitate the treatment of these lesions I adopted many years ago a schematic classification of them, by dividing the lesions into stages, the stages acting as a guide to the use of digitalis as well as to the avoidance of its use.

MITRAL INSUFFICIENCY.

Mitral insufficiency is divided into three stages. The first stage is characterized by one sign, and one sign only, namely, a systolic murmur at the apex. The murmur may take the place of the first sound of the heart or a part of it; it is limited to the apex. This is the murmur that some clinicians call hemic but which is not hemic but organic, as prolonged observation of the case proves the correctness of the interpretation of it. This stage of the lesion requires no digitalis or any other cardiac stimulant. Digitalis used in this stage is abused and the heart on which it is used is likely to be thrown out of gear. The second stage is characterized by the systolic murmur mentioned above plus displacement of the apex; slight hypertrophy and dilatation; accentuation of the second pulmonic sound; systolic thrill and a slightly diminished pulse when it is taken while the arm is held in an upright position. The use of digitalis in this stage depends entirely on the presence or absence of symptoms, such as dyspnea on exertion, cyanosis on exertion, mild edema of the ankles or toes, etc. The appearance of one or two symptoms is a signal that the heart is in distress and digitalis should be given. The correct and helpful dose of the drug in this condition is twenty minims of the tincture three times a day, and continued until the effects of the disturbed compensation have disappeared. It may take three days or it may take a full week before compensation is restored, but it will be restored. Of course if the patient is obedient and will go to bed while the digitalis is given, compensation will be all the more quickly restored. When the latter result is happily obtained it is folly to stop the administration of the drug; rather is it wise to reduce the dose one half and continue it indefinitely regardless of the ancient fable of "the cumulative effects of digitalis." The third stage embraces all the physical signs of the first and second stages, very much more pronounced, and added to them the whole gamut of symptoms and distress which follow and accompany complete failure of compensation. In this condition dram doses are to be given twice and three times a day until visible improvement is established, which takes two or

*Read by invitation before the Williamsburg Medical Society, 1918.

three days; thereafter half dram doses until still greater improvement is obtained, when a further reduction is effected, say twenty minim doses, which are to be continued indefinitely, practically as long as the patient lives. My method is to give that dose five days a week, and then discontinue the drug for two days. While these large doses are given, the patient should be in the recumbent position all the time to avoid syncope which sometimes results from suddenly getting up.

MITRAL STENOSIS.

This lesion is divided into two stages, one might say, the bad and the worse. The first stage is characterized by the presystolic thrill, a sign which is more common in stenosis than in insufficiency; presystolic murmur, which in this valvular defect is not as steady as in regurgitation; the apex may or may not be displaced; if there is a displacement it is not very marked; accentuation of the second pulmonic sound, and slight diminution of the pulse when taken while the arm is held in an upright position. This stage is incompatible with digitalis unless it is associated with auricular fibrillation. The patients as a rule feel comfortable with the exception that they get tired easily and are subject to occasional attacks of palpitation. In the event of decompensation, as indicated by such symptoms as dyspnea or severe, irritating cough, the employment of the tincture *strophanthus* in five or ten minim doses, or *caffeine sodiobenzoate* in five grain doses three times a day, is preferable to digitalis. *Caffeine sodiobenzoate* fulfills the purpose of a heart tonic in mitral stenosis until the heart failure is all but complete. When this condition sets in (the second stage), the mitral insufficiency, either relative or organic, becomes noticeable, dilatation of both ventricles will also be present with a whole series of sequelæ in its train. This clinical panorama demands the use of digitalis in doses of thirty minims three times a day, soon to be reduced to twenty minims three times a day. For one reason or another the first stage of this valvular lesion does not stand digitalis well.

AORTIC INSUFFICIENCY.

The first stage of this disease is "featured" by one sign, namely, a diastolic murmur over the aortic area, or the fourth left interspace close to the sternum, or over the ensiform cartilage. The Corrigan pulse is not sufficiently well marked in this stage. The second stage is characterized by the murmur, the jerking and collapsing pulse, the displacement of the apex, throbbing of the visible arteries, and immense hypertrophy of the heart. The third stage is manifested by all the signs of the first and second stages plus symptoms, namely, vertigo, precordial pain, sleeplessness, anemia, nightmare, and if the dilatation exceeds hypertrophy, also dyspnea and edema. The first stage requires no cardiac stimulant whatsoever. Digitalis would work havoc on a heart like this. The second stage needs no digitalis. Iron, arsenic, and strychnine are more useful. The third stage needs digitalis but the drug should be used not with fear but with understanding.

The fear of the use of digitalis in aortic regurgitation is fostered by some ancient and modern text books on *materia medica* and the practice of medicine. The fear is based upon the fact that victims of aortic incompetency die suddenly through an abnormal influx of regurgitating blood into the cavity of the left ventricle. This abnormal amount of blood in the cavity of the ventricle taxes its capacity, and in order to accommodate the fluid, the ventricle undergoes acute dilatation, the sudden and acute dilatation resulting in instant death. It is argued that any drug which is known to prolong diastole should be eschewed, for a prolonged diastole means more time for the ventricle to receive blood and more time for the blood to flow back and a possibility for acute dilatation, paralysis of the heart muscle, and instant death; and as digitalis is the drug that prolongs diastole, it is to be avoided in the treatment of aortic regurgitation. Yet, as a matter of fact, digitalis is very useful in the third stage of the lesion or even in the second stage if one or two symptoms appear indicative of commencing decompensation, but the drug should not be ordered in an haphazard way, "just so many drops every four hours." It should be given with system and, above all, with understanding. I have adopted the following method and confidently recommend it. This method consists in beginning the treatment with five minims of the tincture three times a day and increasing the daily dose by one minim until twenty or twenty-one drops three times a day are taken. After this dose is attained, the daily dose is reduced by one minim until the starting dose of five minims three times a day is reached, and this five minim dose is kept up indefinitely. I have never seen any bad results from this method of administering digitalis. When the aortic regurgitation is associated with mitral regurgitation, the latter being either organic or relative, the dose of digitalis can be much larger.

There is one important contraindication to digitalis in the case of aortic insufficiency and that is an intermittency in the heart contractions not in the pulse. A point of importance while digitalis is used in large doses in mitral insufficiency and in small or large doses in aortic insufficiency, the patient should lie quietly in the recumbent position to avoid anemia of the brain which may result in syncope. This position is particularly urgent immediately after taking the drug.

Aortic stenosis is a benign disease and needs no digitalis until dilatation sets in. The time which intervenes between the appearance of dilatation and the death of the patient is so short in aortic obstruction, that it makes little difference which drug is used, in what dose, and of what frequency.

As a final word about the use of digitalis in either lung or heart disease, do not fail to give the patient a grain of calomel twice a week. This paper is already too long to enter into an explanation of why I recommend the use of calomel, but use it.

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Flavine in Ophthalmic Surgery.—Arnold Lawson (*Lancet*, June 28, 1919) says that he generally employed a solution of proflavine of 1 to 1000 strength in normal saline and found it an exceedingly powerful antiseptic, relatively free from irritant action or toxic properties, and one which was not neutralized by admixture with serous exudate. This solution is absolutely nonirritant and painless in the most acutely inflamed eye, but its efficiency in wounds of the eye depends very largely upon its continual presence, hence it should be prescribed in the form of drops to be applied at least three times daily. After two or three days' use some irritation may appear in certain cases, as a mild leucocytosis, when the solution should be reduced to 1 to 4000, at which strength the applications can be continued indefinitely. This weaker solution also does not interfere with the growth of granulation tissue, as does the stronger. The greatest field of usefulness in wounds lies in operative cases where asepsis is to be maintained and especially where sutures are used. It is also of the utmost service in all sorts of accidental traumatism, provided the patient receives treatment early before sepsis has already begun. Where an operation has to be performed on a "dirty eye" the use of flavine gives excellent results, and it is invaluable as a dressing for grafts of all kinds. In general it is less useful than the usual remedies in most of the inflammatory diseases of the eye, but in many of these it does constitute a useful adjunct to other methods of treatment.

Subcutaneous Injections of Salicylic Acid in the Treatment of Rheumatism and Gout.—J. Séjournet (*Presse médicale*, May 22, 1919) prepares a sterile 1 in 1000 solution of salicylic acid by pouring one litre of boiling water over one gram of salicylic acid, and injects one mil of the (cold) solution into the subcutaneous cellular tissue over the affected joint. The solution contains but little salicylic acid and causes practically no pain, yet is capable of causing disappearance of acute rheumatic arthritis, torticollis, lumbago, or pleurodynia in a very short time—in some cases within a few minutes. In very sensitive patients 0.005 gram of cocaine may be injected before the salicylic solution, the needle being left in the same place for the latter. Intramuscular injection is painful, and should be avoided. The treatment is applied whether the rheumatism is acute, subacute, or chronic, and whether one or several joints are involved. The injection is made as nearly as possible in the plane of the affected articulation. Injections are repeated daily where necessary. By the fourth or fifth day, pain and swelling have nearly always disappeared. When acute rheumatism is treated early extension of the disease is almost certainly prevented and the chances of the patient escaping endocarditis are greatly increased. Indeed, in one instance the treatment seemed to arrest a beginning endocarditis. In chronic rheumatism pain is reduced by the treatment. In muscular rheumatism, one mil of the solution is injected at the point of greatest discomfort, usually with immediate relief. In a case of acute gout three injections administered in the course of five days

brought relief and initiated convalescence. One mil is injected as near as possible to each gouty joint; in the case of the great toe, over the first intermetatarsal space. To obviate pain, 0.5 mil of one per cent. cocaine solution may precede the salicylic injection. In five cases of sciatica recovery took place in eight to ten days under daily injections of salicylic acid at the point of emergence of the sciatic nerve from the pelvis.

Nearsphenamine Injections in Septicemia and Wounds.—A. Bréchet (*Paris médicale*, May 24, 1919) states that in typical septicemia in which rapid infection of the blood stream is the main feature, nearsphenamine intravenously, .2 or .3 gram, seemed to give good results. Where, however, there were pronounced local foci inducing successive waves of bacilemia or a progressive toxemia, no effect was apparently produced. In a case of streptococcal septicemia with positive blood culture, greater benefit was observed than had previously resulted from electrargol intravenously, antistreptococcal serum, peptone, and a fixation abscess. In recent wounds, nearsphenamine injections exerted a beneficial action both locally and constitutionally. The benefit was manifested in a reduction of temperature to normal, rapid improvement in the appearance of the wound, and a tendency to more prompt healing. These effects begin to assert themselves on the third or fourth day after the injection. They apply in infected, often gangrenous wounds of the soft tissues, and are not distinct in infected fractures. In wounds already of sufficiently long standing to have caused marked changes in the underlying and surrounding tissues through inflammatory reaction, including induration of the tissues and peripheral fibrosis cutting down the blood supply, no appreciable results followed the nearsphenamine injections.

Treatment of Meningitis.—Willard J. Stone (*Ohio State Medical Journal*, August, 1919) reports 259 cases of meningitis at the Base Hospital at Fort Riley, Kansas, from September, 1917, to February 7, 1919. His conclusions are as follows: Early treatment is of greatest importance. On the first day, give one intravenous injection of from sixty to eighty c. c. of serum and two intraspinal injections of from thirty to forty c. c. each after spinal drainage of from forty-five to fifty-five c. c. of fluid, depending on its pressure. On the second day the same amount should be given except that eighty to one hundred c. c. of serum should be given intravenously and two spinal injections. On the third and fourth days repeat if necessary; on the fifth to the eighth day give one spinal injection; on the ninth and tenth days, spinal drainage only. It has been proved wise to desensitize before giving the first intravenous injection, by subcutaneous injections of 0.5 and one c. c. of serum. The intravenous injections should be given slowly at the rate of one c. c. of warm serum a minute for the first ten or fifteen c. c. If anaphylactic symptoms occur the injections should be stopped and attempted later on. One c. c. of epinephrine solution, hypodermically, will relieve symptoms of anaphylaxis should they occur; atropine 1/100 grain is also useful for that purpose. Overtreatment may do positive harm.

Detoxicated Vaccines.—David Thomson (*Lancet*, June 28, 1919) points out that each species of germ is a specific antigen, whether dead or alive, and that the greater the amount of antigen which is administered, the greater is the quantity of antistubstance that is produced. Nearly all germs, however, are so toxic that only very small amounts can be injected in the form of vaccines and hence the amount of antistubstance produced is very small. Thomson then describes his discovery of a method of detoxifying vaccines by solution of the bacterial substance in alkali, neutralization of the alkali, and precipitation thereby of a nontoxic fraction which retains the original specific antigenic properties of the organism from which it was obtained. Quantitative determinations were made to compare the immunity resulting from the use of ordinary gonococcal vaccine in small and in large doses, and of a detoxicated gonococcal vaccine prepared from the same organisms. Patients receiving no vaccine served as controls and developed an average of three units of immunity. Those receiving ordinary gonococcal vaccine in doses of five to 100 millions developed an average of four units of immunity; those receiving doses of twenty-five to 200 million developed five units; while those treated with detoxicated vaccine in doses of 2,500 to 10,000 million developed from eight to twelve units of immunity. The clinical course of the gonorrhea followed the results of the immunity tests quite closely. The enormous doses of the detoxicated vaccine produced no ill effects, either local or constitutional. Similar comparative results followed the administration of ordinary and detoxicated gonococcal vaccine to normal persons, both with respect to the immunity developed and to the reactions produced. Analogous results were obtained in the treatment and prevention of nasal and bronchial catarrhs by the injection of very large doses of a mixed, detoxicated vaccine containing pneumococci, *Micrococcus catarrhalis*, *Bacillus Friedländer*, *Bacillus septus*, streptococci, and *Bacillus influenzae*. In the use of detoxicated vaccines the nontoxic precipitate may be redissolved with the aid of alkali and injected in solution, or it may be prepared in a solution of one half of one per cent. acid sodium phosphate and injected as an emulsion. The latter seems to be the better, since the slower absorption of the antigen largely eliminates the danger of the negative phase.

Detoxicated Vaccines in the Treatment of Gonorrhea.—David Lees (*Lancet*, June 28, 1919) employed the detoxicated gonococcus vaccine prepared by Thomson in the treatment of several series of cases of gonorrhea, comparing the results with control cases and also controlling his observations by means of serological tests of immunity response. He concludes that vaccine therapy by means of the nontoxic stroma of the gonococcus either in solution or as a precipitate, can provoke a specific reaction when sufficient doses are used. It is the most logical, scientific, and effective way of treating gonorrhea and its complications. Doses of 2,500 to 10,000 million do not produce any negative phase. No other form of gonococcus vaccine and no phylacogen causes such rapid and great specific reactions unless used in toxic doses. Very

large doses of the detoxicated vaccine are practically nontoxic and only very rarely cause a severe general reaction. All cases treated with this vaccine run a much milder course than do cases not so treated and there is an absence of complications and less tendency to relapse, due to the presence in the circulation for several months of sufficient antistubstance to give protection. Every case treated with vaccines should also be treated locally as a surgical condition, the vaccine being used as an adjunct to such treatment and its doses being regulated by the results of serological tests and by close observation of the bacteriological progress of the disease. When secondary organisms are found in the discharge a vaccine made from them should be added to the gonococcal vaccine. Finally, the detoxicated gonococcal vaccine should prove of inestimable value in the complications of gonorrhea in the female where local treatment is so limited.

Surgical Treatment of Scars Resulting from War Wounds.—Walther (*Bulletin de l'Académie de médecine*, June 3, 1919), referring exclusively to scars on the extremities, emphasizes the advisability, wherever possible, of completely removing all scar tissue and carrying out surgical repair with normal tissues alone. Scars causing pain or deformity have hitherto compelled the surgeon to operate for their relief, but too often, in their absence, large deep scars causing permanent disability have been held inoperable where actually an operation would have conferred great benefit. Deep scars often cause disability which is not apparent during rest but shows itself upon repeated movements or fatigue and greatly interferes with work. Others evoke such reflex disturbances as lead to the impression that the patient is exaggerating or is an actual malingerer. The best plan for insuring complete excision of a scar is to remove it *en masse*, including the cutaneous scar. Dissection of the outer margins of the incisions about the cutaneous scar needs often to be pushed very far, until normal subcutaneous cellular tissue can be exposed. The deep scar forming the pedicle of the skin scar is then dissected free on all sides. Muscle scars are often surrounded by a zone of fibrous myositis, and nearly always, if injury of a nerve trunk coexists, one finds a large hard mass infiltrating the neighboring damaged muscles. This woody mass, as Nageotte showed, is merely a neuroma due to proliferation of axis cylinders from the injured nerve in the muscle tissue. The entire fibrotic mass should be excised and the muscle injuries repaired either by end to end suture or by bringing the superficially lying layers of muscle tissue over it. Where the scarring is very extensive, the repair operation may be done in several stages. During the operation the tissues should be kept freely bathed in normal saline solution, which not only maintains life of the tissues but exerts a most useful hemostatic action during the deep dissection. Postoperative hematomata are obstacles to repair, and are best obviated by complete immobilization of the limb for fifteen or twenty days, or sometimes longer in transverse injury of a muscle or tendon. The skin sutures consist of fine catgut and do not require removal.

Cure of Multiple Warts on the Face.—Charles Ind (*British Medical Journal*, July 5, 1919) says that the removal of these tiny warts is often very difficult, and he records a case in which all of the usual methods of treatment were applied for long periods of time without the least benefit. Finally the patient was promptly cured by the following simple combination of methods: The warts were painted three times a day for one day with a saturated solution of salicylic acid in alcohol and on the following morning they were cut off by means of a flat, sharp steel instrument, bevelled on one side only. This procedure was entirely painless and left a slightly bleeding point at the site of each wart. The surface was immediately painted with the salicylic acid solution, and this was repeated twice on the same day. This left small brown scabs, which were bathed once daily with pure alcohol until they dropped off, leaving a perfectly smooth, healthy skin surface.

Urticaria Due to Emetine.—R. Savignac and A. Alivisatos (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 13, 1919) reports the case of a man of forty-two, suffering from amebic dysentery for three years, who was given four series of six injections each of 0.04 gm. of emetine hydrochloride without untoward effects. When a fifth series was begun, however, there appeared patches of erythema, later passing into local necrosis and sloughing. During the sixth series large patches of urticaria appeared at intervals and persisted one month after the last emetine injection had been given. The patches occurred on the limbs and had rounded, raised margins; they were red and hot peripherally, paler in the centre. The patches appeared for one day only, and in regions with loose cellular tissues, such as the scrotum and penis, resulted in a soft, transparent type of edema. After the final completion of emetine treatment, the urticaria did not pass off for five months. Emetine was intermittently present in the urine for three months after the last injection. This confirms the observations of Mattei and Ribbon on the protracted elimination of emetine; they found it to persist in the urine for sixty days.

Serum Treatment of Typhoid Fever.—A. Rodet and S. Bonnamour (*Bulletin de l'Académie de médecine*, June 3, 1919) report the results obtained in a series of 127 cases treated exclusively with antityphoid serum. The total mortality was eleven per cent., but eliminating certain patients suffering in addition from advanced tuberculosis, genital septicemia, suppurative hepatitis, and diphtheria, the mortality was reduced to 5.8 per cent. Excluding all patients but those treated before the twelfth day, the mortality was but 2.9 per cent. The administration of serum should be begun as soon as possible, but should be employed even in patients received late, always producing at least some favorable effect. The first injection consists of fifteen or twenty mils. If a reduction in temperature follows within forty-eight hours, no further injection is given as long as defervescence continues. If, however, the reduction fails to occur or the temperature reascends, a second dose of ten to fifteen

mils is given forty-eight hours later. The third dose is similarly regulated, and consists of only five to ten mils. Generally, three injections suffice, frequently but two, and occasionally one. In a few instances fourth and fifth injections at the usual two-day intervals are required. More frequently, serum is repeated for recrudescence or relapse after a more prolonged period of improvement. The serum acts both on the temperature and the symptoms. It never causes the immediate rise in temperature which often attends vaccine or colloid metal injections. Often the temperature shows a marked drop within twenty-four hours after the first injection. Even if it soon reascends a favorable prognosis is indicated, the temporary drop often being the forerunner of an early reduction by lysis. Sometimes the first injection is followed by a progressive, permanent effect on the temperature. Absence of effect on the temperature after three injections points to a different or superadded infective process. Toxic manifestations are reduced to a minimum by the treatment, which is contraindicated neither by hemorrhage nor an already grave condition of the patient.

Action of Strychnine upon the Output of Epinephrine from the Adrenals.—G. N. Stewart and J. M. Rogoff (*Journal of Pharmacology and Experimental Therapeutics*, May, 1919) found in the dog and cat that strychnine caused a marked increase in the output of epinephrine from the adrenals. Outputs ten times the original amount were observed. The increase persisted for a considerable time. When the last adrenal sample was taken, usually an hour to an hour and a half after the strychnine injection, the epinephrine output was still, as a rule, notably augmented. Indeed with the smaller doses the output was sometimes greatest at this time. Doses of strychnine well within the therapeutic range, which caused little or no exaggeration of reflex excitability, produced a considerable increase in the output. The animals being necessarily well anesthetized, it is supposed that still smaller doses would suffice in nonanesthetized animals. Indications were obtained in some experiments that the stage of prolonged increase of the output, which constitutes the principal action of the drug, may be preceded by a transient diminution; this was best seen with the smaller doses and upon subcutaneous administration. No evidence was found that under strychnine the possible normal maximum concentration of epinephrine in the plasma—something like one in 500,000—can be increased. In spite of the greatly increased output caused by strychnine, there was no evidence that the epinephrine store of the adrenals is distinctly diminished even by the prolonged action of the drug in large and repeated doses. The accumulation of epinephrine in the glands is therefore increased as well as its liberation. This is what occurs during stimulation of the splanchnic nerve, except when intermittent stimulation is continued for very long periods. It corroborates other evidence that the strychnine effect is produced by an intensification of the secretory process through the nervous mechanism which normally governs it, and not by a direct action on the adrenals.

Miscellany from Home and Foreign Journals

Edema of the Lungs as a Cause of Death.—M. C. Winternitz, and R. A. Lambert (*Journal of Experimental Medicine*, June, 1919) have studied the problem of whether the mere accumulation of fluid in the lungs is of itself a serious matter. As death in fatal cases of gas poisoning has been frequently attributed to edema of the lungs such an investigation is interesting. For the work they used 3,000 dogs and an equal number of other animals during the past two years. These were exposed to different gases and then observed clinically and at autopsy, particular attention being paid to pulmonary edema, which in man is a fairly constant accompaniment of the gassed state. An artificial pulmonary edema was also studied, which was produced by filling the lungs of a normal dog with isotonic salt solution. As a result of these experiments the authors question the importance of pulmonary edema *per se* as a cause of death, and think that it is rather an indication of some underlying disturbance. They were led to these conclusions by the following facts: Animals dying immediately after exposure to such gases as chlorine and phosgene at autopsy showed varying degrees of edema, and rats and guineapigs which are particularly susceptible to these gases may show little edema of the lungs. Dogs which have been killed before the action of the gas reaches its maximum action may show marked differences in the amount of fluid in the lungs, and these differences do not harmonize with the variation in symptoms shown by the animals. Also dogs which have recovered often show greater edema than those which have succumbed. The increased concentration in the blood of the gassed animal has been regarded by some as a trustworthy index of the condition of the animal, and as a guide to therapy. The authors found that there was not necessarily a relation between this increased concentration and the amount of pulmonary edema present.

The Test of Recovery from Pulmonary Tuberculosis.—L. Rénon (*Bulletin de l'Académie de médecine*, June 3, 1919) points out that it is not as yet possible to make certain of recovery from phthisis by clinical procedures of examination, however carefully conducted. Complete disappearance of tubercle bacilli from the sputum for a period of at least one year is, of course, the initial test. Negative guineapig inoculation and albumin reaction should be obtained. Complete absence of expectoration is not to be expected, as expectoration free of tubercle bacilli may result from fibroid changes or bronchitis. The tuberculin test should be carried out, but not relied upon too much. The x rays, while they permit of following out local improvement, do not definitely reveal complete recovery, as a scar alone will give a shadow. The body weight and blood pressure should have remained unchanged for some time at reasonably high figures. Absence of temperature rise after any amount of muscular exercise is another necessary condition. Prolonged absence of all adventi-

tious sounds during deep inspiration after cough is an important indication, especially upon auscultation in the outer portion of the infraclavicular fossa, at the anterior margin of the trapezius. When all these indications have remained favorable for twelve to fifteen months, the author, in order to make a definite decision as to recovery, which would permit of the patient's resuming all usual social relations, applies what he terms "the test of progressive adaptation to activity." This test covers three months, and consists in having the patient work, at first for a few hours, morning or afternoon, on alternate days, then for a gradually increasing number of hours, morning, afternoon and evening. During the first two months rest days are interspersed with diminishing frequency. In the third month, no rest days are given. Throughout the test period the patient's weight, temperature, blood pressure, and auscultatory signs are recorded at regular intervals. Any rise in temperature, cough, increase of expectoration, or râles below the clavicle on inspiration rendered the test negative. The author has been using this test for seventeen years. In two thirds of the patients who passed the test successfully, health was subsequently maintained for periods ranging up to seventeen years. The test is best made in the late summer and fall months.

Conjunctivitis Due to Food Anaphylaxis.—Frank A. Conlon (*American Journal of Ophthalmology*, July, 1919) reports three cases in which the accuracy of the etiology of the conjunctivitis in each was confirmed by the protein skin test. In the first case the patient was a young man who had always suffered from sore eyes, an acute conjunctivitis, on the day after he ate freely of either tomatoes or strawberries. Indulgence in a catsup containing tomatoes always brought on a marked conjunctival hyperemia. The second patient was a man fifty-six years old who suffered from a chronic hyperemia of the conjunctiva which for some years had given him constant discomfort. Egg protein alone caused a reaction to the skin test, and the elimination of eggs from his diet was shortly followed by a total disappearance of the symptoms. He has remained well for two years. The third patient was a man twenty-eight years old in whom conjunctivitis was caused by eating flounder. Other causes were excluded in all three. Conlon believes that a number of diseases whose etiology is now grouped under the indefinite head of autointoxication will be found to be anaphylactic phenomena. In the absence of uncorrected ametropia, all recurring low grade inflammations of the conjunctiva, which the patient is likely to call "frequent attacks of red eyes," should be considered as possibly due to food anaphylaxis. This is especially true when the attacks appear in the same month year after year. After obtaining a positive skin test the proof as to this food being the cause of the conjunctivitis is readily obtained from the patient.

The Ear and Deafness in Musicians.—A. Cas-tex (*Bulletin de l'Académie de médecine*, June 10, 1919) points out that among musicians various forms of deafness determine special symptoms not observed in other patients. Anatomically the musician's ear presents no special characteristics, but physiologically it does, perceiving details, such as harmonics, which escape the ear of the nonmusical. It is the musician's brain, however, rather than his ears which perceives these minor details. Grouping his cases, the author found that deafness may alter the intensity, pitch, and timbre of the sounds heard. The ear undergoing sclerosis can no longer hear any but the acute and metallic sounds. It hears nothing of the words uttered by the singer. As regards pitch, there are cases of diplacusia. One ear hears correctly and the other half a tone or even an octave lower. There are also faulty perceptions of tonality, and prolonged persistence of sounds. As concerns timbre, the sounds lose their musical quality and are heard simply as noises; or the instruments may seem to have a nasal or a silverlike quality. Painful hyperacusia is not uncommon among deaf musicians. Some fall into syncope from the action of intense sounds—organ or brass band—because their diseased ear has lost the services of its inhibitory apparatus. The prognosis depends on the temporary or permanent nature of the otic disorder; but incomplete deafness does not keep a musical ear from appreciating the qualities and accessory effects of sounds.

Causes and Duration of War Deafness.—Marage (*Bulletin de l'Académie de médecine*, June 10, 1919) describes chiefly experiments with explosives bearing on this question. The curves obtained indicated that the initial excess of atmospheric pressure induced by discharge of modern explosives is at least 150 to 300 kilograms to a square centimetre and that the initial rate of displacement of the pressure waves is 2,000 to 3,000 metres a second. They showed also that the excess pressure and its rate of displacement decrease rapidly as the distance from the centre of explosion increases, the pressure falling to two or three kilograms to a square centimetre at a distance of twenty metres, and being practically nil at a distance of fifty or sixty metres. In some instances, however, an excess pressure of one millimetre of mercury was registered 1,300 metres away from the explosion of a large calibre shell. Simple explosive charges showed a uniform diffusion of the pressure waves about the centre of explosion. In the case of shells, however, there was a zone of very high pressure exactly lateral to the exploding projectile, cones of somewhat lower pressure in front of and behind the projectile, and in between these, dead spaces, or rather spaces of negative pressure. Soldiers exposed to these dead spaces have experienced a sensation as of being expanded, drawn out, or emptied. Penetration of the shell more or less deeply into the soil, and the presence of obstacles such as walls, may considerably modify the results, e. g., by inducing reflected waves which interfere with the primary waves. The wide variation in the clinical effects from nearby shell explosions is easily understood in view

of these facts. The enormous excess of pressure must in some instances produce permanent injury to the ears; hence the fact that in cases of war deafness, with or without dumbness, the patients are not recovering in a ratio of ninety-eight per cent., as had at first been hoped. This is illustrated by the fact that in the aural service at Bourges the degree of deafness has been found to remain unchanged after the third month, and that the number of men receiving special privileges for deafness is not diminishing as time elapses.

The Effects of Faulty Craniospinal Form and Alignment upon the Eyes.—Lloyd Mills (*American Journal of Ophthalmology*, July, 1919) says that the largest class of patients whose symptoms have previously been most distressing and most discouraging, because hitherto almost unbelievable, is that showing from two to six degrees of exophoria at distance, exophoria for near of from nine to over twenty degrees and usually variable, adduction equal to or less than abduction, frontal, suboccipital and nuchal aching provoked by close work and usually worse the following day, soreness at various points along the spine, and with general nervous symptoms which have caused the sufferers to be classed among the psychasthenics. Some have little or no refractive error, though the majority have compound hypermetropic astigmatism. A careful orthopedic examination shows that, with hardly an exception, these cases occur in connection with abnormal spinal twists and rotations, especially cervicothoracic, with irregular and painful impingements of normal or of abnormally broad lateral processes, with overlapping impingements of the posterior spinous processes in cervical lordosis, with arthritic enlargements of the articulations, fibrositis and periarticular thickenings. Nearly all show muscular spasm and soreness over the points of muscular and ligamentous insertion which are being unduly stretched as the effect of faulty skeletal alignment. A common fault is the lateral bending with rotation which occurs in scoliosis. The ocular disturbance is probably due to the reflex effect produced in the cervical sympathetic.

A Case of Keratitis Profunda (or Disciformis?) with Microscopic Examination.—F. H. Verhoeff (*Southern Medical Journal*, July, 1919) gives a very complete report of this case and concludes with the following remarks: Disciform keratitis may be produced by a variety of causes, and from an etiological viewpoint is therefore not an entity. Certain cases are of the same nature as keratitis profunda. The corneal changes in keratitis profunda are due to the action of diffusible toxic substances arising near the anterior surface. The changes consist in alteration of the epithelium, destruction of the corneal corpuscles, injury to the stroma in the anterior layers of the cornea, and proliferation of the corneal corpuscles behind and around the injured area. In addition to this there is injury to, or destruction of, the endothelium, and, in severe cases, deposition of fibrin and leucocytes on Descemet's membrane behind the affected area. Leucocytic infiltration of the corneal stroma is conspicuously absent. The microscopic findings indicated a neuropathic origin for keratitis profunda.

The Menopause.—C. C. Norris (*American Journal of Obstetrics*, June, 1919) from a study of 200 cases, believes the generally accepted statement that the menopause is established at forty-two to forty-five years is incorrect; forty-six to forty-nine is nearer the actual age in the Eastern United States. The following conditions prolong the menstrual functions: Childbearing, marital relations, good nutrition and hygiene, city life, and education; the converse conditions tend to induce an earlier menopause. Heredity is in many cases a potent factor, the menopause in some families occurring early, in others late. In the majority of cases, the chief feature of the menopause is not the cessation or diminution of bleeding, but the neurones. These frequently precede any change in the menstruation and may continue for six to eighteen months after the final cessation of bleeding. The actual bleeding is, however, the barometer of health. Normally, the menopause is established without an increased loss of blood. When menorrhagia occurs, an examination is indicated. Metrorrhagia should always be viewed with suspicion. The menopause occurs normally in about ninety per cent. of absolutely healthy women. Among average women, however, fully thirty per cent. present symptoms which call for a careful physical and gynecological examination. Care by the physician at the menopause results in its establishment with less discomfort and the earlier diagnosis of malignancy.

The Prognosis of Nerve Injuries.—Robert Kennedy (*Lancet*, July 5, 1919) says that to estimate the prognosis of nerve injuries from all points of view it is necessary to have had not only a considerable number of cases, but to have had these patients under observation for a number of years. It is therefore not possible to estimate this properly from cases observed only from the beginning of the war. Nerve injuries more than any others are influenced by many factors which have a profound effect on the prognosis. One of the causes most unfavorable to nerve regeneration is sepsis in the wound, which has been thought to be a complete bar to regeneration. This is not necessarily true, however, for some patients with markedly septic wounds have made good recoveries. It is, nevertheless, to be regarded as always an unfavorable factor. The absence of sepsis does not mean an assured recovery of function, because of the profound influence of other factors. The nature of the damage to the nerve greatly affects the prognosis, cicatricial compression of slight grade being generally regarded as more favorable than complete severance of the trunk; but such is not the invariable rule. The extent of the damage to the tissues surrounding the injured nerve influences the prognosis; the greater the damage the more unfavorable the outlook. The same holds with reference to the amount of trauma accompanying the nerve injury. The nerves injured and the situation of the injury also materially affect the prognosis, and it may be said that, other things being equal, the larger the trunk—up to a certain size—the better the prognosis. Wasting of the muscle supplied by the damaged nerve is the most serious effect of a nerve lesion and profoundly in-

fluences the prognosis. No functional recovery of the muscle is possible until the muscle is largely built up and restored to a condition in which the electrical reactions are normal. The time required for this will vary widely with the extent of the wasting. Therefore, other things being equal, primary suture of the nerve will secure recovery in the shortest possible time. But other things are not always equal, and, in war injuries especially, primary suture is seldom possible on account of sepsis and the severe lacerations and traumas. When primary suture is not possible the wound should be encouraged to heal as promptly as possible and secondary nerve suture should be undertaken between two and three months after the injury to secure the earliest possible recovery. Up to a certain point the greater the time which elapses between the primary injury and the secondary suture, the greater will be the delay in recovery of function, but this time for recovery will not be further prolonged after a certain point has been passed, and very late operations will often give as good results as those undertaken much earlier. The prognosis is also influenced considerably by many factors occurring at the time of operation, such as the perfection of the aseptic technic; the gentleness of manipulation; the amount of traumatism caused at the operation; the coaptation of the nerve ends; the nature of the suture material used; the foreign material left near the nerve, and the surroundings in which the nerve is left. Contraction of the antagonist muscles, cicatricial contractions, and overwork after beginning recovery are important factors.

Phagocytosis and Agglutination in the Serum in Acute Lobar Pneumonia.—Paul W. Clough (*Bulletin of the Johns Hopkins Hospital*, June, 1919) has studied the phagocytic activity in the serum in thirty-three cases of acute lobar pneumonia. The serum was tested with the homologous strain of pneumococcus, and in twenty-eight instances, or thirty-five per cent., gave positive results. In seventy-nine per cent. agglutinative activity was also shown. The phagocytic activity was demonstrable only after crisis or lysis, and was not shown during the acute stage of the disease, nor was it obtainable in the serum in the fatal cases, with one exception. These reactions were seen after recovery from infection with all types of pneumococci, but they were strictly limited to organisms of the same type as that which caused the infection. They were also exerted on the homologous strain and on heterologous strains of the same type, thus being specific as to type but not as to strain. The agglutinative and phagocytic activities closely parallel each other. The active substances in the serum are usually thermostable, remaining active for several weeks in serum preserved *in vitro*, but when the activity is lost the serum cannot be reactivated by fresh normal serum. The facts stated above suggest that this factor plays a rôle in recovery in man, but that there are other factors to be considered is shown by the fact that one patient died from sepsis, in spite of the previous development of phagocytic and agglutinative activity in his serum.

The Effect of Carbon Dioxide in the Cultivation of the Meningococcus.—Frederick L. Gates (*Journal of Experimental Medicine*, April, 1919) disagrees with Cohen, who called the meningococcus a "microaerophile." Gates found that it grew equally well in atmospheres containing from fifteen to forty per cent. of oxygen. This work on the meningococcus is an added confirmation of the unreliability of titrating the total acidity of a medium, and the hydrogen ion concentration method should be used; the best pH for the meningococcus is about 7.4. A moist chamber is very helpful in obtaining a luxuriant growth of this organism.

Transplantation of the Thyroid Gland with Intact Blood Supply.—K. Kawamura (*Journal of Experimental Medicine*, July, 1919) using the Carrel technic of bloodvessel suturing, made successful autoplasmic thyroid transplants in dogs, the thyroid gland remaining in good condition and functioning for several months after the transplantation, even when the circulation had been interrupted for one and one half hours. The author was not as successful in obtaining permanent homoplasmic transplantation of the glands. The circulation through the transplanted vessels is reported as being as good as normal.

Transplantation of the Spleen with Intact Blood Supply.—K. Kawamura (*Journal of Experimental Medicine*, July, 1919) made seven attempts at autoplasmic transplantation and one attempt at homoplasmic transplantation of the spleen, using the dog as the subject. Five of the autoplasmic transplants were replanted to the splenic vessels, one to the neck, and one to the renal vessels. The technic is as follows: The spleen is divided into two parts, and the half of the organ which is nourished by the larger branches of the gastrosplenic vessels is used for the experiment, the attached omentum being cut off after ligation. Using Crile clamps, the splenic artery, vein, and nerves are dissected and divided. The spleen is removed and wrapped in a salt sponge, after which it is put back into the abdominal cavity, and its vessels are reunited by end to end anastomosis. In one dog such an autotransplantation was successful, as the gland was normal after eighty-eight days.

Implantation of Ureters into Rectum.—A. L. Ludlow (*China Medical Journal*, May, 1919) reports a case in which Bergenheim's operation was performed, and emphasizes the need of observing the rules laid down by Buchanan: 1. Each ureter should pass in a direct course, without kink or twist, to the point of entrance into the bowel. 2. There should be no injury by forceps, knife, or needle of or near the ostium that could cause cicatricial narrowing of the passage. 3. The intestinal portion should keep its position without tension. 4. No injury should be done to the ureter by retention sutures. 5. The ureteral catheter should be used as a guide in dissection during the operation, but not as a conductor of urine afterward. 6. No dilatation of the sphincter ani should be practised, a rubber tube being sufficient to prevent distention of the bowel. The patient made a good recovery, but leakage from the fistula persisted in spite of several secondary operations.

The Vitamine Requirement of Yeast.—Roger J. Williams (*Journal of Biological Chemistry*, July, 1919) includes from the experiments here reported that the substance or substances which stimulate the growth of yeast is or are identical with the substance or substances which in animal nutrition prevent beriberi or polyneuritis. The fat soluble vitamine has apparently no effect on yeast growth. As it was possible to cause a single yeast cell to produce from twenty to several thousand cells in twenty-four hours by varying the vitamine content of the culture medium, it is hoped that the method described may be of value as a qualitative and quantitative test for vitamine.

The Absence of Fat Soluble A Vitamine in Certain Ductless Glands.—A. D. Emmett and G. O. Luros (*Journal of Biological Chemistry*, July, 1919) report observations in which the fats from three ductless glands, the pancreas, the thymus, and the suprarenal, were incorporated in diets which were adequate for growth except for a lack of the fat soluble accessory A. The deficient diet was first fed to rats until they showed symptoms of a lack of this vitamine, when the modified diet was used, with ten per cent. of the glandular fat. This brought about no improvement in the condition of the animals, showing that it was not possible to extract from these glands by benzine or acetone a fat that contained the fat soluble vitamine A.

A Case of Shiga Bacillus Bacteremia.—S. Scaglione (*Revista Critica di Clinica Medica*, May 10, 1919) finds that there are extremely few cases reported of the isolation of Shiga's bacillus from the blood or internal organs, such as the liver or spleen. Therefore he considers interesting the case of an Italian soldier, aged thirty-three, who had the ordinary type of dysentery but who, after improvement, suddenly became worse, the temperature very high, in whose blood Shiga's bacillus was found by culture during life and verified by the agglutination test. After death the bacillus was found in the heart's blood, in the liver, and the spleen. Scaglione therefore concludes that in exceptional cases the bacillus of Shiga may invade the general circulation, and that in this event the toxic and septicemic effects produce a clinical picture extremely grave with a uniformly fatal outcome.

Persistence of the Virus of Poliomyelitis in the Nasopharynx.—Simon Flexner and Harold L. Amoss (*Journal of Experimental Medicine*, April, 1919) deduce from the experiments reported that the nasal and pharyngeal mucosæ of persons succumbing to poliomyelitis during the first week or ten days of the disease probably contained the virus of poliomyelitis in each case. Specimens of tonsils and adenoids removed surgically and obtained at autopsy showed a distinct difference in inoculation results. The surgical specimens entirely failed to incite infection and paralysis in monkeys. The authors were unable to confirm the indefinite symptoms and atypical lesions described in some inoculated animals by Kling, Pettersson, and Wernstedt. It is stated that the development of the carrier state is unusual; the greatest period of infectivity is early in the disease.

Proceedings of National and Local Societies

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-sixth Annual Meeting, Held at Atlantic City,
June 14, 16, 17, 1919.*

The President, Dr. GUY HINSDALE, of Hot Springs, Va.,
in the Chair.

President's Address: The Sun, Health, and Heliotherapy.—Dr. GUY HINSDALE, of Hot Springs, Va., in his presidential address reviewed the subject of the influence of sun radiation on human health, expressing his belief that the great importance of the influence of the sun on human health and the vital functions of the body made any phase of the subject important. So far, the vast amount of work done by meteorologists and geophysicians had only covered measurements of sun radiation and estimates of the electromagnetic influences of the sun and moon on conditions existing on the earth. There was no longer any doubt as to the effect on the magnetic and electric fields of the earth's surface of disturbances upon the sun for this had been proved by a number of phenomena which the speaker described in detail. The study of the phenomena of radiation and their relation to electromagnetic influences had shown that heliotherapy in all probability owed some measure of its efficiency to the electric energy of the sun.

It was well known that disturbances of the nervous and mental balance were influenced not only by the environment of the individual but also by climatic conditions. There was a popular belief in lunar influences among the ancients, and this belief exists in some quarters at the present time. It was undoubtedly true that solar irritation had a considerable influence, and a remarkable and growing interest in heliotherapy had developed in the treatment of tuberculosis of the bones, joints, and lungs. Among many physicians there was a tendency to extend the use of this therapy to a large variety of surgical affections, particularly in the military hospitals. It had been carried out in the treatment of these affections at suitable stations in the Alps and on the French coast, on the Mediterranean and the Atlantic shores, and had also been employed with marked success in Hampshire, England. In America some systematic experiments had been made, among the earliest of which were those carried out by members of this association and recorded in its transactions. Rollier, one of the most ardent exponents of heliotherapy, had treated about two thousand patients, both children and adults, during the last sixteen years by graduated exposure to solar radiation at his institution at Leysin, Switzerland, and claimed about seventy-five per cent. of cures. His clinical reports amplified by photographs taken on admission and discharge fully corroborated his claim.

Doctor Hinsdale then reviewed the work of Albert Robin in the treatment of tuberculosis by radiation, and stated that in America there was every opportunity for practising heliotherapy for tuberculosis, as well as a wider field which included

many chronic medical and surgical conditions, such as torpid wounds, fistulas, frost bite, trench foot, and the conditions caused by caustic gases, as so many military hospitals contained such cases. A true sun cure could be established in the Rocky Mountain region, preferably in Colorado, New Mexico, Arizona, or California. There was a wide difference in the amount and quality of sunshine, the *sine qua non* of successful treatment, to be found in different parts of the country. In Colorado and Southern California, where the hours of sunshine were most uniform, there was no danger of interruption to the cure.

Heliotherapy had proved its efficacy in tuberculous conditions. Since the introduction of the Rollier treatment in the J. N. Adam Memorial Hospital, at Perysburg, N. Y., in January, 1913, to January, 1919, in 812 cases of bone, joint, and gland tuberculosis and tuberculous peritonitis, there had been 197 apparent recoveries, fifty-five arrested cases, thirty-one improved, nineteen unimproved, and one death. The length of time spent under treatment had an important bearing upon the results in surgical tuberculosis. The average period in all surgical cases was 8.4 months, while the average of those in which the patients were discharged as apparently recovered or the disease arrested was 13.5 months. Of the patients who remained three months or longer, sixty-seven per cent. were discharged apparently recovered or the course of the disease had been arrested.

Tuberculosis School for Patients and Observation Hospital.—Dr. JOSEPH PRATT, of Boston, first reviewed the general plan of treatment of tuberculosis and expressed his opinion that rest, and particularly bed rest, was the chief factor in the arrest of the disease. A feature absolutely essential to a successful campaign against tuberculosis was the practical instruction of physicians and nurses in the proper treatment of the disease, and that this had largely been neglected was due to the fact that the chief therapeutical factor advocated had been an out of door life. This recommendation to the out of door life and the failure to employ the rest treatment explained the lack of success in the treatment at many of the public sanatoriums, at nearly all dispensaries, and in private practice.

The establishment of the Trudeau School of Tuberculosis had been an event of great significance in the antituberculosis campaign. It presented an opportunity to any physician who was dealing with tuberculosis to receive from teachers of distinction a short but systematic course of instruction in the diagnosis, pathology, and treatment of the disease. The records of the Emanuel Church Tuberculosis Class, covering a period of thirteen years, proved that tuberculosis could be cured at home in a large proportion of cases if the patients followed the strict rest treatment. Seventy-six patients in the first and second stages of the disease were well one to ten years after their discharge. The patients faithfully followed the bed rest treat-

ment without strict supervision because they believed it offered them the best chance of recovery. They spent their days and nights out of doors in bed, and in consequence experienced a rapid disappearance of symptoms and gained in strength and well being.

Admitting that these statements were true, how could the lessons learned by this experiment in home treatment be applied to the treatment of large numbers of consumptives, for instance, those in the cities and towns? The plan proposed by the speaker for utilizing the knowledge gained by experience and which would make possible the use of the same successful methods in modified form, was the teaching and observation hospital. It might be called a tuberculosis school for patients, physicians, and nurses. The plan had been worked out in some detail in the State of Massachusetts, but it could be adopted in any other State or county if money was available because this school could be conducted in cooperation with existing sanatoria or tuberculosis hospitals, or be used independently in places where such institutions did not exist. Essentially it was a school for home treatment.

The ideal observation hospital would be an institution with accommodations for twenty patients, with all single rooms, and long covered porches where the beds could be placed both night and day. There should be a well equipped x ray department under the direction of an expert and a laboratory where research work could be done as well as routine examinations made. The institution would be under the direction of the commissioner of health in the State. The chief physician should be a man selected for his experience both in the diagnosis and the treatment of tuberculosis, who would devote at least half his time to the work. The remuneration should be sufficient to secure the services of the right man. The resident physician should be well trained in physical diagnosis and have a good general knowledge of internal medicine. Much of the routine work could be done by interns and voluntary assistants. The nursing and social service work should be under the supervision of the chief nurse in the department of health of the district.

Physicians and nurses engaged in the various forms of tuberculosis work in the State could come to the hospital for short periods of intensive training. Patients would come for a week or two for observation and instruction in treatment; this would be sufficiently long to teach them the importance of rest, details of the bed rest treatment, the use of the thermometer, pulse taking, and the keeping of record books. They would be given useful and encouraging information about their disease. Careful records would be kept of the patient while in the hospital and a carbon copy with the opinion of the medical staff would be sent to the patient's private physician on his departure from the hospital. Records would also be kept by a social worker who would visit the patient and explain the importance of the régime to the family. The medical staff would advise the patients as to the best place for treatment.

The educational influence of such a tuberculosis school or hospital would soon extend throughout

the State. It could give the necessary instruction and training to from 500 to 1,000 patients a year. These patients would help others with whom they would later be associated, and would improve the morale of patients in other institutions to which they might go.

The Treatment of Tuberculosis in the Army Hospitals.—Colonel HENRY W. HOAGLAND, of Colorado Springs, presented this communication, which dealt with the subject only from his personal experience. The first institution he organized was U. S. General Hospital No. 17, at Markleton, Pa., and the second was U. S. General Hospital No. 19, at Oteen, North Carolina, and the treatment of the soldier was identical in each.

In the organization and administration of an army hospital many points had to be kept in mind. For instance, a system had to be found to insure that among an average of fifteen hundred patients not a single one should fail to receive the daily personal care of a medical officer, for it was realized that this was more important in tuberculosis than in almost any other disease. To this end the hospital was divided into six separate units: the receiving ward, the infirmary, and four groups of ambulatory wards. Over each of these groups was placed an officer, either a major or a captain of the medical corps, and under him was an officer for each individual ward. The officer in charge of individual groups was held responsible to the chief of the medical service for the care of the wards under him. As a further safeguard and as a means of identifying a patient, or rather a type of patient, all patients were classified as to the extent of their particular lesion. The individual classification varied with the progress of the case. A method was also used not only to secure greater efficiency in the organization but to give to each man a concrete example of his improvement. A system of rotation was followed; patients were admitted to the receiving wards, and the history, clinical findings, x ray, sputum and urine examinations made. The men were given short talks on the nature of tuberculosis, its treatment and cure, and the case classified as to group A, B, C, or D. Apart from the röntgen ray apparatus the receiving wards had their own laboratory to expedite removal of the patient to the institution proper. If an active case, on arrival the soldier was sent to the infirmary wards; if inactive, or if an infirmary case had passed from a D to a C class in the infirmary wards, he was sent to one of the groups of ambulatory wards corresponding as far as possible to his class. The patients in class C went to the group nearest the mess in order to limit the length of the walk necessary in going to meals. Finally the case progressed to class A, or the arrested case, when the patient was sent to the wards in which he was fitted to be returned to active duty, or, after the armistice was signed, to civil life. The patients in group A wore brassards, were given certain prescribed privileges and liberties, and were considered the graduating class. In other words, the men were examined, diagnosed, educated as to tuberculosis, classified, and started on a regular course of progression.

A reconstruction department was established and

no single agency ever changed the morale of an institution as did the establishment of this department. There was an almost immediate improvement in the mental attitude of the patients. They found that not only could they regain their health but at the same time could educate themselves to be more useful, not only to their country but to themselves. An illiterate could learn to read and write, trades and special knowledge of a practical nature could be acquired, and the men seized the opportunity with avidity. But many of these occupations meant exercise and the patients were tuberculous, so in order to safeguard them all members of the medical staff were instructed that while exercise was one of the most dangerous remedies, it was also one of the best aids in the treatment of tuberculosis but had to be prescribed as one would prescribe morphine, cocaine, or strychnine. The ward surgeon, the man who came in daily contact with the patient, was made responsible for the prescribing of work or exercise. The man was sent to the reconstruction department with a prescription that he could do a certain kind of work for a certain time, the man's preference for the kind of work being consulted. His pulse, temperature, and respiration were taken half an hour after his return to the ward and his general symptoms were noted; upon his daily record depended the increase or decrease of his exercise. The subject of recreation was also given considerable thought. It was believed that by careful attention tuberculosis could be arrested more quickly by the judicious use of graduated exercise and also that a fair part of the cure was psychological. Such matters as fresh air, rest, and a balanced ration were of course included in the treatment and the use of tobacco, while not denied, was restricted. The one thought was to regulate every hour of the day so that while the patients ate, slept, worked, had their exercise or recreation, they were living a life enabling them to get well, and time passed quickly for them.

The year spent as commanding officer at two army hospitals had convinced Colonel Hoagland, first, that large bodies of men suffering from tuberculosis could be treated at one institution conducted by a proper system; secondly, that exercise properly prescribed was a valuable remedy, and thirdly, a reconstruction department should be established in every institution for the treatment of tuberculosis.

The Treatment of Tuberculosis in Returned Canadian Troops.—Dr. J. RODDICK BYERS, of Ste. Agathe des Monts, Quebec, Canada, explained that the treatment of tuberculosis in the returned Canadian troops devolved upon the Department of the Soldiers' Civil Reestablishment of Canada, created by act of parliament, which possessed full authority. The country had been divided for the purpose of administration into geographical areas termed units, which were administered by officers representing the heads of the various departments. This established the chain of responsibility between the sanatoria, hospitals, and the Minister of the Department. All unit officers had their business quarters when possible in a common building. There were nine units extending across the entire Dominion in which twenty-nine sanatoria were

establishing, having a total capacity of 1,811 beds and in which were 1,730 cases of tuberculosis under treatment on March 1, 1919. A total of 5,831 cases had been treated from the beginning of the war with excellent clinical results. A full course of sanatorium treatment was given with the object of obtaining at least an apparent arrest of the disease and testing out before discharge the actual resistance by suitable exercise. The soldier received the same pay during the treatment as though he were on active duty, and this gave him reassurance so far as finances were concerned. The soldier was not forced to take treatment, but he seldom refused. After completing the course of treatment and when disease was apparently arrested, he received a pension on a basis of 100 per cent. disability for the first six months after leaving treatment. At the end of this period he was reexamined and his pensional disability estimated by a board of medical experts under the Board of Pension Commissioners; or, he might become a class 1 out patient for observation purposes, receiving his pay and allowances as if in the sanatorium. As far as tuberculosis was concerned, very few entered this class. Following the sanatorium treatment, if it was found that the occupation of the soldier prior to enlistment was of such a nature as to be unsuitable, a vocational training was given along suitable lines. While taking the vocational training, his pay was equivalent to that received while under treatment, with an amount for living allowance added. Standardized forms of record were kept which were always accessible when necessary. The rules and regulations of the sanatoria were those of the late Doctor Trudeau of the Saranac Lake School and had been thoroughly systematized throughout the country, so that a patient passing from one institution to another experienced little or no change in the methods of his treatment, which tended to increase his confidence and help him in his fight for renewed health. Up to March 31, 1919, the total number of cases of pulmonary tuberculosis was 5,231; in 3,614 the patients were discharged, in 487 the patients died, leaving 1,730 patients under treatment. Of those discharged the disease was apparently arrested in twelve per cent.; in nine per cent. the disease was quiescent; in 41.5 per cent. there was marked improvement; in 7.3 per cent. there was no improvement, and 6.3 per cent. of the patients refused treatment; 4.6 per cent. of the patients were not tuberculous; seventeen per cent. of the cases were not recorded.

The patients were divided into three main classes: 1. Infirmary cases: Patients in the acute and toxic stage, and in consequence confined to bed throughout the day. These patients were allowed to knit, draw, embroider, crochet, do cardboard work, weave raffia, and study, in moderation and under strict clinical control. This work was in no way obligatory. 2. Porch cases: These patients were allowed to attend the table at meals three times daily, wash themselves and perform other daily habits, and rest in the open air in reclining chairs. They were allowed to do more work of the sort given class 1 and as they began to increase in strength they undertook slightly heavier work, such as reed basketry, penmanship,

telegraphy, and class study. 3. These patients were the exercise and workshop cases. As the clinical evidences pointed to the disease becoming arrested, the patients passed into this class, which was divided into six subdivisions according to the periods of time allotted to exercise, the first group getting fifteen minutes, the second thirty, etc. A man entering class III was allowed fifteen minutes' exercise by slow walking morning and afternoon; if he showed improvement he was advanced fortnightly. While attending the shop patients were given their choice of certain arts and crafts and general school instruction following the qualifications required by the Civil Service department of the Canadian Government. In addition, educational and recreational entertainment was provided. All the medical and hospital details of a properly conducted sanatorium were carried out, the occupational therapy being merely an adjunct to the medical organization.

The Army Tuberculosis Problem as Seen in Massachusetts.—Dr. JOHN B. HAWES, of Boston, read this report. He had collected figures which, up to May, 1919, showed that there were 1566 Massachusetts men who had, during the years 1917, 1918, and part of 1919, either been rejected by the draft or discharged from the various camps on account of tuberculosis. Detailed inquiry of each of the local boards of health throughout the State was made for information regarding these men. Many were of course known to be tuberculous and their rejection by the draft boards was a matter of form only. A considerable number, however, were new cases. There were 491 who were definitely stamped as cases of tuberculosis by local draft boards, the remainder being classified as suspicious. Of the 1,566 men, there were 548 of whom the local authorities could give no information, 110 had died, 500 were working and apparently in good condition, the greater majority being under supervision by local authorities. The speaker had been able to discover only forty-two Massachusetts men who had been discharged from the service on account of tuberculosis; of these twenty-nine were under supervision at home or in private sanatoria and eleven were in state sanatoria.

The real tuberculosis problem in the State of Massachusetts was not merely the looking up of the men who had been classified as having disappeared, having moved away, or who were unknown; it was not merely seeing that in the future every local board of health, every physician, and every agent in the state dealing with tuberculosis had accurate, up to date knowledge of the facilities at his disposal. The real problem that the war had given was to find out how many of these men, discharged from the army or rejected in the draft on account of tuberculosis, really had that disease. Of more importance still was the formulation of standards so that there would in the future be a clear and definite understanding as to what constituted active pulmonary tuberculosis from the point of view of the State board of health. From the point of view of a State health officer, Doctor Hawes stated that Massachusetts had no tuberculosis problem as far as handling and disposing of the individual cases was concerned. He did feel,

however, that the war had emphasized and called to attention the problem which had previously existed as how best to come to some practical and sane conclusion in regard to tuberculosis, its diagnosis, and its treatment, and to formulate definite standards concerning it.

Examinations for Tuberculosis at Camp Lewis, Wash.—Major RALPH C. MATSON, of Portland, Ore., presented an analysis of the examination of over one hundred thousand men who were examined at Camp Lewis, Wash., by the Tuberculosis Board, and of twenty-five thousand soldiers discharged from the service. This report was illustrated with lantern slides exhibiting tabulated results of these examinations as well as a striking demonstration of the methods employed. The work at this camp had not been the same as that done elsewhere. The effort was made to secure a personnel specially trained in tuberculosis work and to establish a model for work of this kind in army hospitals. Soldiers were examined in groups of twenty-five and about fifteen hundred men were examined every day. This number could be increased to two thousand with the assistance of a few additional examiners. Some fifteen or sixteen thousand men a month had been examined in the course of demobilization. General examination, including orthopedic, postural, eyes, ears, teeth, nose and throat was made of the 25,000 soldiers discharged from the service, after which they were carefully examined for tuberculosis. Fluoroscopic and x ray examinations were made in all cases in which there was a family history of tuberculosis, or in those patients who had had pneumonia, typhoid fever, who had expectorated blood, or who were troubled with asthenia or certain types of chest deformities.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Hygiene and Public Health. By GEORGE M. PRICE, M.D. Second Edition, Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1919. Pp. viii+280.

A surprising amount of information is crowded into this little manual, and the author deserves credit for preparing so compact an epitome of hygiene and public health. In dealing with the control of communicable diseases the author has made use of the standard regulations formulated by the American Public Health Association. Here and there the revision appears not to have been as thorough as it might have been. For example, chemical purification of water, once condemned as impracticable for the purification of large water supplies, is now successfully practised by many municipalities. In discussing food values, only the energy requirement is touched upon. The biological disposal of sewage as described is out of date.

Though not directly so stated, a paragraph on page 193 implies that relapsing fever, yellow fever, malaria, and syphilis are bacterial diseases. The *Treponema pallida* is classed with the cholera vibrio as a spirillum. The book will be especially useful to sanitary inspectors and to students desiring a handy résumé by means of which they can readily refresh their knowledge of public health.

Army Anthropometry and Medical Rejection Statistics. By FREDERICK L. HOFEMAN, LL. D., Third Vice-President and Statistician. The Prudential Insurance Company, of America; Member of the Committee on Anthropology and Chairman of the Subcommittee on Race in Relation to Disease (Civilian Record) of the National Research Council, etc. A Consolidation of Papers Read Before the National Academy of Science, Philadelphia, November 21, 1917, and the American Statistical Association, Philadelphia, December 28, 1917. Thoroughly Revised and Brought Down to Date. Newark, N. J.: Prudential Press, 1918. Pp. 114.

Unfortunately for our national pride the science of statistics in the United States is far behind other world powers. A great deal is being done to remedy this fault, however, and such publications as this are steps along the right road. Here are tabulated such anthropological data as could be obtained from the mass of material that passed through the recruiting mills in the past two years. Appropriate comments are made on the limitations and value of this sort of data. Comparative tables are quoted from all the countries participating in the Great War. Rejection statistics from the United States are given very fully and compared with life insurance figures. The pamphlet as a whole is a quite suggestive one and will furnish the nucleus for a great many studies in the future.

The Health Officer. By FRANK OVERTON, M. D., D. P. H., Sanitary Supervisor, New York State Department of Health, and WILLARD J. DENNO, M. D., D. P. H., Medical Director of the Standard Oil Company. With Fifty-one Illustrations. Philadelphia and London. W. B. Saunders Company, 1919. Pp. 512.

This book admirably supplies the untrained health officer with some of the knowledge which he should have in order to discharge his duties. It is of course quite impossible to give any really adequate presentation of the entire field of public health in a book of about five hundred pages, and the present work therefore can only be regarded as an introduction to the subject. This limitation the authors have apparently recognized, for in the preface it is stated that "the simple and untechnical form of the work will commend it to college students, public health nurses, members of boards of health, social workers, teachers and others who are interested in public health work." The information contained in the book is, up to date, the style is simple, the illustrations are clear and to the point, and altogether the work can be commended as constituting a safe guide for those for whom it was written. In general the reviewer would criticize the too confident tone in which most of the subjects are dealt with. The reader is led to believe that an observance of ordinary preventive measures will easily suffice to control any of the commoner communicable diseases. This, of course, is far from true; witness the difficulties in dealing with tuberculosis, malaria, the respiratory infections, and other diseases.

Mortality Statistics of Insured Wage Earners and Their Families. Experience of the Metropolitan Life Insurance Company, Industrial Department, 1911 to 1916, in the United States and Canada. By LOUIS I. DUBLIN, Ph. D., Statistician. With the Collaboration of EDWIN W. KOPF, Assistant Statistician, and GEORGE H. VAN BUREN, Supervisor, Statistical Bureau. New York: Metropolitan Life Insurance Company, 1919. Pp. iii+397.

A tremendous amount of labor has been expended in gathering together these statistics on the mortality "experience" of holders of insurance policies among wage earners. The ground covered is stated to include most of the United States and Canada, embracing also some districts not within the United States registration area. A total of 635,449 deaths is tabulated according to the international list of causes of death, and comparisons are made on the basis of age, sex, and color. It is to be regretted, however, that many facts which would have made this a really vital and informing work have been left out. There is no opportunity given to interpret the mortality statistics from the viewpoint of occupation or income, which in most cases means standard of living. No data are given as to race and none as to geographical location other than the announcement that most of the policyholders live in cities or towns. It is interesting but not essential to know that more males than females die from automobile accidents and injuries. The general conclusion arrived at is that mortality had declined appreciably during the six year period of study through the reduction in incidence of a number of the more important causes of death; but it can hardly be said that the book fulfilled its aim of showing what has been achieved by the movement for public health and what "remains to be done in checking preventable sickness and premature death."

Births, Marriages, and Deaths.

Born.

LILING.—In New York, N. Y., on Sunday, August 3d, to Dr. and Mrs. Martin Liling, a son.

Married.

AYERS-RANDLE.—In New York, N. Y., on Wednesday, August 6th, Dr. Horace Ernest Ayers and Miss Muriel Randle.

Died.

CHAMPION.—In Mansfield, Ill., on Thursday, August 7th, Dr. Joseph V. Champion, aged sixty-two years.

FRANCHE.—In Boston, Mass., on Tuesday, August 19th, Dr. Pedro F. Francke, aged fifty-three years.

GALLOWAY.—In South Bend, Ind., on Tuesday, August 12th, Dr. Ulysses G. Galloway, aged fifty-four years.

HANSEL.—In South Bend, Ind., on Sunday, August 3d, Dr. Charles E. Hansel, aged forty-five years.

KIMBALL.—In Watertown, N. Y., on Sunday, August 17th, Dr. Charles Campbell Kimball, aged fifty-eight years.

MARKLEY.—In Camden, N. J., on Monday, August 18th, Dr. Paul H. Markley, aged fifty-eight years.

MCCORMICK.—In Normal, Ill., on Sunday, July 27th, Dr. Nelson K. McCormick, aged fifty-seven years.

MOODY.—At New Haven, Conn., on Tuesday, August 19th, Dr. Mary Blair Moody, aged eighty-two years.

REA.—In Oxford, Pa., on Monday, August 18th, Dr. Samuel A. Rea, aged seventy-six years.

ROSCOE.—In Goodlettsville, Tenn., on Friday, August 8th, Dr. Scott Roscoe, aged seventy-eight years.

STREET.—In Brooklyn, N. Y., on Monday, August 18th, Dr. Herman Edward Street, aged seventy-three years.

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Original Communications

THE WORK OF PHYSICAL RECONSTRUCTION AS IT CONCERNS ORTHOPEDIC SURGERY.*

By JOEL E. GOLDTHWAIT, M. D.,
Boston.

Late Colonel, Medical Corps, U. S. Army, and Senior Consultant,
Orthopedic Surgery, A. E. F.

That which orthopedic surgery stands for primarily is the preservation of function in parts which are injured or diseased or the restoration of function in parts which have been previously injured or diseased. Proper construction and reconstruction are the basic principles of orthopedic surgery, and it is natural that in the work of an army, surgeons trained to think in these terms should naturally be sought to assist in the treatment of the many who have been wounded.

Medical treatment alone, or surgical treatment alone, which usually stops with the relief of acute symptoms, many times leaves the individual with a limitation of activities that could have been prevented had measures having to do with the preservation of the function in the inflamed or damaged part followed the treatment which had been given during the acute stage. An inflammation of a joint or in and among the tendons, such as is so commonly a part of many of the infectious diseases, frequently results in adhesions in or about the joint or tendons that seriously interfere with the function of the part, and for which the ordinary medical or surgical treatment makes no provision. An operation upon a bone or joint may be technically most perfect, but unless the performance is executed with reference to later usefulness or unless measures having to do with the restoration of function are instituted as soon as possible after the healing of the wound, a result that might have been perfect may, from the point of view of function, be very poor.

In the American army results of just this sort led to a very considerable number of men coming back to the rear, representing not only unsatisfactory results from the point of view of the man, but equally unsatisfactory from the point of view of further usefulness of these men to the army. A similar condition had resulted in the first two years of the war in England, where the great numbers of wounded men had finished their surgical treat-

ment with such unsatisfactory functional results that it became necessary to institute measures for the correction of these conditions on a very large scale. At that time Sir Robert Jones was turned to and the responsibility was put upon him for not only seeing that these disabled men had adequate treatment, but that plans be made to prevent the recurrence of such disability in the future.

The importance of planning the first part of the treatment with reference to that which has to do with the later work, which more strictly has to do with the establishment of function, must be obvious to all who give the matter consideration, and in the very beginning of our own American war activities, Sir Alfred Keogh, then the director general of the medical services of the British Army, urged us to see that the so-called reconstruction work was carried far forward, right up to the trenches. Not only has this been shown to be most desirable, but it is obvious that there should be some general responsibility for the care of the individual from the time the injury is received or the disease has started until the fullest possible restoration of function that it is possible to bring about is obtained. This, of course, applies directly to the condition in our civil hospitals, in which today many of the results are much less satisfactory than it is possible to attain because the surgeon or the physician is interested so frequently only in the acute stages, losing interest in the case as soon as these seem past, with the result that often persons of limited experience are made responsible for the later stages of the treatment which many times from the point of view of judgment involves greater knowledge than that which is required for the early part of the work.

Not only is such supervision desirable, but in the army where the number of disabled and wounded men is so great, the problem assumes proportions of such magnitude that results which might be accepted in civil conditions cannot be tolerated. A few patients, such as might be present at any one time in our civil hospitals, are easily overlooked, and not receiving the attention that they naturally would where great numbers were studied in practically the same period, the ultimate results are far from perfect. The responsibility for the supervision of the large number of casualties in which the treatment would be required for a long period in order to bring about the best results was as-

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signed in the British and American armies to the division of orthopedic surgery.

In the American army the organization was elaborated in conjunction with the director of the division of general surgery, so that there would be no conflict in the natural overlapping of effort. In planning such work, naturally conditions which were medical should be treated by the internist during the acute stage, but treatment having to do with the rapid restoration of function in the part inflamed could be accomplished much more rapidly by those who have been trained to think in terms of human mechanism and are familiar with the possible combination of the elements that can bring about the greatest possible usefulness. Also naturally much of the emergency surgery upon injured bones and joints can often best be performed by the general surgeon, but it is natural that as soon as the primary wound healing is established, the restoration of function in the affected part should be accomplished more quickly and perfectly by those who have been trained to deal with such problems and are familiar with what can be expected in a given case in two, four, six, or more months later.

It is natural that the closest possible cooperation should exist, as it did in the American Expeditionary Forces, between the orthopedic surgeon, the general surgeon, and the internist, so that the skill of each would be available to save or restore the man who was either diseased or wounded. The work of the orthopedic surgeon not only has to do with the treatment of those who are injured or diseased, but quite as much in preventing inevitable disabling conditions from developing. A very large part of that which was expected from the division of orthopedic surgery in the early months of the war consisted in so directing the training of the men that elements of weakness or strain would be eliminated, in order that the men would be fully equal to the demands made upon them.

In a country which has paid so little attention to the physical development of its people as a part of the educational system, naturally a large number of men have grown up with imperfectly poised and developed bodies, which are entirely unequal to the strain of full war activity. The common posture of so many of our young men naturally leads to weak feet, lame backs, round shoulders, sag of the viscera, etc., which makes sustained normal physical effort absolutely impossible. This was particularly conspicuous in the American Expeditionary Forces with the first divisions which were sent over and which were made up of men hastily recruited or of militia, without thorough physical training in the previous methods. The resulting large number of men who arrived in France with weak feet, weak backs, poorly poised bodies, unequal to any long continued effort, resulted in the filling of the hospitals with men not really sick, but still not equal to the work expected of them in their regular organizations. It very soon became evident that with these men the problem was wholly one of training, and that, if the principles which had been used so much in similar conditions in civil life were applied to these men, they could be made physically fit, well poised, and equal to any reason-

able physical demands. Without such training these men, who represented in the total many thousands, were a nuisance to their commands, were entirely out of place in hospitals, and should have been transferred to the United States for discharge. This, however, would have represented the loss of such a large number that it would have reduced the divisions already too small, and would have been a source of embarrassment not only to the American forces but to the Allies.

To meet this problem a special training organization was started, to which these men were sent. The men were carried on a duty status and not on sick call. They were made to understand that the difficulty was one of weakness and imperfect use, not of disease, that relief meant training, and the work was carried on under carefully selected drill masters, the special exercises used being selected in so far as was possible from the regular military routine. Squad drill, bayonet drill, route marching, manual of arms, etc., were used, but the periods were shorter than ordinarily would have been used, with intervals of rest or play interposed, so that no one group of muscles was seriously fatigued at any one time. The emphasis during the entire period was put upon the form in which the movement was made, and the rapidity of the movement was increased with the idea of making the effort as quick and as snappy as was possible. The man was made to stand erect, with his weight on the ball of the foot, head erect, waist drawn in, and in the different activities insistence was put upon the use of the trunk with the body straight. In case of pain in the feet the men were made to realize that the relief consisted in standing up straighter, carrying themselves more buoyantly, with a rapid cessation of the acute symptoms. In a certain number of patients who suffered from extreme degrees of flat feet, it was necessary to raise the inner edge of the heel of the shoe, and also in a certain number a figure of eight ankle strap which held the bones of the tarsus together was used with great success. Foot plates were not used at all in the A. E. F., and with the proper training, with the use of the raised heel, with the use of the figure of eight ankle strap, relief was obtained in practically all cases so that the men were able to be retained in the army for useful service.

Following the establishment of this special training organization practically no man was sent home either discharged from the army or relieved from duty because of weak or flat feet or weak or lame back. It was demonstrated that all of these cases involved the same fundamental principles of training, and that with such training the men in a relatively short time could be made equal to the full military stress.

The one element of difficulty in connection with such training consists in the length of time required to make these badly poised men fit. Extreme cases required three to four months, the mild ones a month or six weeks, and beginning July 1, 1918, when combat activities increased so rapidly and the demand for men in all the departments became so very great, it was not possible to keep the men for three or four months in order to make them.

Class A men, or men of full military fitness. During this period it became necessary to classify the men rapidly and to assign those who would require the long period of training to some form of non-combatant service. The men were given short periods of training, were properly shod, were given instructions that would help them so that they would have the minimum of disability, and were then assigned to such noncombatant type of activity as the special need required. The men who could be made of full combat fitness in the four or five weeks were still trained and sent back to the combat line.

To give an idea of the number of men reclassified and used all through this period, just before the Saint Mihiel activity 1,200 men from this special training organization were sent forward to assist in staffing the hospitals that were being prepared, a thousand were sent up for similar work a short time later, a thousand men were sent to act as guard over the German prison camps, and many other smaller groups were sent to meet the particular need. With such an organization a place was found for every one, and in so far as possible the work was planned so that it would tend to strengthen the man and lessen his tendency to weakness, although, of course, it was distinctly less ideal than could have been carried out had it been possible to retain them in the training organization.

To meet the needs as they have to do with ultimate function, which occur under conditions of actual disease or injury, naturally the treatment having to do with the final result should be planned in the very beginning. This applies directly to the care of the men injured in combat, with whom in order to preserve the best ultimate function in the parts damaged or to save as much of the tissue as was possible it was necessary to care for the man from the moment he was wounded.

Many times the original injury caused comparatively little general shock, and as long as the man lay on the battlefield he was in fairly good general condition and could easily have been operated upon for treatment of his wounds. If, however, he was moved back to the dressing station, which many times meant moving him two, three, or more miles, the jar of being moved resulted in such a degree of shock that it became impossible to operate upon him until the shock was overcome, while in many instances death occurred even before the station was reached. It very soon became evident that if the wounded parts could be properly splinted on the battlefield, before the man was moved at all, that he then could be transported long distances with very little shock or harm resulting. Lives were lost, limbs were lost, not because of the original wound, but because in transportation, no matter how carefully carried out, unless the part was properly splinted, the loose fragments of bone lacerated tissue, tore bloodvessels, and did other damage with disastrous results.

To eliminate this element of harm it became necessary to standardize the splints which were to be used throughout the army, with the idea of reducing the treatment of such injuries to the simplest possible terms that were in keeping with

efficiency, and a special medical board was appointed by General Bradley in the summer of 1917. Eight types of splints were finally selected which were to meet all the needs as they would arise. Not only was it necessary to decide upon the types of splint, but it became necessary to instruct the medical officers as well as the stretcher bearers in the use of the splints, so that they could be applied to the greatest possible advantage. With such planning not only were many lives saved, but in the entire American Expeditionary Forces, with its over two hundred thousand battle casualties, there were less than four thousand cases of amputation.

To provide for the proper handling in the advanced region or on the battlefield meant the careful training of the stretcher bearers or ambulance corps men so that the splints could be applied in the most efficient manner and with the greatest possible speed. The standard which was worked out in the British army, chiefly under the direction of Colonel Gray of the Third Army, required that a stretcher bearer should be able to apply a Thomas leg splint with traction and with a dressing to the wounded thigh in a case of gunshot wound of the thigh in not more than two minutes' time. In our own army much the same general requirement was expected, and to make this possible it was naturally necessary to see that the stretcher bearers were carefully trained. Training of the stretcher bearers and the ambulance corps men for this work became part of the work of the division of orthopedic surgery, the instruction being given by the orthopedic representative in the special unit.

Upon the delivery of the wounded man to the evacuation hospital or the hospital in the forward area, the general surgical division after some experimentation assumed charge and saw that the necessary operation was performed, the type of operation in the cleaning of the wound having been previously decided upon by consultation with representatives of the general surgical division and the orthopedic surgical division. After some experimentation it was decided that as soon as the operation was performed the case would then be turned over to the division of orthopedic surgery, and the dressings arranged, the splints applied upon the operating table by the representative of the division of orthopedic surgery, who not only saw that the treatment was satisfactorily given at that time, but who became responsible for the case as long as the patient remained in that hospital, and also saw that the arrangements for transportation to the next hospital were carried out satisfactorily. In the hospitals in the rear to which the men were sent after leaving the hospitals in the forward area, while much of the work of the bone and joint cases was carried on directly by the general surgeons, nevertheless, the responsibility was given to the division of orthopedic surgery, so that in each hospital area there was a carefully selected representative of this orthopedic division who acted as the consultant for that area and saw that the treatment was carried out satisfactorily.

Since it became necessary with most of the patients to move them from time to time to hospitals

further and further to the rear, it was necessary to have certain standard methods of treatment, both as regards the sterilization of wounds and as regards the position and splints used. This led to a careful standardization of the positions in which fractures of different types were to be put up, the kind of splints to be used, so that it was possible to move a patient from one hospital to another without disturbing the fragments seriously or without changing the general alignment of the bones. This resulted so satisfactorily that the transportation of the wounded which at first had been viewed with considerable alarm was shown to be a matter of relative simplicity, with very little harm resulting to the patient. Not only was it possible to move large numbers of men with serious conditions of injury from one hospital to another without harm, but in cases of sluggish or chronic infections there is not the slightest question but what the transportation accomplished something in the way of stimulation of healing that made it distinctly beneficial rather than harmful. This was particularly noticeable in the late stages of the hospital work when the dregs of all of the battle casualties were gradually collected from the different hospital areas and concentrated at the ports of Bordeaux and Savenay. Several thousand cases of very seriously sick men, many of them with chronic pyemia, were moved in this period, and in not one case was it felt that harm had resulted to the patient while in many cases the men arrived in distinctly better condition. This was due possibly in part to the mental stimulus of being moved toward home, but undoubtedly also in part to the stimulation to the general circulation resulting from the general movement of the body with the vibration that would naturally come from the train journey.

In each of the hospital centres it was expected that the treatment would not only be planned with reference to the most perfect position of bones that could be planned, but also that the movement or use of the part would be started at the earliest possible moment. Use up to the limit of toleration has been the rule insisted upon, and with the various measures that have been used a great saving in the number of days spent in hospitals on the part of the wounded men has resulted. While this has been true in practically all cases, it has been strikingly true in regard to certain special conditions. For instance, in the early part of our activities one of the most troublesome conditions to treat was gunshot wound of the hand, which usually represented a stay in the hospital of from three to four months, with a badly crippled and relatively useless hand as the ultimate result. With the standard methods of treatment, involving the early use of the damaged part, it became possible to have these men at work, sometimes in the ward, sometimes in the curative workshops, using their hands in from two to three weeks from the time the wound was received, which resulted not only in a more rapid healing of the wound, but in a very much more perfect functional condition as the final result. With the knee joint injuries similar methods were followed, with the idea of using the joint as much as possible,

without causing irritation or inflammation. With such standard methods of treatment it became possible for the wounded man to have exactly the same kind of treatment, both regarding the type of splint used as well as all the other details, including sterilization of wound, curative work, etc., in each hospital wherever he might be sent. The simplicity of the effort resulting from this can hardly be appreciated by those who have not been in touch with the work, and because of the general excellence of the results it was considered desirable to have not only the types of splints shown and explained, but the methods of treatment also shown, and this was done in the second edition of the *Splint Manual* which has been published and issued by the American Expeditionary Forces.

In no place was the practicability of the standardized treatment more clearly shown than at the time it became necessary to transfer to the United States large numbers of wounded men who had previously been considered to be nontransportable, and for whom it was expected treatment would be required in France for many months. With the rapid expansion of the combat forces and the greatly increased number of wounded men, it became impossible to build hospitals fast enough to meet the need, so that the only method available for caring for the wounded men was to relieve the hospitals in France by sending the men to the United States. Carefully planned details of treatment were worked out, and as the convoys were taken to the transports, practically only four types of splints for the extremities were worn by the men or were demonstrated to the ship surgeons as the patients were put on board. Two splints for the legs, two for the arms, with the plaster of Paris shell for the back, practically covered all that were required to transport the thousands of men who had been transferred across the seas during this last year. With such measures few if any patients have been harmed by transportation, and the few cases concerning which there is some question are so similar to cases of men in whom acute symptoms developed while remaining in the hospitals in France, that it is a question whether the undesirable symptoms did not develop in these patients more because of the general nature of the infection than because of the transportation. It is certain that the number of men who were harmed by such transportation was exceedingly small, and many men are living today because of the benefit that was derived from the thought of returning home, and with the better care they received both on board ship and in the hospitals in the United States than it was possible to give them in France at that period.

The work as it has been developed in the American army, in so far as it concerns that which is of interest to the orthopedic surgeon, has practically developed nothing that is entirely new. The desirability of good posture has been perhaps more strikingly emphasized, but the methods of obtaining such posture have been similar in every way to those used under civil conditions. The treatment of weak feet and weak backs has been practically the same as that under civil conditions,

the only special features being the simplification of the methods as would be required to meet work on such a large scale. The treatment of the actual condition of injury of the bones or joints, or the principles of treatment involved in the care of the *amputé* are similar to those used in civil life. An injury of a knee, whether made by a projectile in the field or whether made in a factory or resulting from disease, involves problems exactly the same, and it was because of this that the broadly trained orthopedic surgeon found such an important place in the army organization.

The test which was put by both the British and the American armies, was that of ultimate function, the one thing which the British director general of medical services and which the chief surgeon of the American Expeditionary Forces emphasized being, "What can the man do after the treatment has been completed?" This led to the most thorough employment of the methods used in civil times and of a greater emphasis being put upon the ultimate condition of the injured man than has been possible in our civil hospitals or has been appreciated by the people under ordinary conditions.

Not only has the United States Army insisted that the best surgical and medical care should be given, but that such details as the curative workshop, the early employment of occupation at the bedside, should all have their place and should be fully developed. The recognition of the corps of reconstruction aides and the fact that these aides have been assigned not simply to the hospitals in the remote rear but have been gradually assigned to hospitals with the army in the front is an indication of the extreme to which the principle of the early application of measures having to do with the ultimate function has been applied. Occupational therapy has come to be recognized in the army as of as much importance in certain stages of the individual's recovery as nursing or any other detail of medical or surgical care, and in our civil hospitals not only is it obvious that standardized methods of splinting in connection with the bone and joint injuries will be used, but also that in our civil hospitals the reconstruction aide will have her place the same as it has existed in the army.

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The Weil-Felix Reaction.—Ramon E. Ribeyro (*La Cronica Medica*, of Lima, Peru, May, 1919) reports seven cases of typhus exanthematicus in all of which this reaction was positive. The dilution of the agglutination varied from 1-100 to 1-10,000. The reaction was done as a control in cases of influenza, lues, typhoid, pernicious anemia, etc., and was negative in all cases. Macroscopic agglutination requires a lower dilution than a microscopic in a given case. The serum of guineapigs inoculated with typhus did not give the reaction. In explanation the author reminds us that this Weil-Felix reaction consists in the agglutination of the *Bacillus proteus* X19 by the serum of a patient suffering from typhus.

SOME OF THE DIFFERENT ASPECTS BETWEEN INFLUENZA, PNEUMONIA, AND PNEUMONIC PLAGUE.

By S. T. LEE, M. D.,

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During the height of influenza epidemic in the United States last fall, I happened to pass through New York on the way to China from Europe. There was a hot discussion about the epidemic having originated in China, the recognized home of many undesirable things in the world. Many thought that it was related to the plague epidemic of North China in the winter of 1917-1918, either that the virus of the epidemic in China was not properly identified or that the influenza bacilli seen here were only modified forms of pest bacilli.

Last spring when I returned to Europe some authorities there also mentioned the possibility of such a relationship. I take this opportunity to present some of the contrasting differences between these two forms of pneumonia aside from the bacteriological factors which may be still disputable. I shall endeavor to give you first the basis of my observation and then the conclusions drawn therefrom.

Forst, let us have a short survey of the plague pneumonia epidemic in China. The first epidemic happened nine years ago, October, 1919, to March 1911, in Manchuria, causing 50,000 deaths. It originated on the borders of Siberia, North Mongolia, and North Manchuria, and was disseminated along the Chinese Eastern Railway and its connecting lines. The second epidemic occurred from November, 1917, to March, 1918, at Suiyuan, and caused 12,000 deaths. It originated at the border of South Mongolia and Shanshi and Kangsu Provinces and was disseminated along the highways and through the passes of the great wall, the railway traffic being stopped to prevent the spread. The third epidemic was a local outbreak in January, 1919, in the Shanshi Province, causing eighty-three deaths. These epidemics have been proved bacteriologically to be plague. This all happened during the winter and was at its worst in the month of January, affecting almost entirely the poor laboring class. After the first epidemic in Manchuria the Chinese Government established an antiplague service with the chief quarters at Harbin, and branches at strategical points, which in ordinary times serve as general hospitals where a watch is kept for any cases of plague and which are thoroughly equipped for emergency in an outbreak. This service has kept Manchuria free from plague until the present time. The second epidemic at Suiyuan happened outside its zone of surveillance because the troubles in Russia caused most of the merchants and laborers to travel through the southern route to meet the new railway line, the extension of the Peking-Kalgan line. This tells us that pest pneumonia epidemics can be effectively prevented and controlled.

Then let us give you a brief picture of the influenza epidemic in China. Last year, 1918, in the months of March, April, and May there was an ex-

tensive epidemic of influenza of the ordinary form without an unusual death rate. This occurred in all of the cities along the railways and coast, while in the interior far from the general traffic there were centres of intense infection with pleuropneumonic complications and consequently a very high death rate. At its worst during the months of May and June, the disease was curiously disseminated; two badly infected villages might be separated and between them lie other villages entirely free from the disease or very slightly affected. Then early in the fall the epidemic manifested different forms in different places. In one place gastrointestinal forms predominated and in other regions nervous symptoms alone were seen, as if in these two locations there were two different diseases. Pneumonia complications were a rare occurrence and certainly not to be compared to what happened on this side of the world. We had reports of epidemics of pest typhoid and dysentery from these centres, but careful study by competent bacteriologists revealed that they were all the same—influenza. When I reported this observation in China to the Interallied Sanitary Commission in Paris, the reports of some other countries, notably England, revealed the same conditions.

In the third place, after a survey of what happened in China, let me turn to what I saw in Europe during the influenza epidemic at its very beginning. Between last June and August at a certain military centre in France where the influenza epidemic had its first appearance, I made observations in a ward with some seventy patients brought in from one depot during the week. In this ward we saw the disease at all of its stages. We would pass from one bed containing a patient with a mere cold, fatigue, and nasopharyngeal catarrh to another patient with tracheitis, another bronchitis, another laryngeal abscess, another pleurisy, another pneumonia, another empyema, another abscess of lung, until we came to a corner and saw one or two cases of septicemia. Every day during that week from three to five cases were seen at autopsy. In those clinical pneumonia cases (and in fact most other cases show intense congestion of the lung as well) amidst the diffusely congested lung tissue, we always found the presence of pus disseminated either in the lung tissue or in the pleural cavity or along the bronchi. Streptococci, staphylococci and pneumococci were generally found, Pfeiffer bacilli were sometimes found, while pest bacilli were never found.

It is from these observations that I draw my conclusions in differentiating these two forms of pneumonia. Certainly the bacteriological question is a very important one but the most deceptive argument against my present discussion is that we have not found the specific virus of the so-called influenza pneumonia. Pfeiffer bacilli are disregarded as the causal factor by the fact that during the epidemic we found Pfeiffer cocci bacilli in diseases other than influenza while in many influenza cases Pfeiffer bacilli were not found. The ultra-microscopic and filtrable virus reported by Nicholle, of France, and Bradford, of England, is still unconfirmed. Taken for granted that the Pfeiffer

bacilli found in influenza are modified forms of pest bacilli or that the pest bacilli found in the plague epidemic of China are modified forms of some other bacilli, let us not blind ourselves to other phases of the question. Laying unsettled bacteriological factors aside we have to study the other aspects in a fair minded manner.

CLINICAL DIFFERENCES.

In the first place there are clinical differences between these two forms of pneumonia. In a general way I say that in influenza we usually have a longer period preceding the manifestation of lung symptoms, a catarrhal stage, with fatigue and nervousness more marked. We always have some time to wait for something to happen, which may not turn out to be pneumonia though generally it does. When pneumonia does occur it develops clearly as a secondary complication. Patients seen after pneumonia has already developed on being carefully questioned, always give a history of a few days of indisposition with sneezing and cough. While in plague these features are very different; the lung symptoms are primary. A clinical synopsis of the pneumonic plague shows that the patient always complains of headache and loss of appetite, often thirst and nausea, joint and muscle pains and sometimes epigastric pressure. The temperature varies between 36° C. and 40° C., the pulse is rapid, soft, and fluttering; after these symptoms lasting from twelve to sixteen hours the patient begins to present pneumonia symptoms followed by cyanosis and then cardiac asthenia which leads to death. Only a few hours pass before the appearance of bloody sputum. Single cases of either type of pneumonia during the stage of respiratory hunger may simulate each other very closely, but the picture of a ward filled with pneumonic plague patients is entirely different from one containing patients with influenza pneumonia. The course of pneumonic plague is shorter; sixty per cent. of the patients died within forty-eight hours, sixteen per cent. within twenty-four hours, sixteen per cent. within seventy-two hours. From the first appearance of bloody sputum the average duration of 150 cases of pneumonic plague patients is forty-eight hours and of thirty patients with influenza pneumonia was three and one half days, all terminating in death.

The recovery from pneumonic plague is almost nil, only two patients recovered in 72,000 cases; while we see more patients recovering from influenza pneumonia though here also we have a very high mortality. Both are fast trains, one is express, the other limited express.

PATHOLOGICAL DIFFERENCES.

The frequent association of pyogenic organisms is found in both forms of pneumonia. In influenza we find pus disseminated in the lung tissue, while in pest pus is not formed, only the highly red hepaticized lung seen. This may be explained by some that in the former there is time for pus to form while in the latter the virus is so virulent as to prevent the activity of other organisms which even were not allowed time to manifest.

EPIDEMIOLOGICAL DIFFERENCE.

Season.—The plague pneumonia in Manchuria and the Suiyuan epidemic all happened in winter, most marked in January; the influenza pneumonia in 1918 over the entire world happened in autumn and reached its height in October.

Distribution.—Plague pneumonia was limited almost entirely among the laboring classes and influenza pneumonia, though more severe in unhygienic and crowded places, did not exempt the better classes.

Infectivity.—In plague a direct contact is always necessary for infection, hence we can always trace a chain of infection, while in influenza this is not true. Proper precaution against plague pneumonia is an absolute protection while this does not hold in influenza pneumonia. Not a single doctor or assistant died in the last Suiyuan epidemic though in the first Manchuria epidemic we had four or five deaths due to the lack of precaution.

Before closing, let me turn again to the unsettled bacteriological question. In the Suiyuan epidemic one thing, the most interesting, is the discovery of human carriers of plague bacilli. In two patients who recovered from plague, Doctor Yu, in charge of the laboratory at Kwcisui, had been examining them first every day and then every other day until the sixty-second day of the disease in one and the forty-fifth in the other; during this time he found the presence of pest bacilli in their sputum. The patients recovered on the eighth and eleventh days.

Now, to recall a report made by Doctor Christie, of England, during the Manchuria epidemic, of the case of Mrs. L. After the death of her husband and his two brothers she escaped to a neighbor's house and the neighbor died. Then she went further to two distant villages, where there was not a single case reported and she infected three persons of these villages with whom she spoke though she was refused admittance to the village. She said she had not been sick herself. Doctor Christie presented her as having natural immunity against plague, but he did not examine her sputum. I think as in other diseases pest bacilli sometimes assume mild forms, either the seed is weak or the soil is bad and certain patients may recover and those who recover bear immunity for a certain period of time and may carry the bacilli just as in cholera, diphtheria, etc. This naturally tells us that the virus of the pneumonia epidemic in Suiyuan, 1917, was that of pest bacilli.

In conclusion let me confess my incompetency in this task and especially my unpreparedness in doing it. I want only to give you a panoramic view of the situation so as to enable you to be in better position to judge.

The one sided view of one in the midst of the whirl of anxiety and work is certainly excusable, especially because China has been so often taken to be the home of anything of doubtful origin. Just for the same reason, such views easily gain acceptance. Be assured, I have not the least idea of attempting to relieve my country from the responsibility of being the origin of the pandemic; my present point is to show you that one was not the same as the other rather than what we had or had

not, because we had both. While some might have to wait for further bacteriological enlightenment in order to be convinced, I do hope that the points I have presented may be useful to many of you as a help for a clearer understanding and a better judgment.

VARIABILITY IN VULCANIZATION THE CAUSE OF PSORIASIS.

By GEORGE ELLIOTT, M. D.,

Toronto.

Man has a vulcanized skin. Analogy is therefore suggested between human skin and vulcanized India rubber. Considerable interest and value will be obtained in this connection by a brief historical and descriptive account of the sources and properties of rubber, and the trade process of vulcanization as carried out in rubber industrial plants.

Dr. D. Spence (1) in an article specially written for the official report of the Fourth International Rubber Congress, 1914, states: "In the year 1615, Juan de Torquemada, issued a report in regard to a tree from which the inhabitants of Mexico extracted a milky liquid which the Spanish invaders afterwards used to make their garments waterproof." This milky liquid is known as latex, and comes from certain tropical and subtropical trees and vines, indigenous in America, Africa, and Indo-Malay. Sections of these latex producing plants when examined under the microscope show that this milky liquid is found in well defined latex vessels, or canallike structures, distributed in a definite manner throughout certain parts of the plants, and a scientific knowledge of the distribution of the latex system is essential in "tapping."

When the milky fluid, or latex, itself, is subjected to microscopy, it is found to be an emulsion of minute, oillike, refractive globules, varying in size, in rapid Brownian movement, suspended in a clear liquor or serum. It is faintly alkaline in reaction like most physiological fluids in metabolic processes. This fluid, Doctor Spence says, resembles milk more closely than has been hitherto believed. Even the acidity developing in fresh latex on standing is said to be analogous to the souring of milk, brought about by similar agencies.

On chemical examination latex is found to be not merely an emulsion of fine caoutchouc globules in water, for it contains beside resins, protein, sugars, alkaloids, and several salts of acids. These vary with the botanical sources of the latex. There are also active substances known as enzymes, which are said to be of great importance commercially in the preparation of rubber, and physiologically for the part they play in metabolic processes. They are at once the cause of the acidity of fresh latex and the spontaneous coagulation of the fluid. The dried up or coagulated latex is the India rubber of commerce.

Sulphur plays a predominating part in the vulcanization of rubber, formerly by means of carbon bisulphide, but latterly more by chloride of sulphur. Indeed, most rubber goods are manufactured by this means. There are two distinct processes known in the industry, that by heat and that by

cold. The following questions were submitted to the chief chemist of an industrial rubber plant in Toronto, and the following replies elicited thereto:

Q.—What difference is there in the percentage amount of sulphur in hard rubber goods; say mouthpieces of pipes, and softer goods, like surgeons' gloves?

A.—About thirty per cent. sulphur in hard rubber goods; in the lighter grades, such as rubber gloves, no sulphur, but when these are washed in chloride of sulphur solution, a chemical combination takes place between the chloride of sulphur of the wash and the rubber.

Q.—If more sulphur goes into rubber than necessary, what is the result?

A.—It makes the product brittle and dark.

Q.—What is the chemical nature of the grayish dust on rubber goods?

A.—Mostly sulphur bloom.

Q.—Is there any vegetable protein in rubber?

A.—Yes; possibly one to two per cent.

(Spence says Para rubber seldom contains more than four per cent. protein, but the rubber from Manihot or Castilloa latex may contain as much as ten per cent.)

Vulcanization renders rubber more elastic, durable, malleable, and resisting, and impermeable. It thus gives to rubber its commercial value. To the scientists in the rubber industry, vulcanization for a long time has been the great problem, i. e., the nature of the combination of the sulphur with the rubber during vulcanization. Possibly they have arrived nearer the truth since the theory of depolymerization and repolymerization of rubber which was first advanced by Bernstein after scientific experiments.

Polymerism is defined by Cattell as follows: 1. Excess in the number of parts. 2. A variety of isomerism characterized by difference of molecular weights, the molecular weights of the polymers (one of the series of polymeric compounds), being multiples or submultiples of each other.

Bernstein (2) asserts that rubber must be depolymerized before it can enter into reaction, and that oxidation of the rubber is so brought about by heat, work or light. Under the action of sulphur it is vulcanized by a process of repolymerization. This can be brought about by actinic light. By actinic action less sulphur is required; and the repolymerization of the India rubber by sulphur he speaks of as a catalytic reaction. The reaction is chemical in cold cure, but in vulcanization by heat or light, nothing definite has been settled. However, of the two theories of vulcanization, physical and chemical, Skellon (3) does not consider it to be by any means a finished work.

Man has a vulcanized skin. In the upbuilding of the epidermis, each cell of the basal or stratum germinativum layer selects and absorbs for its special metabolic function the particular element or elements required from the lymph spaces. By the constant process of mitosis of the cells of the basal layer new cells for the rete malpighi or prickle cell layer are being produced; and by special differentiation finally is evolved immediately above the stratum lucidum, the most perfect horn cell, which might be called the basic layer of the corneum, or what Unna calls the superbasal layer of the corneum, styling the stratum lucidum as the basal layer of the corneum, so dividing the corneum into four layers by reason of each responding differ-

ently to staining reaction. Macleod (4) states that the epithelial fibres or prickle cells of the rete persist in these cells and have been transformed into the highly resisting scleroprotein, keratin. A fatty or waxy substance has taken the place of the eleidin and hyaloplasm of the cells, while the spongioplasm in its peripheral parts has also been transformed into keratin. Ranvier (5) considers that the existence of the fatty or waxy substance of the corneal cells, which he likens to beeswax, plus the keratinized prickles and the peripheral parts of the cells make of the stratum corneum a waterproof coating to the body. Hence is suggested the analogy of the skin to a thin coating of rubber.

The keratins are scleroproteins and form the hard structure of hair and nails, in addition to being present in the skin. The chief characteristic of them is the high sulphur content they contain—as much as fifteen per cent. of keratin in human hair, and the sulphur in keratin is generally loosely combined. Moreover, Haliburton (6) says: "The continual shedding of epidermal scales is in reality an excretion. Keratin, of which they are chiefly composed, is rich in sulphur, and, consequently, this is one means by which sulphur is removed from the body."

Macleod in writing on the process of cornification, whereby an epidermal cell is transformed into a resisting horn cell, states "there is no unanimity among histologists with regard to the process of cornification, and one of the most important problems in the histology of the skin remains yet to be solved. Perhaps closer consideration and a fuller study of vulcanization may lead to a solution of the problem. Cornification or natural vulcanization may make of the corneal layer a factor in the elasticity of the skin, which may not be altogether attributable to the collagenous fibres, which are now believed to have greater elasticity than the elastic fibres of the corium.

The histopathology of psoriasis is thus described by Macleod: Psoriasis is the classical example of slight edema of the epidermis, with parakeratosis. The cardinal feature in the histology of a recent papule of psoriasis may be thus briefly tabulated:

1. Dilatation of the bloodvessels chiefly affecting the veins of the papillary and subpapillary layers of the corium.
2. Elongation of the papillæ.
3. Cellular infiltration and edema of the superficial layers of the corium.
4. Proliferation of the prickle cell layer, with down growth of the interpapillary processes (acanthosis).
5. Dilatation of the interepithelial lymphatic spaces.
6. Deficiency of the transitional layers and imperfect cornification.

A striking feature of the picture of a section of a recent papule is the collections of broken down leucocytes between the horny lamellæ. The cells in the horny lamellæ are moist, retain their nuclei, but are deficient in keratin. These horn cells are soft and pliable and adhere together in squames and lamellæ, so cannot usually be rubbed off separately.

In perfect cornification dry squames or cells are constantly being shed. There is no actual, or parenchymatous, edema of the prickle cells. The granular layer of the epidermis and the stratum lucidum are absent; so too are keratohyalin granules and eleidin droplets invisible. The basal layer of the epidermis is everywhere perfect.

Sulphur is ingested in organic and inorganic form, but it is organic sulphur which is of interest here. It is principally incorporated in fibrin, egg albumen, casein, corn, turnips, cabbage, cauliflower, asparagus, white bread, brown bread, apples, pears, gooseberries, onions, celery, potatoes, etc. In the final digestion of the protein products in the alimentary canal, just before absorption into the blood stream, the only amino acid of special and significant importance in this connection is cystin; because all the sulphur ingested is gathered into the cystin molecules, and in these the sulphur is loosely combined.

Chipman (7) makes this significant remark: "When the amount of nitrogen eliminated is less than that received in protein there is evidently a storing up of nitrogenous substance." As the excretion of sulphur parallels the excretion of nitrogen, may not this too apply to sulphur? "The sulphur of protein is contained in the amino acid cystin, and cystin is absolutely necessary for nutrition. A satisfactory protein ration must include such proteins as contain systin in sufficient amount." And further: "Cystin is of importance in metabolism, because it is the only known sulphur containing amino acid in the protein molecule." In addition to the elimination through the urine, and in the stools, sulphur is eliminated in the skin excretions. Small quantities are also cast off through the growing nails and growing hair, by clipping. "The amount of sulphur passing through the skin is estimated at thirty mg. a day."

Cystin, according to Plimmer (8) is present in greatest amount in some of those proteins belonging to the group of scleroproteins, namely, the keratins. It has been found in the liver and other organs. When absorbed into the blood stream from the alimentary canal, no evidence has been obtained that cystin has undergone any change as such. Indeed, one author, already quoted, speaks of cystin as being present in that state in the liver, but whether in the liver cells or bloodvessels was not made clear. It is known, however, that taurocholic acid, which contains sulphur, originates there, and that it is thereafter in the blood stream, as, according to Croftan (9) all white blood corpuscles contain taurocholic acid. It is also known that sulphur is present in hemoglobin. Thus when the blood arrives in the vessels of the *pars papillaris* it is in close contiguity to the layer of basal cells of the epidermis, the stratum germinativum, each of which cells, like all other cells of the body extracts from the lymph spaces surrounding them, the essential element or elements for their metabolism.

Three striking features of the sectional histopathological picture are: The disintegrated white blood corpuscle collections among the cells of the corneum, or, as they have been called, the cold or

chronic abscesses of that layer; the increase in the number of prickle cells, especially in the interpapillary spaces, or bodies, being absent over the apices of the cones; and the absence of any parenchymatous edema of the prickle cells. Now recall here the fact that when too much sulphur goes into the vulcanization of rubber, it becomes brittle. Have the white blood corpuscles carried too much sulphur to the prickles of the rete, so that they become brittle and fail to keratinize, or vulcanize? Is the increase in cellular production of the interpapillary body an effort on the part of nature to take up and assimilate the surplus sulphur—a "speeding up," as it were? To what is the silvery color of the corneal squames due in psoriasis? Whether it has been absolutely proven or not, opinion holds to the presence of air amongst the cells. Might it not be due to the escape of sulphur dioxide?

Thompson (10) is interesting in this place. "The sulphur vapor is highly irritating"—there is irritation in psoriasis. "The vapor is liberated in . . . bleaching various products. . . . Sulphurous acid is used as a bleaching agent . . . and is employed in bleaching . . . animal tissues, as wool, hair, bristles, feathers, down"—substances which contain keratin in considerable percentages. Small quantities, minute amounts of sulphur dioxide do not emit odor, so there would be no odor from a psoriatic skin. It appears quite reasonable to assume, therefore, that sulphur vapor is liberated, irritates the epithelial layers, and bleaches the squames.

Something about the excretion of sulphur other than by the skin should be noted, particularly through the channel of the kidneys. As is well known, it appears in urine, according to Croftan, either in combination with alkali, or with certain aromatic constituents of the urine, together with that portion of sulphur which seems to escape oxidation into sulphuric acid and which forms complex compounds, such as cystin. This portion of sulphur is known as "neutral sulphur compounds." Therefore, there are in the urine preformed or mineral sulphates, conjugate or aromatic or ethereal sulphates, and the neutral sulphur compounds. Of the preformed sulphates but a small quantity is ingested with the food, the bulk of them being derived from the catabolism of the food or tissue albumen, i. e., the total sulphur is largely dependent on the degree of intercellular disassimilation of albumen. The bulk of the aromatic sulphur is derived from putrefaction of albumen in the bowel. Croftan further says that "as the bulk of the urinary sulphates is derived from the metabolism of albumen, the sulphate excretion gives us some information in regard to the degree of disassimilation of albumen in the body. The sulphur of the urine consequently partakes of the same significance as the urinary nitrogen. Whereas, however, all albumens contain the same amount of nitrogen, they do not all contain the same amount of sulphur (.8 to 2.1 per cent.); consequently a change in the kind of albuminous food eaten will determine a change in the sulphur excretion but not in the nitrogen excretion, provided the quantity of albumen remains the same."

Schamberg (11), who has done considerable and exceptionally original work in psoriasis, Ringer, Raiziss, and Kolmer, have shown that psoriatics tend to retain nitrogen in the skin, as well as in the system generally, but apparently have overlooked, or wholly disregarded, any part which might be assigned to the rôle of sulphur. Is there, then, in psoriasis, an overcharging of the cutaneous system with sulphur, a diminished excretion of sulphates, and an aberration in the requisite sulphur content which fails to produce the exact vulcanization of the normal skin?

Some concluding remarks would seem to confirm the theory of variability in vulcanization of the skin as the cause of psoriasis. Although a case or two of psoriasis of the buccal mucous membrane has been reported, it is not possible for such to occur for there is no cornification of the squamous epithelium, and consequently, no keratin or sulphur required in that situation.

From the microscopic study of a sagittal section of the lower lip of a child, Krause says: "A different picture presents itself in the epithelium of the mucous membrane (schlep). We first notice its great size. It consists of many more strata of cells than did the epidermis and, while there is some horny material in the most superficial layers, there are no nonnucleated horny scales, thus keratosis is incomplete." There is a deficiency of keratin in the scales of psoriasis, and the nuclei persist in these, which distinguishes hyperkeratosis in which the nuclei are absent, from parakeratosis in which the nuclei persist.

As a rule psoriasis appears on the colder surfaces of the body, the extensor surfaces; it tends to get well with warmth and sunlight. In the tropics it is said to be very rare, scarcely if ever occurring. In the Southern States, it is about one to two per cent. of all skin diseases—and it is said to be extremely rare in the negro race, who can quite likely take care of all sulphur ingested and convert it into melanin which is a keratinized product. In the temperate regions, its incidence is about four to five per cent. of all other diseases of the skin; while in Scotland and Iceland it is about eight per cent. Practically all patients with psoriasis are large consumers of the food stuffs in which sulphur abounds; and the nitrogenous foods are now pretty generally prohibited in patients with this disease. It has been noticed to disappear more rapidly during confinement to bed with warmth and in training for athletic contests.

One digression: In fevers, such as typhoid and possibly influenza, there is a rapid excretion of sulphates in the urine, and often rapid falling of hair as a result. This needs further investigation. Indeed, the entire rôle of sulphur in the economy seems to be worthy of further study and experimentation.

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CHRONIC APPENDICITIS.*

A Study of Postoperative End Results.

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No disease is more ideally suited for surgical treatment than is chronic appendicitis. The operative dangers are practically nil and if the diagnosis is correct the postoperative cure is absolute. A correct diagnosis is therefore the all essential factor for success, and it is because I see a very considerable number of patients who have been operated upon under an incorrect diagnosis of chronic appendicitis by surgeons of unquestioned ability, and because among the physicians who refer patients to me for operation I find a very hazy conception of the symptomatology of this disease, that I have decided to bring this subject before you.

What is chronic appendicitis? All of us have used the term freely for many years but the condition is by no means as easy to define as its rather alluring name would seem to indicate. The name implies that we are dealing with a definite pathological entity capable of fairly constant recognition by the surgical pathologist. That this is not the case, however, can be easily proved from the records of any hospital with a well equipped pathological laboratory and a competent pathologist. The finer microscopical changes supposed to be indicative of chronic inflammation do not bear any constant relationship to the clinical picture presented by the patients whose appendices have been sent to the laboratory. For purposes of studying the symptomatology of this disease I believe that our only absolutely reliable test is the end result record. The patient who is promptly and permanently relieved following a simple appendectomy did have appendicitis. The patient who is not cured following the operation in all probability did not have an appendix which was responsible for the symptoms.

The term permanently needs special emphasis because nearly all patients who are operated upon for chronic appendicitis are apparently greatly benefited for from a few weeks to several months following the operation. This temporary benefit is probably in part due to the more or less lengthy period of rest following the operation, in part to the prolonged medical supervision, and in part to the psychic influences associated with the operation. End result observations made three months after an operation for so-called chronic appendicitis will record many patients as "cured" who six months later will be found to be suffering from

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the same symptoms they complained of before the operation.

For the purposes of this study I have analyzed the clinical histories of 110 patients operated upon by me under a preoperative diagnosis of chronic appendicitis and definitely cured, as proved by end result records extending over periods of from one to ten years following their operations. Considerable confirmatory data have been obtained from the histories of an approximately equal number of patients operated upon for acute appendicitis, but who after operation found themselves cured of a long standing tendency to attacks of so-called indigestion. A third group studied was composed of patients not demonstrably benefited by appendectomies performed by myself and by other surgeons.

The point which I want to emphasize particularly in this paper is the fact that practically without exception the patients in my series who were cured have presented a definite and constant group of symptoms. The symptoms, which according to my experience have been characteristic of chronic appendicitis, have been equally conspicuous by their absence from the histories of the patients who were not cured. Also I wish to emphasize the relationship of the characteristic symptoms of so-called chronic appendicitis to the well known symptoms of the acute attack.

SYMPTOMS OF ACUTE APPENDICITIS.

The attack of acute appendicitis is accompanied by a group of symptoms which are so constant in their essential features as to make an almost uniform clinical picture. The intensity of the several symptoms may vary markedly in different individuals, but the essential features are always present and easily recognizable, provided the history is accurately taken. In practically all acute cases the attack begins with cramplike pains which are for the most part referred to the epigastrium or mid-abdominal region. These initial cramplike pains are almost uniformly accompanied by nausea and in the great majority of cases by vomiting. Abdominal pains of this type with the accompanying nausea or vomiting are characteristic of all acute obstructions situated at no matter what point along the gastrointestinal canal. They are present in the first hours of an acutely strangled hernia, in intussusception, in obstructions due to foreign bodies, tumors, or adhesions, and in acute and also chronic appendicitis.

If the patient suffering from acute appendicitis is operated upon within six or eight hours after the onset of these pains or before abnormal temperature and subjective pain in the region of McBurney's point have developed, the pathological condition encountered is practically constant in all cases. The appendix is always obstructed at some point along its lumen. Distal to the point of obstruction the lumen is distended to limits which are determined by the character of the walls of the individual appendix. As a result of the overdistention the circulation of the appendix is more or less interfered with. The walls are swollen and edematous but histological examination of these very early appendices shows that the true inflammation, the

result of secondary bacterial invasion, which develops with such rapidity is not present to a noteworthy extent at the very beginning of the painful attack. I believe, therefore, that we have sufficient evidence to say definitely that the abdominal cramps and nausea which usher in the attack of acute appendicitis are caused by the obstruction of the lumen of the appendix and that they result directly from spasm of the wall of the appendix. From six to twenty-four hours, as a rule, after the onset of the acute attack fever develops and at about this time the chief subjective pain shifts to the region of the right lower quadrant, and the cramplike pains which ushered in the attack usually subside. Gross and histological studies of a large number of appendices removed at this stage of the disease and studied with special reference to the clinical symptoms in the corresponding cases have convinced me of the following:

First, the subsidence of the primary cramplike pains is due to paralysis of the muscular wall of the appendix. Second, the primary overdistention of the wall of the appendix allows of bacterial invasion and is followed, in the acute cases, by diffuse inflammation involving all of the coats of the appendix. With the onset of the true inflammatory process we have fever and the subjective pain is referred to the region of the appendix. This is in accordance with our knowledge of pains of intestinal origin in general. The pain due to spasm of the appendix wall is like other pains of obstructive origin, referred as a rule to the midabdominal region and is accompanied by nausea or vomiting. The pain due to true local inflammation is referred to the inflamed part itself, namely, the appendix and the involved area of peritoneum.

I have gone into the symptoms and the correlated pathology of acute appendicitis in some detail because my end result studies have convinced me that the diagnostic symptoms produced by the so-called chronic appendix are very similar in kind and mode of origin to the earlier symptoms so characteristic of the more severe attack which progresses to the inflammatory lesion of acute appendicitis.

SYMPTOMS OF CHRONIC APPENDICITIS.

Pain and Epigastric Distress.—Pain is the most constant symptom of chronic appendicitis. The primary pain of acute appendicitis is almost always situated in the epigastrium or midabdomen. Similarly in cases of chronic appendicitis, in which the patients have been cured, the pain has been almost constantly referred to as epigastric or midabdominal rather than right inguinal. On the other hand, nearly all the patients not benefited by operation complained of right inguinal pain as one of their chief symptoms.

Graham and Guthrie (1) state that, given attacks of dyspepsia accompanied by epigastric pain with radiation to or about the umbilicus or lower abdomen, we must hold first and clearly to appendicular disturbance, and this statement agrees perfectly with our experience. We may call this pain a pylorospasm, or we may account for it as best suits our fancy, but it is undoubtedly analogous to the early pain of the acute appendix attack, and its presence

in real cases of chronic appendicitis is so constant that its absence in the history of a suspected case should lead to grave doubt as to the accuracy of the diagnosis. Such attacks of epigastric or mid-abdominal pain or distress were present in 108 out of 110 or ninety-eight per cent. of my patients who were cured. On the other hand, my histories show that when this type of pain is not complained of by the patient in all probability an appendectomy will not cure the patient.

Epigastric or midabdominal pain is also a prominent symptom in a number of other abdominal diseases, but a carefully analyzed history will permit of a differential diagnosis in most cases.

In gastric and duodenal ulcer we have a clean cut regularity in the symptoms not observable in appendicular dyspepsia. In ulcer, before secondary complications have intervened, the remissions between attacks are free from symptoms, and during the attack the pain comes on at a regular interval after each meal. Food gives temporary relief and alkalies are similarly effectual. Later, as complications intervene, much of this regularity is lost, but the early history is always obtainable and the onset of complications is usually accompanied by evidence of food retention.

In gallbladder disease we have the sudden onset and almost equally sudden relief, with the characteristic radiation of the pain, or, in the absence of real pain we may have the sudden attacks of gaseous pressure relieved by belching, slight vomiting, or regurgitation. The patient as a rule notices no definite relation to food intake, the periods of disability are usually short, and the intervals are, as a rule, relatively free from symptoms.

In chronic constipation the distress or pain is of a diffuse character, with areas of special intensity corresponding to points along the colon. Increase of pain or distress is directly referable to the degree of constipation, and the trouble is temporarily relieved by catharsis.

In enteroptosis the pain varies greatly in individual cases, bears a definite relation to fatigue and the upright position, and is associated with the characteristic physical type and neurasthenic tendencies.

In appendix dyspepsia the first pain of an attack may come on without warning or may follow an indiscretion in diet, but during the subsequent period of disability, food intake is regularly associated with an increase of distress or pain. The discomfort is irregular as to time of onset and may appear any time, from a few minutes to an hour or more after eating, and may be manifested only as a peculiar epigastric distress, or attacks of quite severe abdominal pain may be followed by days or weeks in which the patient is afraid to eat because each meal is likely to be followed by a peculiar, tenacious distress of such a nature as to convince both the patient and the examining physician that there is something definitely wrong at some point in the intestinal canal.

Nausea.—Next to the pain and epigastric distress nausea has been the most frequent symptom in our patients who have been cured; 105 or ninety-five per cent. of the 110 patients in my series report having had nausea with at least some of their

painful attacks. As the pain increases in severity, nausea becomes a prominent symptom, and with attacks approaching in intensity the pain of acute appendicitis, nausea and vomiting become the rule. While actual vomiting is limited largely to the more severe painful attacks, nausea seems to be far more common than in gastric ulcer or gallstones; nausea is the rule during the height of the attacks, and frequently is the most constant and distressing symptom complained of by the patient. Oschner has called attention to the fact that this symptom is especially frequent in cases where the appendix contains a large fecal concretion.

Pain in Right Lower Quadrant.—Among my patients who have been cured ninety-five, or eighty-six per cent., have also complained of subjective pain or tenderness in the right lower quadrant. This pain, when occurring in close association with the more diffuse or midabdominal pains and especially also associated with nausea, points directly to the appendix as being the organ at fault. On the other hand, right inguinal pain not associated with the other symptoms mentioned above only very rarely indicates chronic appendicitis.

Constipation.—Most writers have spoken of constipation as one of the chief symptoms of chronic appendicitis, but in our patients who have been cured constipation has not been more prevalent than in the ordinary run of office patients, and removal of the appendix has had no constant effect upon this condition. As will be noted later, a large group of uncured patients with pain in the lower right quadrant suffered from chronic constipation, and neither the pain or the constipation was benefited by removing the appendix. Several patients, who sometimes had spells of sudden diarrhea following soon after the onset of their painful attacks, were cured of the diarrhea after removal of their appendices, a fact previously noted by Ewald and others.

Gas.—In our earlier records, gas and distress are often used without especial differentiation, but we have come to realize that in chronic appendicitis the distress usually bears no particular relation to gas, and although discomfort from gas makes up part of the general picture, it is a far more characteristic feature of the uncured than of the cured patients.

Appetite.—The appetite often fails during the height of the attack, but for the most part our histories of the cured patients record the fact that the appetite was good but the patient was often afraid to eat because of the subsequent distress.

Taking the 110 cured patients as a group, we are at once struck by the fact that 108 complained of attacks of epigastric or midabdominal pain or distress; ninety-five stated that they had had one or more attacks in which the primary pain and nausea were also accompanied by pain or soreness in the right lower quadrant, a fact which aided materially in the diagnosis, but even in these patients the subjective symptoms directly referable to the region of the appendix constitute but a minor part of the total discomfort. On the other hand, our uncured patients almost without exception complained of pain in the right lower quadrant as their chief symptom.

It is altogether probable that the symptoms of so-

called appendiceal indigestion are caused by the same abnormal condition which is the predominating factor at the onset of the acute attack, namely, an obstruction interfering with the free drainage of the appendix, and that as long as the lesion remains a mechanical one the pain or discomfort is referred to the midabdominal region. On the other hand, it is a well known fact that, with the onset of active inflammatory changes in the appendix, we have pain subjectively referred to the region of the appendix. In those who escape the acute inflammatory attacks the subjective symptoms may be entirely referred to the epigastrium or midabdominal region, but in the majority of patients, occasional attacks will probably lead to active inflammatory changes in the appendix and an accompanying pain or soreness in the right lower quadrant.

THE UNCURED PATIENTS.

The space allotted me for this paper does not permit of a detailed analysis of the cases in which the patients were not cured. Previous to 1911, when I first reviewed my end results in these cases we had errors in diagnosis amounting to thirty-six per cent. During the past eight years eighty-six per cent. of the patients I have operated upon for chronic appendicitis have been definitely cured by the operation.

The uncured patients have for the most part fallen into two rather sharply defined groups. The larger group is typically represented by the young woman who haunts the surgeon's office complaining of right inguinal pain usually associated with varying degrees of constipation. The type is familiar to all of us; fatigue or constipation or both are usually given as causes of increased pain. Many of them tell you that they have been repeatedly treated with the ice bag for supposed attacks of acute appendicitis, but a carefully taken history fails to reveal the first two of the cardinal symptoms of appendicitis, namely the cramplike, diffuse, or midabdominal pain and nausea. The great majority of these patients present at operation a normal appendix and an enlarged movable cecum of the type described by Wilms (2), Stierlin (3), and others.

I wish to emphasize the fact that in eleven years of operating I have never cured a single one of these patients by appendectomy nor have I ever learned of a convincing case of cure by another surgeon. In my experience these patients are readily relieved by proper corseting, abdominal exercises, hygiene, and cathartics. Occasionally it may be justifiable to remove the appendix to eliminate doubts and retain control of the patient, but it should not be done with any idea of direct benefit by the appendectomy itself.

The second rather poorly defined group is composed of patients operated upon in the hope that the appendix might be the cause of various obscure gastrointestinal symptoms. In the absence of typical appendix symptoms these operations have been uniformly failures. Surgeons and x ray specialists have talked knowingly about pyloric spasm and its relation to chronic appendicitis, but to date I have failed to find a case which would stand the acid test of the end result investigation. Such authori-

ties as Ewald (4) and Moynihan (5) have asserted that almost every conceivable form of dyspepsia might be caused by the appendix. At one time I hoped fervently that they might be right but to date I have failed to find the cases.

CONCLUSION.

In my experience chronic appendicitis has proved to be a rather sharply defined disease in which the symptoms may be recognized by the fact that they reproduce in miniature the first symptoms of the acute attack. The disease differs from acute appendicitis by the fact that the obstruction is incomplete or because it is habitually relieved before the acute inflammatory stage develops. The pathologist's report based on the microscopical examination in so-called chronic appendicitis is unreliable. Most symptoms producing chronic appendicitis may be recognized at the operating table by the presence of gross anatomical factors predisposing the appendix to attacks of partial or complete obstruction of the lumen.

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STATE AND BARRETT STREETS.

PRACTICAL METHODS OF INFANT FEEDING.*

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No other branch of pediatrics, in my opinion, is as important as infant feeding. Infant mortality is highest during the first few months and decreases with the age of the child. To lower the great infant mortality, the simple principles that govern infant feeding must be brought home to the general practitioner, both for his own knowledge and for the specific instructions he must leave with the mother. It is surprising to see how the most fundamental rules are sometimes neglected by the physician. To cite an instance: A case was referred to me for prescribing a feeding formula for a baby fifteen days old. On inquiring what the child had been getting before, the mother told me that she mixed one third milk and two thirds water and a little less than a teaspoonful of sugar, making a four ounce bottle. She gave this to the baby every two hours and when it cried. She had been given no other instructions by the family physician. I

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can recall similar examples. In a way the general practitioner can hardly be blamed; the question is presented in such complicated form by many authors that the physician who is not a specialist cuts the Gordian knot by merely following his own impulses and whatever hazy recollections he has from his college days. It is my intention in writing this paper to present the subject of infant feeding more simply so that the general practitioner will be able to prescribe infant formulæ just as rationally as prescribing in any other case. After all, this matter can and should be treated like any therapeutic measure, such as dietetic treatment for diabetes, gout, and other diseases.

In considering infant feeding we cannot sufficiently emphasize the well known principle that nature's food is best suited for the infant. By all means insist on the baby getting breast milk whenever possible. In this paper we shall consider only cases where, on account of either general or local conditions, mothers cannot nurse their babies. There are instances in which a slight and easily remediable cause will produce untoward effects in breast feeding, and before weaning the baby we must be careful to find out how long the mother keeps the infant to her breast and how she holds the baby, and to look for any irregularities of intervals between feedings, or bad odors about an unwashed breast or nipple. In other words, eliminate every cause of disturbance to the nursing baby before placing the blame upon the quality of milk. There are times when a baby will refuse to make an effort at nursing when applied to the breast although it will thrive on mother's milk if drawn and fed to it. This also applies in certain cases of cracked nipples. Sometimes the services of a competent wet nurse may be necessary.

When the simple hygienic measures mentioned do not help, a thorough chemical analysis of the mother's milk should be made to ascertain the source of the trouble and have the mother treated accordingly. As the first few months are the most perilous, every effort should be made to tide the child over this period on breast feeding if it is possible. In those cases where, for one reason or another human milk is not available, the question is, what may be given to take the place of nature's food? The substitute should embody as nearly as possible the physical and chemical characteristics of the mother's milk. A properly modified cow's milk is the nearest substitute we can get.

PHYSIOLOGICAL CONSIDERATIONS.

To give an understanding of the physiology of the infant's gastrointestinal tract, I have compiled the following data from the latest works on the subject:

CAPACITY OF INFANT'S STOMACH.

At birth.....	1 ounce
At two weeks.....	2 ounces
At two months.....	3 ounces
At three months.....	4 ounces
At six months.....	6 ounces
At twelve months.....	9 ounces
At eighteen months.....	12 ounces

The duration of gastric digestion varies with the age of the infant and the kind of food taken. During the first month the stomach of a healthy infant

will be empty from one to one and a half hours after feeding, with cow's milk a half hour longer; from two to eight months, two hours after nursing, and with cow's milk from a half hour to an hour longer. In disordered digestion the process is much longer. With the newly born infant the first step in the process of digestion is sucking. The suction force produced causes the milk to flow. It will not be amiss to remark here that the attending physician should instruct the mother to have the bottle held so that the neck will always be filled with milk to prevent the baby from sucking in air, which frequently causes colicky pains. There is little saliva present at birth and up to three months of age. After three months the saliva increases rapidly and acts upon starch, converting it into sugar.

At birth the infant's stomach is oblique, nearly vertical, and cylindrical. Gradually the fundus becomes larger, and after twelve months it is almost transverse, attaining its full development late in childhood. Its secretions contain pepsin, hydrochloric acid, and rennet ferment. Gastric digestion is not as important in infants as in adults. Food leaves the stomach so rapidly that a large part of the casein passes into the intestine before being converted into peptones. The gastric process is only preliminary and partial, the digestion even of proteids being completed in the intestine. In infancy the stomach acts more like a reservoir than a digestive apparatus.

The proteids are transformed successively into acid albumens, albumoses, and peptones. Sometimes lactic acid is present in place of hydrochloric acid. The rennet ferment first coagulates the human milk into loose flocculi, and cow's milk into coarse and firm curds except when well diluted (a point to be noted). Then solution of the coagulum begins by the action of the pepsin and hydrochloric acid. The milk passes through the pylorus quickly, so that in half an hour a considerable portion has passed into the intestine and at the end of an hour the stomach is usually empty. This process is somewhat slower with cow's milk.

The small intestine in an infant is about nine feet long and the large intestine eighteen inches. An interesting fact is that the sigmoid is nearly half the length of the large intestine. The action of the intestinal juice is not perfectly understood, but its chief function is thought to be diastatic. It is supposed to contain enterokinase and erepsin, and its alkalinity facilitates the action of trypsin, the diastatic ferment, and the absorption of fats. Intestinal digestion really depends upon the activity of the pancreatic juice, the enzymes of which act as follows:

Trypsin converts proteids into peptones in an alkaline medium.

Amylolytic ferment converts starch into sugar (becomes active about the fifth month).

Fat splitting ferment.—Fats are partly emulsified and partly saponified by the pancreatic juice, in connection with bile, which probably furnishes the needed alkali. Even at birth pancreatic juice has the power to actively split, emulsify, and saponify fat.

The liver is proportionately large, and its most important function is the secretion of bile. Bile secretion is present after three months of fetal life. The greater part of the bile is reabsorbed from the intestine. Milk sugar is converted into galactose and cane sugar into dextrose and levulose by the pancreatic juice.

ABSORPTION.

Stomach.—Water, salts, sugar, and peptones are absorbed directly into the blood.

Small intestine.—Fat is taken up by the villi and the simple follicles of the mucous membrane. Absorption is less active than secretion except in the duodenum. Absorption takes place through filtration and endosmosis, chiefly through the activity of the epithelial cells.

Large intestine.—Absorption is imperfect. Sugar, salts, and peptones are absorbed with moderate facility.

ARTIFICIAL FEEDING.

Among the different methods of infant feeding, the most scientific and at the same time the most practical are those based on the calorific values of food and the percentage of the different ingredients in the milk mixture and top milk mixture. The calorific method can be easily computed when we know that during the first six months an infant requires about 110 to 120 calories to the kilogram of body weight, and for the next six months about 100 calories to the kilogram. When conditions permit the percentage formula can be prescribed in accordance with the age and calorific requirements of the infant. The following is a specimen formula:

Fat	2.5 per cent.
Proteid .....	.9 per cent.
Lactose	6.5 per cent.
Lime water	5.0 per cent.

Make six bottles of six ounces each. Pasteurize at 140° F. for forty minutes. For baby A. B.

Send this prescription to the milk laboratory and they will deliver as many bottles as required for the day's supply to the home. Change from time to time according to the requirements of the baby. Inasmuch as milk laboratories are as yet inaccessible to the great body of the profession, the problem presented is how the advantage of the laboratory method may be utilized where milk is prepared at home.

MODIFICATION OF MILK.

When milk stands for more than twelve hours the fat rises to the top as cream, the proportion of other ingredients to the cream remaining unchanged. The top ten ounces of the milk represents ten per cent. fat cream, the top sixteen ounces seven per cent. fat, the top twenty ounces six per cent. fat, the proteid remaining 3.0 per cent., and the sugar 4.75 per cent. These top milks will be the only ones necessary for our purpose in making up milk formulae for infants.

In making up a formula for infant feeding, the following principles must be observed by the physician:

1. Decide on the formula you need, the number of ounces in each feeding, and the number of feedings daily.

2. Note the relationship of fat to proteid in the

formula and use for dilution a top milk with the same proportion.

3. Add the sugar (milk sugar, dextrimaltose, or cane sugar) best adapted for the baby in making up the required percentage. Milk sugar is best tolerated by most infants.

4. Substitute barley or oatmeal water in place of the boiled water in the formula, the former for babies having loose stools and the latter for constipated babies, after the third month. Take one tablespoonful of barley or oatmeal to sixteen ounces of water and cook for one hour in a double boiler. Keep the water up to sixteen ounces.

5. Give detailed instructions to mother or nurse on the following points:

a. All the food needed for twenty-four hours should be prepared at one time, preferably in the morning.

b. Feed the baby regularly. Give as many feedings in twenty-four hours as ordered and no more. Do not feed the baby every time it cries.

c. Every feeding should contain the same amount of food; if fed regularly the child's stomach becomes accustomed to feedings of the same quantity and quality.

d. Prepare the food just as it has been ordered. Changes made to suit your convenience may be responsible for serious troubles to the infant.

e. Keep the prepared milk in stoppered bottles on ice until feeding time, then place the bottle in water at a temperature of 100° F. so as to warm the milk before it is fed to the baby.

f. When the milk has become warm, a clean boiled nipple should be placed on the bottle.

g. Do not test the warmth of the milk by putting the nipple in your mouth; test it by pouring a few drops on your wrist.

h. Do not give the baby a nipple to suck every time it cries; this distorts its mouth and tires the sucking muscles, which should be used only at feeding time.

i. Do not use the ordinary home utensils for preparing the baby's food. A complete equipment would comprise the following:

- One two quart porcelain pitcher.
- One quart or pint glass graduate.
- Milk sugar graduate to measure accurately weighed quantities of sugar of milk.
- One small glass funnel.
- One dozen round bottom, wide necked bottles.
- One dozen nipples.
- Two bottle brushes.
- One Chapin dipper.
- One tall cup for warming milk.
- Small ice box, or the ordinary household one.
- Sterilizer or container large enough to boil the bottles, dipper, nipples, and other utensils.
- Absorbent and nonabsorbent cotton, borax, sodium bicarbonate, milk sugar, boiled water fresh daily, lime water.

The most scrupulous care of nipples and bottles is necessary.

FORMULÆ FOR INFANT FEEDING.

From my own experience based on over 2,000 cases from private practice, consultations and institutional babies, I find that the infants thrive best on the formulæ described below.

The digestion of healthy infants is much alike, and they can all be fed in much the same way. Or

the other hand, the variations afforded by unhealthy infants are almost endless, and each case must be considered by itself. Although only healthy infants can be fed by rule, it is equally true that if fed by proper rules from the beginning, most infants will be healthy.

A.—FORMULA FOR BABY FROM TWO TO FOURTEEN DAYS.

Ten ounces to fifteen ounces for the twenty-four hours; feeding time from 6 a. m. to 10 p. m.; one to one and a half ounces in each bottle to make ten feedings, including one night feeding.

One feeding every two hours.

Percentages: fat 1.7 per cent., proteid .6 per cent., sugar 6 per cent. (fat-proteid ratio three to one).

From top third or ten ounces of milk take two ounces.

Boiled water, nine and a half ounces.

Lime water, 5 per cent.—one half ounce.

Sugar of milk, five drams.

6 Fat 10%	Proteid 3.5%	Sugar 4.75%
1.7%	.6%	.8%
Add five drams milk sugar,		5.2%

Fat 1.7%	Proteid .6%	Sugar 6%
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B.—FORMULA FOR BABY FROM TWO TO THREE WEEKS.

Twenty ounces for twenty-four hours; eight feedings of from one and a half to two and a half ounces every two and a half hours; one night feeding.

Fat 2 per cent., proteid .7 per cent., sugar 6.5 per cent.

From top ten ounces of milk take four ounces.

Boiled water, fifteen ounces.

Lime water, q. s. 5 per cent.—one ounce.

Milk sugar, one ounce one dram.

5 | Fat 10%	Proteid 3.5%	Sugar 4.75%
2%	.7%	.9%
Add one ounce one dram milk sugar,		5.6%
Fat 2%	Proteid .7%	Sugar 6.5%

C.—FORMULA FOR BABY FROM ONE TO TWO MONTHS.

Twenty ounces to twenty-eight ounces for twenty-four hours; eight feedings of three to three and a half ounces every two and a half hours; one night feeding. Fat 2.5 per cent., proteid .9 per cent., sugar 6.5 per cent.

From top ten ounces of milk take seven ounces.

Boiled water, nineteen and a quarter ounces.

Lime water, q. s. 5 per cent.—one ounce six drams.

Sugar of milk, one ounce six drams.

4 | Fat 10%	Proteid 3.5%	Sugar 4.75%
2.5%	.88%	1.19%
Add one ounce six drams sugar of milk,		5.3%
Fat 2.5%	Proteid .88%	Sugar 6.5%

D.—FORMULA FOR BABY FROM TWO TO FOUR MONTHS.

Twenty-eight ounces to forty ounces for twenty-four hours; seven bottles of three and a half to five and a half ounces each every three hours; one night feeding. Fat 3.3 per cent., proteid 1.6 per cent., sugar 6.5 per cent.

From top ten ounces of milk of two bottles take thirteen ounces.

Barley or oatmeal water, twenty-five ounces.

Lime water, two ounces.

Sugar of milk, two ounces.

3 | Fat 10%	Proteid 3.5%	Sugar 4.75%
3.3%	Proteid 1.6%	Sugar 6.5%
Add two ounces sugar of milk,		4.9%
Fat 3.6%	Proteid 1.6%	Sugar 6.5%

E.—FORMULA FOR BABY FROM FOUR TO FIVE MONTHS.

Twenty-eight ounces to forty-two ounces for twenty-four hours; four to six ounces every three hours; one night feeding; seven bottles.

Fat 3.5 per cent., proteid 1.75 per cent., sugar 6.5 per cent. (fat-proteid ratio 2 to 1).

From top sixteen ounces (7 per cent. fat) of milk of two bottles take twenty-one ounces.

Barley or oatmeal water, nineteen ounces.

Lime water, two ounces.

Sugar of milk, one ounce six drams.

2 | Fat 7%	Proteid 3.5%	Sugar 4.75%
3.5%	1.75%	2.38%
Add one ounce six drams sugar of milk,		4.12%
Fat 3.5%	Proteid 1.75%	Sugar 6.5%

F.—FORMULA FOR A BABY FROM FIVE TO SEVEN MONTHS.

Thirty to forty-five ounces for twenty-four hours; five to seven ounces every three hours; no night feeding; six bottles.

Fat 4 per cent., proteid 2 per cent., sugar 6.5 per cent.

From top sixteen ounces of milk of two bottles take twenty-six ounces.

Barley or oatmeal water, seventeen ounces.

Lime water, q. s. 5 per cent.—two ounces.

Sugar of milk, one ounce six drams.

4/7 | Fat 7%	Proteid 3.5%	Sugar 4.75%
4%	2%	2.8%
Add one ounce six drams milk sugar,		3.7%
Fat 4%	Proteid 2%	Sugar 6.5%

G.—FORMULA FOR BABY FROM SEVEN TO NINE MONTHS.

Thirty-three ounces to forty-five ounces for twenty-four hours; five and a half to seven and a half ounces every three and a half hours; six bottles.

Fat 4 per cent., proteid 2.3 per cent., sugar 6.5 per cent. (fat-proteid ratio more than two to one).

From top twenty ounces (6 per cent. fat) of milk of two bottles take thirty ounces.

Barley or oatmeal water, thirteen ounces.

Lime water, two ounces.

Sugar of milk, one ounce two drams.

2/3 | Fat 6%	Proteid 3.5%	Sugar 4.75%
4%	2.3%	3.2%
Add one ounce one dram milk sugar,		3.3%
Fat 4%	Proteid 2.3%	Sugar 6.5%

H.—FORMULA FOR BABY FROM NINE TO TWELVE MONTHS.

Thirty-five to forty-five ounces for twenty-four hours; seven to nine ounces each feeding, every four hours; five bottles.

Fat 4.5 per cent., proteid 2.5 per cent., sugar 6.5 per cent.

From top twenty ounces of milk of two bottles take thirty-three ounces.

Barley or oatmeal water, ten ounces.

Lime water, two ounces.

Sugar of milk, one ounce one dram.

3/4 | Fat 6%	Proteid 3.5%	Sugar 4.75%
4.5%	2.5%	3.6%
Add one ounce one dram milk sugar,		2.9%
Fat 4.5%	Proteid 2.5%	Sugar 6.5%

Example: A formula is required for a baby from two to three weeks of age, weighing from seven to nine pounds. How should the physician proceed?

1. Formula to be used. A baby two to three weeks old would require formula B.

2. Number of ounces in each feeding and number of feedings a day. In this case the baby would require from one ounce four drams to two ounces four drams to each feeding and eight feedings a day, including one night feeding—twenty ounces for the twenty-four hours.

3. The sugar for a healthy infant of two to three weeks should be 6.5 per cent., preferably sugar of milk.

4. Instructions for the mother:

a. Mix one ounce one dram of milk sugar, one ounce lime water, and fifteen ounces freshly prepared boiled water, until all the sugar is dissolved.

b. Take off the top ten ounces from a quart bottle of grade A milk which has stood in the cold for from five to seven hours, using a Chapin dipper.

c. From the ten ounces take off four ounces and add it to the mixture.

d. This mixture will make the proper percentage mixture and the required amount, which is twenty ounces in twenty-four hours.

e. Fill eight previously sterilized bottles, each to contain from one ounce four drams to two ounces four drams according to the child's weight (gastric capacity). Stopper the bottles with nonabsorbent cotton plugs;

f. Place the bottles on ice, and warm to 100° F. before each feeding.

g. The baby is to get a bottle every two and one half hours and one night feeding. Feeding time should be from 6 a. m. to 10 p. m.

From the above one can see how simple these formulæ are. The top third or ten per cent. milk cream fat should be used up to the second month in one sixth, one fifth, one fourth, and one third dilutions and the necessary percentage of sugar added. One dram of sugar to twelve ounce mixture will make a one per cent. solution of sugar, and one-half ounce sugar to ten ounce mixture will make a five per cent. solution of sugar. From four to seven months use the top half or seven per cent. fat milk in one half and four sevenths dilutions. From seven to twelve months use the top twenty ounces of milk, or six per cent. fat in two thirds and three fourths dilutions.

You will observe the considerable latitude allowed as to the amount of food which may be given at each feeding. This is because of the varying stomach capacities in different children. In rare instances cow's milk causes serious disturbances whether given as cream, skimmed milk, whey, condensed milk, or other form. Even a small amount will give trouble in such cases. These symptoms are probably manifestations of anaphylaxis to the protein of cow's milk. After a thorough trial with the regular formulæ I place such infants on different foods or mixtures according to their respective idiosyncrasies and physiological needs. They may be whey mixture, skimmed milk, eiweissmilch, malt soup extract formulæ, or Dryco milk powder solutions. In rare instances infants do well only on patent foods. A few cases of extreme malnutrition may require a properly diluted condensed milk mixture for a few days until the baby gains a little weight and vitality, when it can be placed on the regulated top milk formula according to its age and weight. I refrain from going into detail concerning these various foods because they are out of the domain of the general practitioner, and I merely mention them as part of the subject of infant feeding that concerns the pediatricist.

In conclusion I shall mention a few illustrative cases, bringing out the value of infant feeding according to the formulæ given above.

CASE I.—B. W., five months old, showed all evidences of rickets, weighed ten pounds. When I first saw the baby, March 5, 1919, she was receiving the following formula prescribed by the family physician:

Top quarter of bottle.....	8 ounces
Barley	3 tablespoonfuls
Water	12 ounces
Lime water	3 ounces
Cane sugar	3 ounces

Six bottles of three and a half ounces each, every three hours.

This baby was getting entirely too much fat, starch and sugar, which resulted in vomiting after every feeding and severe colicky pains. I placed her on formula D and she gained four ounces within a week. After two weeks she was getting formula E, and now she is enjoying perfect health on formula F.

CASE II.—M. MCP., one week old when I first saw her, November 25, 1918. The mother was very much run down, had a double mitral lesion, cracked nipples, and was unable to nurse her baby. This infant was getting Mellen's food, vomited frequently and was very restless. I placed her on formula A; she took to the mixture happily, stopped vomiting and crying, and gained continually. She is now five months old and after getting formulæ B, C and D is now on formula E, with a weight of fourteen pounds and eight ounces.

CASE III.—A. S., twelve weeks old, weight eight pounds, was seen for the first time March 30, 1919. She was losing weight constantly, had cramps, vomited, and cried almost continually. She was getting the following formula from the physician treating her:

From top sixteen ounces of milk.....	6 ounces
Boiled water	19 ounces
Lime water	1 ounce
Dextrimaltose	1 ounce
Three and a half ounces every three hours.	

This baby was getting entirely too low a percentage of all ingredients in the mixture. He was put on formula D, and I am glad to state that by the end of the week he gained six ounces. He takes the bottle readily and does not cry.

CASE IV.—G. A. S., two months old. This case is of interest because the father is a physician. The mother would not nurse the infant and instead was giving it Horlick's milk. The baby was losing and weighed only seven pounds when I first saw her, February 3, 1919. After much persuasion and reasoning I finally succeeded in having the mother nurse the child every six hours and give the baby a bottle from formula C every six hours. Each feeding was three hours apart and the two were alternated. The baby improved rapidly and at present is getting along well, taking formula E and weighing nine and a half pounds. These and similar cases illustrate the mistakes many physicians make in prescribing formulæ for their little patients.

111 SECOND STREET.

Paroxysmal Nasal Hydrorrhea Due to Dysthyroidism of Syphilitic Origin.—Mariano R. Castex (*Endocrinology*, January-March, 1919) reports the case of a forty year old woman who had suffered for twelve years from attacks of paroxysmal rhinorrhea, for which she had taken much advice and undergone innumerable treatments. Only recently was dysthyroidism suspected and exploration by Marañon's maneuver revealed a goitre. Treatment with thyroid preparations resulted in prompt and marked improvement. Syphilis being suspected, mixed treatment was instituted and the attacks were entirely cured.

WHAT THE WAR HAS TAUGHT US SURGICALLY.

Wounds.

By JULIUS A. MILLER, M. D.,
New York.

In the consideration of a topic so vast, I shall endeavor to give only a brief outline or summary of the various methods by which wounds and other injuries can be treated to the best advantage in their progressive stages. These are I believe the real principles laid down by the knowledge gained from the extensive experiences of this recent war. I shall not include here the advances made in the treatment of specialized conditions, such as compound fractures, tendon injuries, nerve or cranial injuries, which I believe should be considered as separate topics, but shall confine myself in this article solely to a discussion of injuries to the soft parts.

In modern civil life there are, I believe, as great a variety of wounds and injuries as in war, and they are inflicted in a similar manner, but the number of such injuries is, of course, much smaller. Therefore, the knowledge gained during the war at such a cost will, I hope, bring returns in full value in the treatment of the wounds received in the accidents that occur daily in industrial and private life. In discussing the treatment of wounds I shall touch chiefly on the points most often encountered.

First, let us consider the primary stage. The wound is a dirty one. There may be a great amount and variety of foreign material in the wound, such as clothing, dirt, metal, wood, and always micro-organisms of various types. This naturally leads to the discussion of the sterilization of the part affected. To do this we must examine the wound thoroughly. Very often a general anesthetic is necessary. The wound should be covered with sterile gauze and the skin surrounding it should be thoroughly cleansed, using one of the many cleansing antiseptic agents, such as green soap, ether soap, and benzine. Next in turn comes the cleansing of the wound itself. It should be thoroughly irrigated with an antiseptic solution, of which the war has given us many. The wound and surrounding areas should now be painted over with picric acid or iodine. The wound is then examined, foreign bodies removed, dead tissues or those that you satisfy yourself will die should be cut away; all recesses of the smallest size should be examined and thoroughly cleansed.

The question of further treatment now arises. If the wound is small, and quite regular in its deeper portions, it should be excised as a whole and sutured, leaving no dead spaces. As a precaution the newly made raw surfaces can be rubbed with alcohol and then with bipp before closing. In the event that complete excision is not possible, that portion of the wound which can be excised should be excised. The entire wound is then packed with gauze wet with some nondestructive antiseptic solution. After three days the wound can be examined in the operating room, the patient being prepared for operation. If there is no evidence of infection or suppuration the wound can be safely closed by

suture. This method is called delayed primary suture.

This method was strongly recommended by the British Medical Department in the last months of the war. Allow me here to quote some passages from a memorandum sent to all surgeons by the Royal Army Medical Corps authorities:

"It is now universally acknowledged that the best treatment for war wounds, especially those produced by fragments of shell, is by excision of all the infected and damaged tissues. Some of the smaller wounds are sutured immediately, but in many cases, especially in the more extensive excisions, the wounds are packed with gauze and the patients evacuated to the base for delayed primary suture. It is important that the delayed primary suture should be done without delay—in an aseptic theatre with all the usual precautions as to technic. The best results are obtained where the wound is closed at the time of the first dressing." By this method or by primary suture, if successful, healing will take place by first intention and months of pain and treatment will be saved.

If, however, the nature of the wound is such that primary or delayed primary suture cannot be done, because of the size and irregularity of the wound, or in cases where the suturing has proved unsuccessful and in wounds already infected or sure to become so, because of the delay in surgical aid, the treatment required is such as will most quickly prepare the wound for secondary operation, either secondary resuture or skin grafting, the former being the operation of choice, the latter that of necessity.

During the war by far the vast majority of wounds were so long left untreated except for a perfunctory first aid dressing, and very often not even that, that the wounds were already infected or becoming so, and therefore excision and suture were dangerous. It must be realized also that the condition of the men receiving the wound was such as to invite infection. Their resistance was at the lowest possible ebb. Their bodies and clothes were covered with filth and dirt, and very often it would be hours and many times days before these wounded men were able to go or be brought back to where surgical attendance could be given. Often gas gangrene was present or threatening, therefore wide excision was practised immediately, all the diseased portion of the tissues being removed, muscle cut away until the cut edges were pale and quivering, and all the wounds left open and thoroughly drained. In still other cases immediate amputation of the infected limb had to be done in order to save life.

All injuries causing open wounds were given antitetanus serum, not in one initial dose of 1,500 units but in three doses intramuscularly and at weekly intervals, each dose containing 500 units. This lessened to a great extent the number of cases of delayed tetanus that occurred earlier in the war when only one initial prophylactic dose of the antitoxin was given. In civil practice, although these conditions are not often met with they do occur and war surgery has taught us how best to treat such wounds.

The first stages of the procedure is much the

same as that I have just described, i.e., cleansing of the wound and surrounding area and the removal of all detritus. Absolutely perfect and free drainage is essential and must be obtained. Packing is a danger, not an aid, and should be religiously avoided. We are trying to prevent infection or to minimize it as much as possible, and this is best accomplished by one of the great surgical discoveries of war, the Carrel-Dakin system of treatment.

It was my good fortune to be one of the surgeons in a British Hospital just about the time there was a great controversy going on as to the best forms of treatment for large infected wounds. Some advocated Rutherford Morison's treatment by bipp. Some by hypertonic salts, such as desiccated magnesium sulphate in glycerine as practised by A. Morison, with whom I was associated for a time. He called it the jam treatment because of the consistency of the mixture. Still others used such mixtures as flavine or brilliant green, but the majority upheld the Carrel treatment. Most of the Carrel dissenters complained of the intricate method of his treatment. In the four surgical wards under my care I tried a different method in each ward for about two months. After that all wounds in the four wards were treated alike—by the Carrel method. My personal results were by far the best in the ward where Carrel's treatment was carried out exclusively.

To go back, after seeing that the wound has the best drainage possible, Carrel tubes are inserted into various parts of the wound, the number used does not matter, so long as all spaces and cavities are reached by these tubes. It is just as easy to carry on the after-treatment with several tubes as it is with one. The tubes in the remote recesses of the wound are best sutured in as it would be difficult to get them back into proper position if they came out.

The next step in the procedure is the proper dressing of the wound immediately after the operation. It must be remembered that there will be a great abundance of discharge and escaping fluid from the injection of the fluids into the tubes. The wound should be very lightly packed with gauze wet with eusol, and plenty of wool, enough to absorb all the discharge and excess fluid until the next dressing. This is not ideal, but at present it is the best that can be done.

Now we come to a most important factor, very often overlooked. In cases of fracture, the prescribed treatment is immobilization of the part. Why can't we think of wounds and injuries of the soft tissues as fractures of the muscle, skin, or other specialized tissue and treat them in a similar manner wherever possible? In fractures immobilization is practised because it keeps the ends of the fragments in position, lessens pain, and promotes healing to the best advantage and in the quickest way. The same conditions hold true in this manner of treatment of the soft parts as it does in cases of fractures. There is only one point to be remembered and that is early passive movement. In the case of wounds that were immobilized I always remembered, after the first ten days

of absolute rest, to move the joints involved in the immobilization. This prevented the joints from becoming stiff.

Having dealt with the wounds in the operating room, we come now to another important factor, namely, that of the local after-treatment of the infected wounds. In the interim between the dressings the wound inside and out is kept moist with various solutions by the injection of these solutions into the Carrel tubes. Thus all parts of the wound are flushed with an antiseptic solution at regular intervals, the entire procedure taking less than a minute. The quantity of solution injected and the frequency of the treatment are optional and should depend on the condition of the wound and its progress under such treatment. Rapid sterilization of the wound is being sought for. The main point of treatment is for this purpose, and all extraneous conditions that tend to prevent it should be eliminated where possible or at least greatly lessened.

One of the greatest sources of continued prolongation of the infection is the discharge from the wound itself that collects about the surrounding areas. The drainage is free, therefore the discharge collects in the gauze about the external portion of the wound, and the skin all about it is a real home for bacteria. All the essentials necessary for their growth are present, warmth, moisture, and food. The antiseptic solutions injected have been neutralized more or less by their action in the wound and their value almost nil outside the wound. This condition was somewhat obviated by having a tube between the first and second layers of gauze, and injecting into it the same solution at the same interval as the rest of the wound, and still further by injecting the solution at the time the wound was dressed. After exposing the wound, it was thoroughly flushed by means of the tubes still in position until the fluid came away clear. The surrounding area was made as sterile as possible, the skin was thoroughly cleansed with ether soap, or spirit, or some other antiseptic solution that might be efficient and not too irritating to the skin. In fact, the surrounding area is treated in much the same way at the time of dressing as at the initial dressing just before operation, and this should continue in all subsequent dressings until the results are obtained for which we have been working, to bring the wound into such a condition that secondary suture can be safely attempted. In following out this method it is obvious that considerable time will be saved to the patient, his pain will be lessened, and from an economic point a vast saving for all concerned, especially in cases of industrial injuries.

Now we reach the stage where the wound is ready for resuturing. Let us consider what resuture means to the patient in civilian life. In wounds caused by accidents we formerly waited for the wound to heal by granulation, a long and tedious procedure, very costly, and always disfiguring. The same holds true of abscesses and carbuncles. Long after the infective processes have ceased the wound left is healing by granulation and the ultimate results are a large scarred

surface after prolonged treatment and countless dressings. Again we often encounter sloughing, superficial, and deep wounds following such operations as herniotomy, appendectomy, cholecystotomy, etc. Very often the breaking down of these wounds causes ventral hernia, and I believe could often be prevented by early resuture, which is in itself a strong point in its favor, aside from the time saved and other good features recommending resuturing. We can here include burns of second and third degrees that were formerly allowed to heal by granulation. The returning wounded soldiers have learned the value of resuturing. They will teach the civilian, and it won't be long before surgeons will be asked by the patients for such an operation if it is not suggested first by them.

Where bacteriological examinations of the wound can be had, the results are surer. One of the features brought forth in war surgery was the length of time that bacteria of almost every variety can lie dormant in healed and healing wounds, and how very often with only slight provocation a recurring infection takes place. At this moment I can recall a very sad instance. A youth injured by shell explosion sustained numerous wounds of body and limbs. Two months later the largest wounds, one of the right leg involving the tendoachilles and another a deep thigh wound of the left side, were resutured. Eleven days after the resuturing, although the wounds healed by primary union and the sutures had been removed, tetanus developed and the boy died four days later. Of course this case is open to debate as to whether the tetanus followed the resuturing or whether it was a case of delayed tetanus. It was the only death following resuture in my long series of cases. The giving of prophylactic doses of antitetanic serum has been advocated and should be given when such wounds are reoperated upon. Aside from these rare dangers, which are usually preventable, secondary resuture stands out preeminently as a decided surgical advance.

In the preparation of the wound for operation, I believe it is a good plan to dress the wound a few days prior to operation with twenty-five per cent. magnesium sulphate solution. This dressing causes an increased exudation of fluid from all parts of the granulating surfaces and in that way may bring bacteria to the surface from the deeper layers. The technic of the operation, generally speaking, is quite easy, but the surgeon must always be prepared in deep wounds to repair damage to nerves, tendons, and muscles. There must be no spaces left after the closing up of the wound. In superficial wounds some surgeons have advocated cutting the skin from the granulating area, undermining it and bringing it over the granulating surface without disturbing it. Personally, I cannot say that I favor it. There are bound to be some few organisms in the granulating area and I don't believe this procedure is as safe as removing the entire surface wound. When the entire wound area is excised and the skin undermined, so as to prevent tension of the skin in closing up, the wound should be swabbed out with alcohol and

then bipp rubbed in. This is not necessary but it is another factor of safety and, since it in no way prevents perfect healing, it might as well be included in the operation. In cases where tetanus might have an entrance in the original wound a prophylactic dose of the antitoxin should be given at the time of the operation.

In many cases resuturing is impossible on account of the great loss of skin. In these cases skin grafting is the only alternative if we wish to save the time normally taken in allowing the wound to heal by granulation. In a recently published article on secondary resuture and skin grafting I brought to the attention of the profession that in the great majority of cases resuturing and skin grafting could be done under local anesthesia with very little pain and so obviating practically all sources of danger. This method would lessen the number of refusals from patients who object to general anesthesia.

SUMMARY.

In closing I shall summarize briefly the salient features of the knowledge gained in the treatment of wounds: 1. The war has taught us that primary suture is the ideal treatment and should be carried out whenever possible. 2. Where primary suture is not thought advisable, steps should be taken to render delayed primary suture a possibility. 3. Early and most efficacious methods for preventing and lessening infection of wounds and for most rapidly bringing the wound into a sterile condition. 4. The importance of the immobilization of wounds of the soft tissues. 5. Early secondary resuture, which is probably the most important advance.

75 FORT WASHINGTON AVENUE.

HEMOPTYSIS.

BY H. RABINOWITSCH, M. D.,
New York.

Nothing frightens the layman as does a bloody sputum; nothing will make him go to a physician more quickly than even the slightest trace of blood in his sputum. This is explained by the ignorance of the laity in identifying hemoptysis with tuberculosis. I have noticed that even some physicians are alarmed by this occasional symptom. They hasten to refer the patient to a laboratory for a microscopic examination of the sputum, as if hemoptysis were more specific for tuberculosis than any other occasional symptom, although the overwhelming majority of tuberculosis patients do not manifest this symptom. Among seventy tuberculosis patients I had two or three with occasional slight hemoptysis—an average of about 3.6 per cent., and only about four or five had positive findings in the sputum—about 6.4 per cent. When the microscopic examination proves negative many physicians tell the patient that nothing is wrong, not taking into consideration the fact that in these patients a thorough physical examination of the lungs is of more diagnostic value than the microscope.

The relationship of cause and consequence between hemoptysis and tuberculosis has long been

a matter of controversy. Hippocrates considered hemoptysis a cause of tuberculosis, and his view prevailed until Laennec said in 1832 that in his opinion the reverse was true, although he was without positive proof. Louise in 1843 was convinced that hemoptysis, *d'une manière infiniment probable*, proved the presence of tuberculosis. Niemeyer (1869) tried again to prove the theory of Hippocrates. He maintained that in many cases of hemoptysis the portion of the blood which was not expectorated and which had coagulated in the smaller bronchi and air vessels, acting by its composition as an irritant, might cause inflammation of the lung tissue which, in turn, might become the starting point for chronic pneumonic changes: hemoptysis was rather the cause of tuberculosis. But Niemeyer's contemporaries were against this view. Finally Koch's discovery decided against this theory, which is now only of historic interest. Although only one case is reported in the literature by Franz Strickner where tuberculosis bacilli were found in the pure blood expectorated, there is no longer any doubt that hemoptysis is to be considered in the light of a symptom indicating the existence of tuberculous disease of the lungs.

This, however, does not mean that hemoptysis is always of tuberculous origin. The examination of the chest may often prove negative. Blood thrown out of the mouth is by no means always from the lungs; it may come from the fauces, posterior nares, decayed teeth, ulcerative affection of the larynx, the stomach, or even from the small intestine. Even when the bleeding has its origin in the lungs, it does not necessarily mean the presence of tuberculosis. When we consider the size of the bloodvessels entering the lungs and their minute ramifications, being terminal arteries and delicately disposed of on the surface of the aircells and involved in a cellular substance that can admit of little resistance, the frequency of bleeding from any affection of the chest is not to be wondered at. Severe cough or bodily overstraining may cause the rupture of some of the small branches of the pulmonary arteries even with normal blood pressure, or the blood pressure may be increased by some cause. Hemoptysis may occur in apparently healthy young people without recognizable cause and disappear leaving no ill trace (J. Ware, sixty-two cases—Osler). I have observed this in a number of patients in private practice and in the clinic at the Northwestern Dispensary; it may also have been due to some congestion. Hemoptysis may be due to pulmonary congestion from mitral lesions, infarct or emboli, pneumonia in the initial stage, cancer, emphysema or asthma with chronic bronchitis, abscess, gangrene, bronchiectasis, ulcerative affections of the tracheæ or bronchi, vascular degeneration (not tuberculous), purpura hæmorrhagica, arthritis, malignant fevers, or interrupted menstruation (rare).

Cases of hemoptysis of tuberculous origin may be divided into two groups: those showing bloody sputum (early cases especially), and those with profuse hemorrhage or pure blood (later cases). In early cases the sputum may contain traces of dark blood; bright red frothy blood may be present in

quantities of a teaspoonful at a time; or the blood may leak slowly into a bronchus and the blood cast of a bronchial tree be emitted. In later cases occurs the familiar phenomenon of bright red blood filling the mouth or being brought up with every cough. This comes generally from a perforated vessel or a ruptured aneurysm.

PATHOLOGY.

Tuberculous degeneration of the media and intima causes the rupture of the bloodvessel and hemoptysis (Rindfleisch). In very early cases the bronchial mucosa is hyperemic or abraded. The blood pressure may be normal or may be increased by tubercles which make the always narrow lumen of the pulmonary arteries still narrower. This is especially true of the first stage. In advanced cases with cavities, aneurysms which have formed in the inner wall of the cavity burst and cause the hemoptysis (Ruehle).

DIFFERENTIAL DIAGNOSIS.

When the blood proceeds from the fauces or posterior nares it is for the most part brought up by hawking. Upon inspection the bleeding vessel can often be detected. Hemorrhages from the fauces are rarer than those from the lungs and are seldom attended with fever. The teeth should be examined. If the blood comes from the digestive organs this fact may be known by the dark and grumous appearance of the blood and by the presence of alimentary matter; the absence of pulmonary symptoms must also be taken into consideration. The heart should be examined carefully for mitral lesions. Pneumonia, emphysema, and asthma should be thought of and diagnosed or eliminated. Purpura can be diagnosed by inspection. Hemoptysis from arthritis occurs usually in persons over fifty years of age, who commonly present signs of arthritic diathesis. In menstrual disturbances the physician must see that the blood is actually coughed up, as deception may be practised. Hysteria should be watched for. In the Charity Hospital in Berlin I saw a hysterical woman who used all kinds of tricks to make the contents of her spittoon bloody to "deceive the doctors." If tuberculosis is suspected the usual symptoms, such as emaciation, night sweats, poor appetite, diarrhea, loss of flesh, quickened circulation, etc., and the history should be taken into consideration.

PROGNOSIS.

The prognosis of hemoptysis is favorable if bleeding comes from a congested area and is limited. People never die from such pulmonary hemorrhage; on the contrary, in some ways it is beneficial in directly relieving the congested bloodvessel and also in causing the patient to follow the doctor's orders, which he otherwise might not do. If the blood comes from the rupture of an aneurysm, it usually proves fatal and death is almost instantaneous. The hemorrhage itself is of little moment; from a prognostic point of view, its cause is the matter to be determined.

TREATMENT.

Treatment should be directed at the cause. Absolute rest is imperative, and the patient should be

kept perfectly quiet. Food should be given in small quantities, and in order to reduce blood pressure the patient should not have much to drink. Small pieces of ice should be held in the mouth and an ice bag applied to the chest. Morphine may be given, especially when there is a cough, in combination with some hemostatics. Ergot is considered by some authors to be contraindicated as causing a distinct rise in the pulmonary blood pressure. In cases of limited hemorrhage this treatment is sufficient. In profuse hemorrhage caused by the rupture of an aneurysm, the result is often fatal unless a thrombus of sufficient strength to prevent further bleeding forms. Unhappily this condition is not likely to occur before at least twenty-four hours and the patient can seldom be kept alive for such time. Ligature, or Esmarch's bandages, placed around the legs may serve temporarily to check the bleeding.

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LONDON LETTER.

(From Our Own Correspondent.)

Destruction of Rats and Mice in Great Britain.—Diplomas in Industrial Medicine.—Recommendations for the Standardization of Artificial Limbs.—British Horological Institute to Train Disabled Soldiers in Clock and Watch Repairing.—London the New European Medical Centre.—Milk Supply of Great Britain.

LONDON, August 7, 1919.

A bill has been introduced into the British House of Commons "to make further provision for the destruction of rats and mice." Although some people may deem it a legislative waste of time to thus declare war on the rodent, neither the scientific man, the sanitarian, nor the up to date farmer will be of this opinion. Moreover, from the economic viewpoint it is enlightened policy to declare ruthless war on the rat and the mouse. In Great Britain it is computed that the damage caused by these vermin amount to \$100,000,000 a year and this is a conservative estimate. These animals have no redeeming qualities and civilization has no use for them. They have been tolerated too long, mainly for the reason that up to recent times, it was not realized what an implacable enemy to mankind the rat was, and it was presumed that it was brought into being for some good purpose. Now, however, it is fully recognized that from all points of view the rat is a destructive pestilential animal who, for the good of the human race, ought to be exterminated. Medical men, at least, comprehend thoroughly that the rat is a menace to the health of the world. He spreads plague, he is the host of the *Pulex cheopis* by means of which the disease is disseminated all over the world. When the vessel on which he has been an unwelcome traveler comes into port a large number of the rats desert the ship, go ashore, infect their new companions who in their turn infect the dogs and cats, and finally convey infection to human beings. Some ports, Liverpool in particular, keep a staff of rat catchers, whose duty it is to destroy rats on incoming ships, especially those from Asia, a custom which should be followed at every port.

The argument in favor of rat and mice destruction from the sanitary and preventive medicine points of view is incontrovertible and most assuredly should have the whole hearted support of the newly formed Ministry of Health. From the economic points of view the arguments in favor of the extirpation of the rat are no less unanswerable. It must be borne in mind that the object aimed at will not be reached without the earnest cooperation of all concerned. Rats are rapid and prolific breeders. The brown rat breeds four or five times a year, and the litter often consists of from ten to fourteen young ones. He is also superlatively cunning, and therefore in order to rid a country of the rodent tribe, the efforts must be energetic and in unison. The bill for the destruction of rats and mice is an excellent measure and it would simplify matters greatly if similar legislative nature measures were passed in the United States.

* * *

It has been suggested in this country that the General Medical Council be urged to authorize the granting of a diploma in industrial medicine. The suggestion appears to be extremely apropos, for the experiences of the war have brought industrial medicine very much to the front. Every day now interest in the subject is being quickened. When the war was in progress, some most instructive experiments were conducted under the auspices of the Ministry of Munitions on questions of fatigue, overtime, early hours, and so on. Intelligent and go ahead employers of labor followed these experiments with the keenest interest and have shown, in several instances, a desire to obtain further expert information and have even tried to secure the services of specially trained medical men. Up to the present time, there are not many medical men so trained. As previously stated the matter is one that is exciting the attention of the medical profession and of progressive business men by whom it is recognized as a very important branch of preventive medicine. America is beforehand as regards the subject for not only have teaching and research in industrial hygiene been established in the Harvard Medical School but the *Journal of Industrial Hygiene* has been published recently by the Macmillan Company, under the editorship of Dr. David L. Edsall, for the United States, and Dr. Stanley Kent, for Great Britain. There is little doubt that preventive medicine is the medicine of the future and that industrial hygiene is one of its most important branches.

* * *

The Committee of the House of Commons on Artificial Limbs has made several recommendations, which are being carried out. Perhaps the most important of these is that an expert committee will review the various forms of artificial limbs at present made with a view to standardization, by selecting the best features of each limb. It is patent that the execution of repairs will be facilitated if every maker can repair every limb. It is proposed that fitting centres shall be established in connection with orthopedic hospitals throughout the country, and that repair depots shall be opened in populous centres so that minor repairs can be

made in a short time. The question has also been referred to the committee, to what extent, fibre pylons shall be supplied and used by men with artificial limbs. Sir L. Worthington Evans, who spoke in the House of Commons on the matter, is of the opinion that fibre pylons will take their place alongside artificial limbs much as a slipper compares with a shoe and that a man with an artificial limb, coming home from his daily occupation, will be glad to put on a light fibre pylon.

* * *

The British Horological Institute has started a class for training disabled men as watch and clock repairers and has set aside a room at the institute equipped with the necessary apparatus and provided with instructors for dealing with twenty-five men. The undertaking has been endorsed by the Ministry of Pensions and another workshop with accommodation for thirty-five men has been fitted out. Suitable men are selected by the Local War Pensions Committee and sent to the institute for a year's training, during which time they are paid a training allowance in addition to their disability pension.

* * *

Now that Germany is out of the race, temporarily at any rate, as the headquarters of medical postgraduate training, there appears to be a good deal of speculation as to which country will take its place. So far as Europe is concerned London seems to be the logical inheritor of Berlin and Vienna. She has vast clinical material, numerous excellent hospitals and schools, and a splendid array of medical and surgical talent. What is needed is initiative and organization. It was by these means, combined with judicious advertising, that the German schools established their reputations. For two years now members of the British medical profession have had under consideration a national scheme of postgraduate training in London. According, however, to Sir W. Arbuthnot Lane, Sir St. Clair Thomson, and others, up to the present time nothing definite has been done and it is feared that unless steps are taken promptly to organize well thought out plans, the opportunities which London possesses for postgraduate work, greater than those of any city of the world, will be lost forever. Sir St. Clair Thomson, in the *British Medical Journal* for August 9, 1919, points out that even if the scheme for making New York an immense and efficient postgraduate medical centre is brought to full fruition, it will not militate against thorough and well organized teaching in Europe. At the same time, if London is to serve as the Mecca for Americans in search of European medical postgraduate instruction, such teaching must be properly organized. Hitherto, or in any event before the war, it happened usually that the American or Canadian physician who came to London for some special training, found that, as a rule, he could obtain neither information nor the necessary instruction and practice and became "sick and tired" and betook himself to Berlin or Vienna in despair. The great success of the emergency postgraduate scheme of the Fellowship of Medicine with 400 surgeons of the American and Dominion armies,

has demonstrated that it only requires organization and tact to coordinate the various and detached teaching interests of London. But Sir St. Clair Thomson strongly emphasizes the point that there must not be two conflicting ventures in the field if a broad and successful scheme of postgraduate medical training in London is to be attained.

The reasons for making London a great medical centre are too obvious to need elaboration. These reasons, moreover, will appeal to Americans especially. Not only does language enter largely into the question, and language is very important, but the war has brought the American, Canadian, and British medical men into closer contact than ever before, with the result that the feeling of mutual respect and liking has been intensified. It will be a loss to American and Dominion medical men, and especially to the medical men of the British Isles, if the scheme to make of London a great medical postgraduate centre is allowed to fall through.

* * *

Dr. H. R. Kenwood, who is perhaps the first authority on public health matters in Great Britain, gave an address recently on the public milk supply as illustrating the need for a Ministry of Health. He takes it as an acknowledged fact that the milk supply of Great Britain is, speaking generally, in an unsatisfactory state, and consequently, it is responsible for much infant sickness and mortality, especially in the summer months. Further, that from five to ten per cent. of all the samples of cow's milk examined contain the germ of tuberculosis, and that in young children nearly one half of the fatal cases of abdominal tuberculosis are due to this germ; that occasionally milk infected by human beings causes outbreaks of diphtheria, scarlet fever, enteric fever, etc.; and that while eleven per cent. of all the samples taken under the sale of food and drugs acts are adulterated, there is only one sample taken in the whole year to every 700 of the population of England and Wales. Thus, according to Professor Kenwood "the powers that be" knew that the public milk supply was more than a menace to the public health; and yet the administrative measures passed by Parliament have done little more than foster an unwarranted sense of security. The local authorities have been as inefficient and supine as the central authorities in providing and enforcing measures for securing a clean milk supply. This is a severe indictment of the British public milk supply but no more severe than the arraignment of the London milk supply by a commissioner of the *Lancet* published in that journal some twelve years ago. Doctor Kenwood thinks that a strong Ministry of Health would decide to organize public educational propaganda, 1, in favor of really effective legislation and administration, and, 2, to educate the trade and the public. Lastly, Doctor Kenwood voices his opinion that the new Ministry of Health should direct its early consideration to the milk question, and if by this test it succeeds, it will not be likely to fail in its efforts to effect certain other public health reforms. The milk question looms large in every country and if the British Ministry of Health can ensure a pure supply, it will have fully justified its creation.

Abstracts and Reviews.

EPIDEMIOLOGY AND RECENT EPIDEMICS.*

Dr. Simon Flexner, of New York, in his presidential address before the Congress of American Physicians and Surgeons, dealt with the subject of epidemiology and recent epidemics. He said that at the end of the three year interval since the last meeting of the congress, during which time three destructive epidemics of disease had ravaged the United States and Europe, it seemed fitting to review the present state of knowledge of epidemics and the practical hygienic measures for their control, and possibly to suggest more decisive methods of attack.

The three epidemic diseases which had prevailed during this period were poliomyelitis, streptococcus pneumonia, and influenza. Of the nature and mode of infection of poliomyelitis there was precise information. The inciting microorganism left the infected or contaminated body within the secretions of the nasopharynx chiefly and gained access to another human being by means of the corresponding mucous membranes; and since it had not been detected apart from the person harboring it, there was no ground for assuming that it was conveyed otherwise than from person to person.

In numerous studies of streptococcus pneumonia at distinct and often widely remote cantonnments, the inciting microorganism was in almost every instance found to be *Streptococcus hemolyticus*, the virulence of which, it was practically certain, was developed gradually by transfer from person to person. The mode of infection in streptococcus pneumonia, as in poliomyelitis, might be said to be clearly apprehended.

In the case of influenza there were wide divergences of opinion regarding the nature of the causative agent and the mode of infection. One reason for these differences was that to the casual observer the disease seemed to attack simultaneously large numbers of people over wide stretches of territory, thereby rousing superstitions in the public mind in general and making the enforcement of proposed sanitary regulations difficult or impossible. Accurate observers, however, long ago noted that influenza was no exception to the general rule governing epidemics, which were obviously associated with persons and their migrations, and the records of previous epidemics as well as those of the present one showed that influenza spread to the extent and with the speed of transportation facilities. Early cases of influenza, however, tended not to be severe, chiefly because they were unattended by pneumonia, and were frequently overlooked or mistaken until the entire susceptible element of the population, which happened to be large, was exposed, the effect being that of a simultaneous attack. There were good reasons for believing that the severe effects and high fatalities of influenza arose not from bacteria brought from without but from those which were commonly resident in the

nose and throat in health and were transmitted by personal contact.

Doctor Flexner thought that it should now be evident that in the three diseases, poliomyelitis, streptococcus pneumonia, and influenza, the inciting microorganism entered the body by way of the air passages. The efficiency might now be discussed of public health measures, which in diseases of this class were not to be secured by application of sanitary measures to an extraneous and inanimate source of infection, as was possible in the case of typhoid and yellow fever, or infectious jaundice, but by methods of personal hygiene on the individual scale.

Although what was known of the essential facts with regard to epidemic poliomyelitis should, if widely applicable, enable the control of the spread of that disease, great success had not attended such efforts, chiefly because prompt and accurate diagnosis was exceedingly difficult, and wide dissemination took place before restrictive measures could be put into effect. In epidemic streptococcus pneumonia, however, and in the pneumonia following influenza, the active microbes were intensified races of common and almost omnipresent species, disseminated in sprayed or coughed material. It was evident that the chain of direct infection from one patient to another had to be broken by placing measles and influenza patients in separate rooms where they might be preserved from sputum drop-let contamination.

Having drawn a distinction between the possibilities of control of the pneumonias, which are mere intense exaggerations of sporadic diseases, and of poliomyelitis and influenza, which are introduced from without, Doctor Flexner now proposed a suggestion as to the means of attacking the latter exotic epidemic diseases. Epidemic diseases, he said, in the commonly accepted sense had fixed locations, so-called endemic homes, where they survived for long periods without attracting special attention, but in which they occasionally assumed epidemic form and extended widely beyond their endemic confines. There were excellent reasons for believing that an endemic focus of poliomyelitis existed in northwestern Europe. Similarly, the endemic home of influenza appeared to be eastern Europe, particularly the region between Russia and Turkestan, as many recorded epidemics of influenza had been shown to emanate from that region, the more recent ones rather conclusively. The proposal, therefore, was that a continuous effort at control be undertaken, with a view to eventual eradication of these two diseases in the regions of their endemic survival. The success of such efforts in the control of yellow fever proved their usefulness, though the accomplishment was, without doubt, far simpler than it would be with poliomyelitis and influenza, particularly in view of the present imperfect knowledge of the epidemiology of the latter diseases. Here, however, was a world problem of such proportion and nature as to invite the participation of all the scientifically advanced countries in a common effort to suppress one of the most menacing enemies of civilized man and of human progress.

*Abstract of the address of the president, Tenth Congress of American Physicians and Surgeons, held at Atlantic City, N. J., June 16 and 17, 1910.

Editorial Notes and Comments

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HOW DO YOU TREAT INFECTED WOUNDS?

Many of our readers will be disappointed at not seeing the answers to this important question in its customary place—The Prize Discussions. We have gone over the answers submitted in this discussion and regret to say we did not consider any one worthy of the prize. This is deplorable, inasmuch as in no branch of surgery has so much progress been made during the war as in the treatment of infected wounds. In no branch of surgery were the methods devised so universally accepted. In the majority of the papers submitted no mention was made of the modern accepted treatment. Most of the methods advocated were either obsolete or presented ideas which were not based on logic or accepted medical science. The few which did in a measure mention the more modern procedures were extremely sketchy and apparently did not seem to grasp the underlying principles which had caused their adoption.

During the war débridement, or the removal of foreign material with free incision and drainage of the wound, was used. Various antiseptic solutions were employed in conjunction with this treatment in order to combat the bacteria. The process was slow and tedious, for it caused prolonged suppuration, during which time the necrotic material was eliminated which had been devitalized by the trauma or isolated from its source of nutrition.

The combined Carrel-Dakin method then revolutionized the treatment of wounds. At first Dakin's solution was applied by means of the Car-

rel tubes and the constant flushing by the drip method. The idea was that the mechanical flushing by the solution which was supposed to have a solvent action upon the necrotic tissues and an antiseptic action upon the bacteria would hasten the elimination of the useless and objectionable materials and sterilize the wound in addition. The constant irrigation was later supplanted by the intermittent flushing every two hours. Some observers contend that the principal benefit derived from this method was from the solvent qualities of the hypochlorates which in this manner removed a suitable culture media for the bacteria and so enabled the remaining healthy tissues to overcome the organisms and so sterilize themselves.

Then finally the most important method came into vogue. This consisted in the immediate cleansing of the wound surfaces by the removal of all devitalized tissue and foreign material, and either immediate suture or primary suture, or a delayed or secondary suture. This mode of treatment took into consideration the fact that healthy tissues could in the majority of cases overcome a certain degree of infection by most organisms. The presence of streptococci in any marked quantities was a contraindication to immediate closure of the wound. In these instances it was advisable to sterilize the wound further by the use of Dakin's solution or some other antiseptic until the number of streptococci had decreased to one or less than one to the microscopic field.

By generally adopting this last method of primary and secondary suture long drawn out infections with copious suppuration were avoided and functional disability from prolonged disuse of the members was prevented. The patients were saved months of tedious convalescence and in every way the advantages of the treatment were of great value both in the saving of man power and in the quality of the results obtained. The great lesson has apparently not been brought home.

A great many comprehensive papers have been written by well known surgeons in which these methods and their advantages are described in detail. Can it be that the medical men of this country have avoided reading them and prefer to rely upon ancient textbooks that advocate primitive methods of wound treatment? Have they not realized that the great lessons of war surgery can be applied in civil practice and in no field better than in the treatment of infected wounds? Is the work of the surgeons who labored so strenuously in the double task of taking care of the wounded

and in perfecting new and better methods for their care to be in vain? Are the results of their labors to be withheld from civilian patients because practitioners do not realize the importance of the progress which has been made? We would suggest re-opening the question of the treatment of infected wounds at a later date, to afford the men who are interested and who realize the importance of the most modern methods of treatment an opportunity to send in their answers.

IMMUNITY AND HEREDITY.

Until Weismann came to disturb scientific equanimity by his emphatic assertion that acquired characters are never the subject of inheritance, most physicians calmly concluded that diseases were frequently inherited. Now there is a general acceptance of the opposite conclusion that diseases are not inherited, though deformities may be transmitted. Such complete reversals of opinion are not so infrequent in scientific circles as is sometimes thought. One of the latest books on biology translated from German into English ventured the interesting suggestion that man is not descended from the monkey because the monkey represents degenerate man. As Von Buttel-Reepen has stated in *Man and His Forerunners* (London, 1913), "This conception may be crudely summarized in the statement: man is not descended from the ape, but the ape from man." There you are. "You pays your money and you takes your choice." If you don't like the idea of a man descended from the monkey, then accept the opposite pole of opinion, a monkey descended from man, or at least representing one of the results of unsuccessful attempts to compass the road to mankind.

In the matter of heredity we have reached almost a similar *volte face*. As Doctor Flick stated a short time ago: "With the facts before us the transmissibility of disease, at one time a universally accepted doctrine, is no longer tenable. It is inconsistent with the principles of biology and has been disproved both by research and by experimental work." This denial of the transmission of disease by heredity applies not only to tuberculosis, for so long considered the most typical of heredity disease, but also to syphilis, which still occupies a bad eminence in the minds of a great many people as the one disease left to us that is surely inherited.

Both of these diseases may be congenital, but almost needless to say, congenitality and heredity are by no means terms of similar meaning. Either of these diseases may be transmitted to the unborn child by the mother, but only when the barrier be-

tween the circulation of the mother and the circulation of the child, the placenta, has become infected with the disease. It seems scarcely necessary to explain, except for the sake of completeness of statement, that when the placenta becomes thus affected with either tuberculosis or syphilis the transmission of the disease to the child is not a question of inheritance or hereditary transmission in any proper sense of the term, but it is a matter of contagion and that by the clearest kind of contact.

What has come as the result of the study of disease in successive generations is almost exactly the opposite of the transmission of disease and that is the transmission of resistive vitality against the disease. The change of opinion is just as great as between the descent of man from the monkey and the descent of the monkey from man. All living things have an immunity to some degree against microbic influences that may prove harmful. Without this inherent power of selfdefense they would not long survive in a world that is so full of hostile agencies. This power of selfdefense, immunity, like most of the other natural powers inherent in living tissues is strengthened by exercise. It may become accumulative in the individual and apparently may be transmitted to the offspring and in the course of time accumulate in the family from generation to generation until a distinct power of resistance has developed that makes that family completely immune to certain diseases.

From a general acceptance of the idea of the heredity of many diseases we have come to a denial of the possibility of this, but we accept the thought that there may be a heredity of immunity. We find it hard to explain the immunity of the negro races to malaria and also to yellow fever unless we assume this. Corresponding immunity to other diseases has apparently been acquired in certain families. A distinguished old American surgeon, who was himself a very faithful churchman and therefore might be expected not to accept harsh things with regard to his neighbor without due consideration, used to say that probably certain royal families of Europe were protected against syphilis and its effects by hereditary immunization. He used to add that perhaps more of us were protected from the worst effects of syphilis by some such family inheritance than we were aware of.

Authorities on tuberculosis have now come to believe that a history of tuberculosis in a family is a good sign rather than a bad one. A patient suffering from a severe form of tuberculosis, especially of the lungs, and who seems to feel con-

fidant that his affection cannot be serious because, as he emphasizes, "there is no history of tuberculosis in the family," is often signing his death warrant. If there is no family history of the disease, then usually there is no immunity and tuberculosis will run a rapid and fatal course. The physician often searches the family history carefully for some trace of tuberculosis in the hope of finding a prop on which to support the possibility of producing immunity.

It is scarcely necessary to point out how significant these ideas are and how much encouragement they may afford to patients whose relatives have been affected by tuberculosis and who fear that the heredity element in their cases almost inevitably dooms them. The possibility of transmission of immunity has some interesting inferences with regard to some of the contentions of those who are intent on eugenics. Now that we know that instead of disease being transmissible from parent to offspring, we have reason to believe that resistance to disease is transmissible; "To prohibit or interfere with reproduction in those who are affected with diseases which sometimes are called hereditary might, therefore, from a biological point of view, be a step in the wrong direction."

The hope of the race would rather seem to be the encouragement of the propagation of persons capable of resisting disease. The American Indian is a husky, hearty specimen of humanity, but he succumbs readily to tuberculosis and therefore forms very undesirable material for the race in a world that has now become so thoroughly infected with the tubercle bacillus. The Hebrew has acquired a distinct immunity to tuberculosis and so is capable of living and thriving under slum conditions that would be impossible for other nations. Manifestly immunity heredity is one of the extremely important problems of the future.

NERVOUS IRRITABILITY AND TUBERCULOSIS.

Attention is called by Ferranini (The Nervous System in the Tuberculous: *Riforma Medica*, February 22, 1919) to the extreme and intense excitability of the nervous system in tuberculous patients. He reports various laboratory measurements which reveal the rapidity and early exhaustion of nervous reaction with the weakened tonic capacity which accompanies it. He attributes this to the action of the toxins upon the nerves, which, with the action upon the endocrine system or the effect of the latter action again upon the nervous excitability, forms a vicious circle. To this must

also be added toxic irregularities of growth which affect principally the nervous system, which may be of importance in the growth of the young. Such manifestation of this nervous excitability may be of diagnostic import in the case of older individuals.

From this important viewpoint there is seen to be a possible close association of tuberculosis with the nervous system in its anatomical growth. For the author also describes the injury that may result to the spinal cord and its roots by an exaggerated growth of the brain, through the physiological disturbance which results, or through the toxic action upon the nerves or through the endocrine system. And all this serves to open the way to a still further very important consideration to which the anatomical and physiological facts are a basis. If one considers these as the pathways of energy distribution and as such informed and governed by the putting forth of energy or the withholding of it from output which marks the personality, there appears another most important and nonnegligible point of attack upon this nervous phase of tuberculosis. The extreme irritability is indeed a most important diagnostic sign. It may be also psychically a diagnostic and therapeutic factor of which service should be made.

The most advanced psychic therapy aims at the discovery of energy exhaustion in a badly regulated output or in a restraint of external output for hidden psychic reasons, which interferes with active utilization upon the external world and its interests. In such case the energy is driven to an activity within the physiological or autonomic personality, there to produce serious disturbance, which causes receptivity rather than resistance to infectious agents and their activity. Does not therefore the calling of attention to this significant nervous irritability strongly suggest the necessity of psychotherapeutic inquiry? The initial and warning appearance of such proof of badly used energy should contain significant possibilities, at least in incipient cases of tuberculosis. There should be a promising field here for prophylaxis against the development of such a psychic state and its consequent influence upon the physiological condition.

An instance like the following is all too typical of the complete lack of understanding on the part of the patient and of the medical measures which too often foster the destructive energy activity in its secret psychic and physiological strongholds. No means are used to discover it and direct it to a discharge which would relieve the overwrought nerves and other physiological pathways. A patient with a comparatively mild infection, but with

a disposition which had timidly, but unconsciously to itself, shrunk from all forms of effort demanding responsibility, most conscientiously took the doctor's advice and undertook to combat the disease by the most rigid abstention from all interests at home or abroad which could demand the slightest effort, kept the letter of the law most scrupulously, but rapidly declined and died. The actual ravages of tuberculosis were insufficient to have caused her death but the entire nervous system had reached a hypersensitivity which had produced an uncontrollable nervousness and a general derangement of all the organs so that the anarchy within the body was such that life could no longer be maintained. All the efforts of the physicians, as well as of the patient, had been toward fostering energy, but all avenues for its safe discharge had been neglected or deliberately cut off. Should not the testimony from the anatomy and physiology of the nervous system drive medicine also to a consideration of the psychotherapeutic duty involved in such cases?

INDUSTRIAL FATIGUE.

The reports of the Industrial Fatigue Research Board are summarized in the *British Medical Journal*. One of these is on the output of women workers in relation to hours of work in the making of shells. The operation concerned was one of the hardest in the process. For eighteen months the women doing this in the National Ordnance Factory worked on twelve hour shifts, with day and night work in alternate weeks. When it became evident that the hours were affecting the health of the women adversely, the shifts were shortened; some time previously the machines had been changed to a type which considerably reduced the demands for violent physical exertion. Under the earlier scheme the average number of hours worked was 55.85 a week and the average number of shells each operator turned out in an hour was 8.17. Under the scheme of shortened shifts the number of hours was 35.65 a week and the average number of shells 8.70. Taking the average hourly output of shells an hour of actual work as 100, the average hourly output of shells in the factory under the long hour scheme was 85.43 and under the short hour scheme 92.41. A uniformly low efficiency was revealed in the last hour of the long shifts.

The second report describes an experiment carried out with the consent of the workers by the director of a large foundry company. This involved the proper arrangement of tools and materials, the establishment of standard sets of movements for the process, and the training of the men. When the system was in operation the number of hours of work was reduced and a special system of payment devised. The result was an enormous increase of output in spite of the reduced hours of work; there was no increase in fatigue, but rather on the whole an apparent decrease.

News Items.

Yellow Fever in Nicaragua.—Yellow fever is reported to have caused a rigid quarantine to be placed on the Pacific ports of Nicaragua.

Cholera in Formosa.—More than 200 cases of cholera are reported on the island of Formosa. Quarantine has been declared.

War Wounds Cause Insanity in Germany.—Crimes committed during fits of insanity resulting from war wounds are reported to be numerous in Germany.

Eight Hour Hospital Day.—The eight hour day for nurses has been adopted in two of the four buildings comprising the John Sealey Hospital, Galveston, Tex.

Tarrytown Hospital Receives Gift.—The will of Mrs. Amanda Newton, of Philadelphia, leaves \$5,000 as an endowment for a bed in the Tarrytown, N. Y., hospital, in memory of her daughter, Elizabeth Newton Patterson.

Marriage of Diseased Persons.—The New Jersey Court of Chancery has decided that a marriage can be annulled where one of the parties concealed the fact that he or she had chronic, tuberculosis at the time the marriage took place.

Medical Society of Virginia.—The semicentennial meeting of the Medical Society of Virginia will be held October 28th-31st in Richmond, under the presidency of Dr. Ennion G. Williams, who is also State health commissioner.

Medical Association of the Southwest.—The fourteenth annual meeting of the Medical Association of the Southwest, comprising physicians from Missouri, Kansas, Oklahoma, Arkansas, and Texas, will be held October 6th-8th in Oklahoma City, Okla.

Brazilian Medical Students Here.—Fourteen out of fifty honor students who are being sent by the Brazilian government to continue their studies in the United States have arrived in this country. Two of them are graduate doctors who are here to observe clinics in New York and other medical centres.

Dispute Over Negro Sanatorium.—The plan of the Maryland State Tuberculosis Sanatorium Commission to build an institution for colored tuberculous patients at Towson, Md., is temporarily in abeyance. Residents of the vicinity obtained an injunction prohibiting the proposed sale before the option of the board had expired.

Housewives Lead in Drug Addiction.—Housewives make up the greatest class of women drug users in New York city, according to a report on 2,776 registered cases of addiction issued by Health Commissioner Copeland. Out of 646 women addicts, 195 are housewives. Actresses constitute the next largest class, numbering forty-nine.

Survey of Mental Cases.—Dr. D. A. Thom, adviser in mental diseases for the American Red Cross, is making a survey of returned soldiers in the Far West to determine whether a hospital for nervous and mental diseases should be established on the Pacific Coast. He is considering locations in Washington, Oregon, and California for such a hospital.

No Rented Accessories for Funerals.—Regulations adopted by the advisory board of the Pennsylvania State Department of Health forbid undertakers to "rent or temporarily furnish for use at a funeral in any private house any carpet, rug, drapery, clothing or artificial flowers." The regulations were adopted to check the possible spread of disease through this practice.

Cancer Increasing.—The cancer death rate in the United States shows an increase of about two and one half per cent. every year, according to a statement issued by the United States Public Health Service. It has already advanced from 62.9 in 100,000 of population in 1900 to 81.6 in 1917. There were 61,452 deaths from cancer in this country in 1917, as compared with 112,821 from pneumonia, 110,285 from tuberculosis, 115,337 from heart disease, and 80,912 from kidney disease.

Tuberculosis Crusade in France.—The Commission for the Prevention of Tuberculosis in France, working in cooperation with the National Tuberculosis Association, has transplanted the health crusade movement of the latter organization to the Department of Eure et Loire, France. For the first demonstration the crusade has been introduced into elementary schools in the districts of Chartres and Dreux.

Southern Railway Surgeons Elect Officers.—The Association of Surgeons of the Southern Railway, at its annual meeting in New Orleans recently, elected the following officers: President, Dr. Harry T. Ingle, of Mobile, Ala.; first vice-president, Dr. William H. Armstrong, of Rogersville, Tenn.; second vice-president, Dr. Daniel W. Scott, of McDonough, Ga.; third vice-president, Dr. Albert R. Wilson, of Greensboro, N. C.; fourth vice-president, Dr. William T. Mathews, of Greenwood, Miss.

The Osler Anniversary Volume.—The Anniversary Volume published in honor of Sir William Osler's seventieth birthday, which occurred on July 12, 1919, will be ready for distribution by October 1st. Subscriptions are still being accepted and may be sent to the treasurer of the committee, Dr. Henry Barton Jacobs, 11 Mount Vernon Place, Baltimore, Md. Paul B. Hoeber, 69 East Fifty-ninth Street, New York, is the publisher of the volume and executive secretary of the committee. The book is being published for subscribers only, is not published for profit, and is not to be advertised.

Asylums for the Insane in Alsace-Lorraine.—The return of Alsace-Lorraine to France adds five insane asylums: Stephansfeld and Hoerdts in lower Alsace, Steinbach and Lorquin in Lorraine, and Rouffach in upper Alsace. Of these Stephansfeld is the most important. Dr. Paul Courbon, director of Stephansfeld, writing in *Paris médical* concludes that during the German domination the unfortunate inhabitants of Alsace-Lorraine who were in need of such asylum were not neglected by their conquerors. This was not surprising as French alienists had always proclaimed the Germans superior in psychiatric treatment. The war, however, revealed faults of organization in the supposed German superiority.

Italian Red Cross Director.—Dr. Baduel, professor of internal medicine at the University of Florence, has been appointed director general of the Italian Red Cross.

Need for Investigation in Diphtheria.—Sixty-five per cent. of deaths from diphtheria investigated by the Massachusetts State Health Department occurred in children under six years of age. Of these children twenty-three per cent. were sick at least a week without medical attention, and quite a number were found to be moribund at the time of the physician's visit.

Industrial Physicians Elect Officers.—The American Association of Industrial Physicians and Surgeons recently elected the following officers to serve for the ensuing year: President, Lieutenant Colonel Harry E. Mock, Medical Corps, United States Army; first vice-president, Dr. Thomas R. Crowder, of Chicago; second vice-president, Dr. Otto P. Geier, of Cincinnati; secretary-treasurer, Dr. Francis D. Patterson, of Harrisburg, Pa.; assistant secretary-treasurer, Miss Pauline Gunther, of Chicago; directors, Dr. W. Irving Clark, Dr. R. W. Corwin, D. C. E. Ford, Dr. G. L. Howe, Dr. J. E. Mead, and Dr. F. C. Warnshuis.

Army Medical Motion Pictures.—Seventy-five thousand feet of motion pictures and 10,000 still photographs, forming a complete pictorial history of the overseas activities of the medical department of the army, have been turned over to the surgeon general by Major Robert Ross, Sanitary Corps, who has been in charge of this work. Fifteen pictures were taken of each hospital, showing buildings, personnel, and the work of surgical operation. A series of photographs of dental work shows various stages of operations performed on the faces of wounded men. Seventy-nine photographers were engaged at various times in this work.

Survey to Cure Public School Evils.—A committee of the Board of Education of New York city is conducting an investigation of overcrowding and insanitary conditions in the public schools of New York. Some of the evils in the system, according to the committee, are: One hundred out of the 650 school buildings are in an unsatisfactory condition, many of them insanitary and dilapidated; artificial light has to be used in some of the buildings even on the brightest days; class rooms in certain congested districts are deprived of proper ventilation; overcrowding in some class rooms is carried to an extent where it impairs the mental and physical efficiency of pupils and teachers.

Appointments to New Chairs at Glasgow.—Three new chairs have been endowed at the University of Glasgow. Dr. E. P. Cathcart, professor of physiology in the University of London at the London Hospital Medical College, has been appointed Gardiner professor of physiology. Dr. C. H. Browning, director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital and professor of bacteriology at the University of London, has been appointed to the Gardiner chair of bacteriology. Dr. Thomas Stewart Patterson, Waltonian lecturer and lecturer in organic chemistry at the University of Glasgow, has been appointed to the chair of organic chemistry.

Sanitary Officers' Association Elects Officers.

—At the annual meeting of the New York State Sanitary Officers' Association, held at Saratoga Springs, in June, the following officers were elected for the ensuing year: President, Dr. William G. Bissell, of Buffalo; first vice-president, Dr. G. H. Turrell, of Smithtown Branch; second vice-president, Dr. Charles C. Kline, of Nyack; third vice-president, Dr. Thomas E. Bullard, of Schuylerville; secretary, Dr. Montgomery E. Leary, of Rochester; treasurer, Dr. George F. Mills, of Oneida; assistant treasurer, Dr. Myron Metz, of Williamsville.

Civil Service Announcements.

—The Civil Service Commission of the State of New York announces examinations September 27th for the following positions which may be of interest to readers: Assistant director, Division of Laboratories and Research, State Department of Health; \$4,000; men. Bacteriological pathologist, Division of Laboratories and Research, State Department of Health; \$2,500; men and women. Deputy medical examiner, Bureau of Deportation, State Hospital Commission; \$3,500; limited to physicians licensed to practise in New York State. Assistant physician, State and county institutions; \$1,200 to \$1,600 in State hospitals; men and women who are licensed medical practitioners in this State.

Surgeon General Thanks Rockefeller Institute for War Work.

—Surgeon General Merritte W. Ireland, United States Army, has sent to the director and trustees of the Rockefeller Institute for Medical Research, a letter expressing the appreciation of the work done by the institute during the war in placing so fully at the disposal of the Medical Department the great facilities of the institute for research, for teaching, and for the care of the sick. From the beginning to the end of hostilities the entire institute was placed at the disposal of the War Department, the hospital and laboratories becoming a part of the army. This work was paid for out of the funds of the institute, receiving no support from the government except the routine payment of salaries of such members and assistants of the institute as became part of the Medical and Sanitary Corps of the Army.

Prevalence of Influenza.—Influenza is still spreading. During the four weeks ended June 28th, 3,619 new cases of influenza were reported at Brisbane, State of Queensland, Australia. At Newcastle, State of New South Wales, 287 new cases of pneumonic influenza were reported from June 8th to July 5th. On June 10th the Governor General of Australia declared the State of Western Australia infected with influenza and ordered quarantine measures to be observed against the infected area. In the State of South Australia 1,149 cases of influenza and ninety-four fatalities were reported from June 1st to 21st. In Sao Paulo, Brazil, 257 fatal cases were reported from January to May, inclusive. On June 2d epidemic influenza was reported to have spread to practically all sections of Madagascar except Majunga and a few other towns on the west coast. During the month of April, 1,135 new cases of influenza, with sixty-two fatalities, were reported in the Island of Malta.

Vital Statistics.—Births in the United States in 1918 totalled 2,700,000, an increase of 27,000 over 1917, according to the annual review issued by the New York Milk Committee. The death rate among New York city babies was ninety-two in 1,000 in 1918, only three points higher than the year before, in the face of war conditions, high food prices, and influenza. San Francisco, with a population in excess of 500,000, showed the lowest mortality among babies, the rate there being 57.2 per 1,000 for 1918. The average mortality rate for forty-five cities of more than 100,000 population was 103.5.

Hospitals in Labrador.—Dr. Wilfred Grenfell, who has been on a trip through Canada, is quoted as follows from an address made at Sydney, N. S.:

"At present," he said, "we are trying to open hospitals at Bay of Islands and Twillingate with the cooperation of the people. The government has accepted the principle of these outpost hospitals so as to enable the doctors to give more scientific service. Owing to the immense distances between scattered population, the aid that every man has a right to expect has been found impossible to administer. My own plan has been to put half way between each pair of hospitals, a highly trained medical unit, superintended by a nurse, who is in touch with the nearest hospital by wire. At these half way stations the sick can be cared for till we get them into hospital. In Labrador we have three hospitals and two nursing stations, and we will shortly erect another south of Sells Island Strait."

Foreign Women Physicians to Attend Conference.

—Almost thirty women physicians from foreign countries have accepted the invitation to attend the International Conference of Women Physicians, which will open September 15th in New York and continue for six weeks thereafter. Among the number are: Denmark—Dr. Betty Agerholm, Dr. Johanna Feilberg, Dr. Estrid Heim, Copenhagen. Norway—Dr. Dagney Bang, Dr. Martha Regina Stang, Kristiania. Switzerland—Dr. Marie Feyler, Dr. Nathalie Wintsch Maleef, Lausanne; Dr. Minna Tobler Christintinger, Zurich; Dr. Harriet Jane Parrell, Basel; Dr. Freida Ottiker, Berne. England—Dr. Mary Gordon, London; Dr. Phoebe M. Powell-Bigland, Liverpool. Scotland—Dr. Frances Storrs Johnston, Edinburgh. Italy—Dr. Clelia Lollini, Rome; Dr. Angiola Borriano, Turin. Holland—Dr. Ada Potter, Utrecht. Belgium—Dr. Marie Louise Lawaese-Delhaye, Antwerp. France—Dr. Yvonne Pouzin, Nantes; Dr. Alice Hartmann, Dr. Marguerite Giboulet, Paris; Dr. Anna Moutet, Lyons. Sweden—Dr. Alma Sunquist, Dr. Gerda Kjellberg-Romanus, Stockholm. The program will deal with health, the psychological aspects of the sex question, and legislative measures as they reflect the present status of sex morality. The conference has been called by the social morality committee of the national board of the Y. W. C. A. On the program committee are Dr. Augusta Rucker, New York; Dr. Edith Hale Swift, Boston; Dr. Eleanor Bertine, New York; Dr. Lenna L. Meanes, Iowa; Dr. Kristine Mann, New York; Dr. Josephine H. Kenyon, New York; Dr. Katherine B. Davis, New York; Dr. Anna F. Bingham, New York; Dr. Sarah S. Windwos, Boston.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

The high probability of error attending a too hastily reached diagnosis of rheumatism is well illustrated in a recently published statistical study of 100 cases by W. H. Deaderick. The series of 100 cases analyzed—all previously diagnosed as rheumatism—was found to include forty-four cases of actual arthritis in some form to which the appellation rheumatism might without gross error be applied; of these, thirty had a history of gonococcal infection, leaving only fourteen of true non-venereal rheumatism. There were also three cases of muscular rheumatism, making altogether forty-seven at least partially justifying the term rheumatism. In the remaining fifty-three cases of the series, however, the diagnosis was completely at variance with the condition present. Eighteen of these patients were found to be suffering from syphilis and yielded positive Wassermann tests; eight had neuritis; four, tuberculosis; four, flat foot, and three typical pellagra. There were also two cases each of neurasthenia, arteriosclerosis, sciatica, and tabes dorsalis, and one case each of chronic gastritis, chronic nephritis, pernicious anemia, malaria, myelitis, and progressive muscular atrophy. Needless to state, in over half of the series the customary salicyl treatment of true "rheumatism," prescribed in a routine, crudely empiric fashion would have been of relatively slight or no utility, at least from the curative viewpoint. Alkaline treatment might have proved beneficial in a considerable proportion; but in over two thirds of the cases, the most important measures, serviceable or curative in the individual case, would in all probability have been omitted.

Particular interest in this connection attaches to the cases in which the onset of the apparent joint inflammation is such as to simulate acute rheumatism or rheumatic fever. Barlaro, 1917, reported a number of cases of acute syphilitic joint involvement deceptively similar to this condition, even the temperature charts proving misleading. Chills as well as fever, with swelling and redness of the joints, in one instance especially those of the hands, were noted. Grouping with these the sub-acute and certain chronic cases of joint involvement in syphilis, Barlaro states that, according to his observations, syphilitic articular rheumatism is much more common than true rheumatic fever, and is even more frequent than the gonorrheal and tuberculous joint involvements. The tendency to confusion with rheumatic fever is increased in that in most instances the pain in the joints appears without previous indications of disease, while in the cases in which there have been preceding disturbances, these disturbances have consisted not infre-

quently of a recent attack of acute sore throat. In one illustrative case described, pain appeared acutely in the left hand and right knee; later, the left knee and the ankles became involved. In this patient the joints were not swollen nor hyperemic, but pain was augmented upon articular motion. In another case, pain appeared simultaneously in the knees, throat, and abdomen.

In subacute cases, often only one or two joints were affected, but acute exacerbations, which might have been mistaken for acute rheumatic involvement, often occurred. In the actually chronic cases, the possibility is recognized that sometimes the condition might have been merely an ordinary rheumatism developing in a syphilitic subject. This was in part suggested by the relatively refractory behavior of some of these cases to mercurial treatment. Attention is called, moreover, to the fact that various types of chronic rheumatic disease sometimes yielded to mercury; including monarticular joint disease, rhizomelic spondylitis, and other affections.

At all events, marked results from mercury were obtained in Barlaro's cases, though sometimes only after considerable delay. In two acute cases mentioned, mercury gradually overcame the joint involvements and a betterment of general health was observed. In the cases most closely resembling rheumatic fever, the drug relieved the joint disturbances and fever in the course of two months. In one case of acute joint involvement, in which there was a history of syphilitic infection a year or two previously, fever was at first accentuated by mercury, then reduced. Subsequently neurotrophic disturbances appeared, viz., rheumatoid deformity of the fingers and contracture, the patient meanwhile showing marked loss of strength. The dose of mercury being then doubled, however, gradual relief from the severe symptoms was procured, though altogether two pronounced and two mild exacerbations occurred during the course of seven months. Ultimately, under persistent treatment with mercury, complete recovery, except for residual deformities of the fingers and feet, was obtained. Other similar cases of persistent syphilitic rheumatism, with acute exacerbations at intervals—a course of events typical of syphilis—are referred to by this observer. Doubtless in all the condition might at the outset have been mistaken for acute rheumatism.

In children, the occurrence of syphilitic conditions suggesting rheumatic fever is well known. Thus Poynton, 1913, refers to an arthritis met with in congenital syphilis, in which the knees are most frequently attacked, though various other joints may also be damaged. There is also the less common condition known as pseudoparalysis, met with in younger children inheriting syphilis. In the latter type there is sometimes no joint swelling, in spite of the pain: where swelling does occur, it is epiphyseal rather than articular. The history,

the child's age, and the finding of the various stigmata of congenital syphilis should enable the careful observer to differentiate these cases from true rheumatism. The important point to be borne in mind, however, is that, as indicated by Barlaro's observations, acute joint involvements resembling rheumatic fever may also be encountered in acquired syphilis in adults. Unless the manifestations present in a given case of supposed acute rheumatism are altogether typical and convincing, it will be worth the practitioner's while to consider, among other diagnostic possibilities, that of syphilitic infection. A useful hint for purposes of differentiation lies in Barlaro's statement that in nearly all his cases of syphilitic rheumatism the joint pains were more intense at night. The chances of a mistake are practically eliminated by the mere recollection of the possibility of a syphilitic disturbance, for once having this thought in mind, the practitioner will have available the history, physical examination, and in particular, the Wassermann reaction, to clear up his doubts. The syphilitic joint manifestations being, as illustrated in Barlaro's patients, a rather obstinate form of disease, application of arsphenamine therapy in addition to the mercurial treatment he employed is doubtless advisable in such cases.

(To be continued.)

Chemical Purification of Drinking Water.—

Dopter and Rieux (*Bulletin de l'Académie de médecine*, June 10, 1919) refer to the satisfactory results obtained in the French Army in the chemical sterilization of drinking water. The potassium permanganate and iodine tablet methods were soon abandoned in favor of the simpler and much cheaper sodium hypochlorite or "javelization" procedure. The chief difficulty in applying the latter was to secure an automatic apparatus which would bring the hypochlorite in contact with the water as fast as the latter was used and cease adding it when the outlet was closed. By 1917 several successful forms of apparatus for this purpose had been devised, and these the author describes. Bacteriological studies showed that colon bacilli disappeared completely from water thus treated, and that the mechanical mixing of the water reduced by one half the amount of hypochlorite required. The water had no residual taste, and the users remained entirely unaware that it had been chemically treated. The only district in which complete success was not obtained was in the Argonne, the water there being rich in clay and fixing a considerable proportion of the chlorine. The method as a whole proved a potent factor, in conjunction with antityphoid vaccination, in eliminating water borne diseases from the war zone. It seems to have solved the problem of water purification for armies engaged in stationary warfare, though apparently impracticable for troops in active motion. Apart from war conditions the method would seem to be of great value not only in colonial hygiene but in affording a reliable means of securing good water in towns and villages where the costly procedures of purification applicable to large cities are impracticable.

Ringworm Following Vaccination.—Gougerot (*Paris médical*, June 7, 1919) states that nine tenths of the cutaneous complications of vaccination met with in France during the war consisted of ringworm. Even at that, such cases were very rare. Next to tinea in frequency came ecthyma, with small bullæ about the vaccine pustules, and impetigo. Ringworm, as a rule, set in when the scab was about to fall off, from the fifteenth to the twentieth day. Certain patients insisted that the red patches had appeared only thirty or even forty-seven days after vaccination. The lesions, once established, usually developed slowly, and presented no unusual features. Untreated, they persisted indefinitely and formed additional patches through autoinoculation. The treatment recommended, if well borne, is the "military" procedure, consisting in the application of petrolatum containing 0.3 to one per cent. of iodine previously dissolved in the smallest possible amount of xylol. Where this treatment causes irritation, the area should be treated twice a day with tincture of iodine diluted one in five with sixty per cent. alcohol, or with Hoffmann's anodyne to which one fifth volume of tincture of iodine has been added. If the skin is not too delicate the solution should be rubbed in more or less with the cotton pledget. After drying has occurred, there should be applied either a zinc oxide ointment containing 0.5 to one per cent. of yellow oxide of mercury or one to two per cent. of calomel, together with two to four per cent. of tannic acid, or one of the following combinations:

I.

R	Zinci sulphatis,	0.05 to 0.5 gram
	Cupri sulphatis,	0.1 to 2 grams
	Solve in aquam q. s.	
	Sulphuris loti,	1 to 5 grams
	Zinci oxidi,	1 to 5 grams
	Talc,	30 grams
	Olei,	40 grams
	Fiat pasta.	

II.

R	Acidi salicylici,	1 gram
	Camphoræ,	2 grams
	Sulphuris loti,	3 grams
	Olei cadini,	10 grams
	Olei,	15 grams
	Talc,	30 grams
	Zinci oxidi,	20 grams
	Fiat pasta.	

By keeping at hand two jars, one containing the medicated paste and the other simple zinc oxide ointment, the strength of the paste can be easily regulated by transferring definite proportions of paste from one jar to the other. Where the patches are irritated and weeping, one to five per cent. of ichthylol may be added to the first formula. Where the iodine solution irritates it may be replaced by a one to five per cent. solution of copper sulphate. For disseminated patches, local or general baths in 0.01 per cent. copper sulphate solution may be useful. If eczema or pyogenic infection becomes superadded, the lesions may be painted once or twice a week with one in twenty silver nitrate solution and a reducing ointment containing oil of cade used. In a case with copiously weeping eczema zinc oxide ointment containing 0.5 to one per cent. of picric acid proved most effective. Autoinoculation patches are watched for and

treated with tincture of iodine. The regular treatment must be continued two weeks after apparently complete cure; otherwise recurrence is the rule. Definite evidence in one case showed that the ringworm had been inoculated at the vaccination site from the exterior. In some other cases, introduction of ringworm with the vaccine seemed a possibility.

Comparison of Arsenical Compounds for Use in Virulent Syphilis.—Queyrat (*Presse médicale*, May 15, 1919) carefully tested out arsenobenzol, novarsenobenzol, and luargoi in syphilis. The conclusion reached was that arsenobenzol is more active and less dangerous than the other two remedies. A negative Wassermann was more often obtained, and recurrences were less frequent. The writer had no mortality in the course of 24,142 injections of arsenobenzol administered during the war. In four cases, severe symptoms were overcome by means of adrenalin injections. Queyrat is averse to ambulatory treatment of syphilis with the arsenical compounds. The patients should receive their injections in the fasting state and should remain recumbent for several hours thereafter.

Treatment of Syphilis by Soluble Mercury and Salvarsan.—A. B. Barker (*Medical Council*, August, 1919) does not believe that salvarsan alone will cure, but uses a combination of this remedy with mercury. He employs a solution of the benzoate of mercury, one per cent. strength, in a normal salt solution, carefully filtered. Of this solution he gives from forty to ninety drops intramuscularly. He gives an injection every second day for ten days, and then waits two days and gives salvarsan or neosalvarsan. Two days later he starts on the mercury again, and continues in this way until about five injections of the arsenical preparations and from twenty-five to thirty of the mercury are given.

Syphilis of the Nervous System and Its Treatment.—Joseph Mackenzie (*Glasgow Medical Journal*, July, 1919) says that gummata, or syphilitic granulomata, may develop in practically any part of the syphilitic subject. In the central nervous system this manifestation of the disease may occur in a variety of forms. In the first place, it may be present in the form of a large tumorlike mass, commencing either in the membranes of the nervous system or in the substance of the brain itself. The symptoms to which it gives rise are those of tumor, but the gumma may be only one of two or more different expressions of infection, and in that case the symptoms may be, and usually are, complicated by those disturbances which depend upon the other manifestations of the disease. For example, one sometimes finds a gumma in a case of general paralysis, or in a case of locomotor ataxia, and in such conditions clinical phenomena of a mixed character would be observed. These gummata, which may be single or occasionally multiple, give rise to progressive symptoms of pressure, which, according to the site of the growth, produce different localizing symptoms. They yield readily to treatment, if treatment has been begun before the pressure effects have produced perma-

nent damage to the important brain structures. They occur in the congenital as well as in the acquired form of the disease, and, as a rule, make their appearance after the second year of its development. Then, again, the gummata may be miliary; that is to say, they may be present in large numbers and dispersed all over the surface of the brain, like miliary tubercles, or scattered here and there along the lines of the main vessels in the substance of the brain. The miliary form of gummatous infiltration occurs late in the disease, and is usually noted for the first time at postmortem, or at a stage when effective treatment is no longer possible. Mackenzie has seen three cases of this type at postmortem, and in each of these, in addition to the miliary gummata, there had been a diffuse infiltration of brain substance, giving rise to a destruction of neurones and vessels, and resembling in some respects the anatomical degeneration seen in general paralysis of the insane. In one of these cases salvarsan was administered without effect. The cerebrospinal fluid contained a large amount of globulin and a large number of lymphocytes. The patients had been gradually losing the power of their legs, but had not shown those symptoms of alienation or progressive dementia which are characteristic of advanced general paralysis.

Syphilis at Camp Greene.—C. F. Ross and W. A. De Foe (*Virginia Medical Monthly*, June, 1919) present a report of 458 cases, nearly all either primary or secondary, treated at Camp Greene, Charlotte, N. C. Including 323 ambulant cases of latent syphilis sent in from the camp for treatment, there were 781 patients, to whom were given 2,797 doses of arsphenamine and 1,228 injections of mercury salicylate. The average dose of arsphenamine was .547 gram. Untoward results from the arsphenamine included one death and all the various reactions described in current literature. The authors believe most of these results are due to anaphylaxis and some to the gastrointestinal and mental conditions of the patients. In twenty-three primary cases treatment was begun before the Wassermann became positive. No one sign, laboratory or clinical, was depended upon for the diagnosis, but the conclusions reached from a study of all information available. Exceptions to induration as a diagnostic sign in primary syphilis proved numerous. One class of case presented an indurated fissure at the margin of the prepuce, with nearly every characteristic of the chancre, which nevertheless was not a chancre but due to a long tight prepuce, the margin of which cracked at every successive retraction, induration resulting. Again, many early chancres with abundant spirochetes showed no induration consisting merely of a red, superficial, pliable ulcer. Likewise there were exceptions to the old rule that chancres are single and chancroids multiple, nine per cent. of the former proving multiple and thirty-four per cent. of the latter single. Chancroids complicated chancre in thirteen per cent. of chancre cases. Presence of the pale spirochete proved the most valuable indication of syphilis in any lesion; the authors prefer the dark ground method of examination for it, the motility being one of its most important characteristics. A

negative finding means either previous antiseptic treatment, a long standing chance with penetration of the germ to the deeper layers, or absence of syphilis. Where antiseptics have been used, the ulcer should be dressed in normal saline solution for forty-eight to seventy-two hours, to promote reappearance of the germ, while if the lesion is an old one, serum obtained from the deep layers of the ulcer should be examined. An indefinite number of dark field examinations should be made if the organism is not at first found. Primary syphilis can be diagnosed and all active lesions healed in twenty days, with an average administration of three doses of arsphenamine and two injections of mercury. Secondary syphilis can be diagnosed and active lesions healed in sixteen days, with two and a half doses of arsphenamine and two injections of mercury. The negro proves more amenable to treatment than the white man.

Collective Prophylaxis and Treatment of Congenital Syphilis.—F. Balzer (*Bulletin de l'Académie de médecine*, June 17, 1919) lays stress on the prophylaxis of syphilis in the offspring among families infected with the disease. It is a part of the family physician's duty to investigate thoroughly syphilitic antecedents not only in the parents but in the grandparents, and to urge whatever prophylactic measures seem necessary. A syphilitic child can be treated in the home with a fair degree of safety to other persons provided he is kept under close watch. At least four years' treatment, however, is required for complete results, and the numerous details of treatment, as well as the necessary persistence in it, make it difficult to carry out the method thoroughly in the home. Treatment of congenital syphilis in special institutions or dispensaries is therefore more feasible in the general run of cases. Through separate or combined use of hectine and arsphenamine, together with mercury, the treatment of congenital syphilis is now more effectual, less debilitating, and much more prompt in its results than formerly. The external manifestations of the disease disappear in a few days, and the danger of infecting others is thereafter greatly reduced. Too often, however, after the patient has been thus "cleaned up" and returns to his home from a hospital, the necessary further treatment is only irregularly followed. To eradicate congenital syphilitic infection, along with the visceral lesions and general debility it entails, treatment must be systematically followed from at least one to three or even four years. The author therefore highly approves of the measures introduced in Sweden by Welander, of Stockholm, who has induced the authorities to construct special institutions or asylums for these children, in which treatment is kept up systematically for an average period of three years. In some of the children at least, a complete cure is obtained. In metropolitan cities an adequate number of these independent institutions could hardly be provided, but there should be constructed special buildings attached to the ordinary hospitals, with the necessary playgrounds and school facilities, in which congenital syphilitics could be kept under systematic treatment for the entire period required.

One Aspect of Syphilis as a Community Problem.—H. S. Newcomer, Russell Richardson, and Charlotte Ashbrook (*American Journal of the Medical Sciences*, August, 1919) tell of the development of the present clinic for syphilis at the Pennsylvania Hospital, the administration of salvarsan, the results of treatment, and something of the economic results. They say that their experience showed that it was practicable for any well organized general hospital to establish a clinic for the treatment of syphilis without great expense to the institution and to the certain advantage of the community it served. The fundamental questions of morality which underlie the spread of this infection did not properly present themselves for the consideration of the physician and the hospital in connection with such a clinic. The practice of segregating the syphilis clinic from the general work of the hospital should be abandoned, as it made the treatment appear to the patient in the light of punishment and to the hospital staff as a disagreeable duty. The interests of all were thus sacrificed to sentiment. Medically speaking, our results confirm the prevailing view that once syphilis has invaded the body it is very difficult if not impossible to eradicate it. Systematic treatment, however, is capable of minimizing its effects for the individual, and at the same time rendering him almost innocuous to the community. Such a clinic as this was probably more successful in securing treatment in this systematic way than was management by the private practitioner. Assuming that such clinical facilities as those described had been made available in adequate amount, the attack on syphilis as a community problem should involve, systematic effort to secure treatment at the earliest possible moment.

Relationship of Leukoplakia Buccalis to Syphilis.—G. Railliet (*Bulletins et mémoires de la société médicale des hôpitaux de Paris*, April 17, 1919), among twenty-seven cases of leukoplakia, found the Bordet-Wassermann reaction positive in eight, partly positive in five, and negative in fourteen. Examination of patients in 111 cases of known syphilis showed leukoplakia in 22.22 per cent. within two months after infection, in 23.07 per cent. within a year after infection, and in 70.55 per cent. from the beginning of the second year after infection. The intensity as well as the frequency of leukoplakia increases with the time elapsed since infection, very marked leukoplakia often existing after the sixth year from infection. Apart from recognized syphilis, leukoplakia is common in a number of disorders in which a syphilitic etiology appears to predominate. Aside from cases with any history or sign of acquired syphilis, the condition is not infrequently met with even in the absence of such suggested accessory causes as the use of tobacco. The frequency of negative serum reactions in leukoplakia does not invalidate the preceding conclusions, since this is a common occurrence in latent acquired syphilis as well as in congenital syphilis. In less than fifteen per cent. of cases of leukoplakia are all traces of acquired or congenital syphilis entirely wanting.

Effects of the X Rays on the Endocrine Glands, in Particular the Adrenals.—A. Zimmern (*Bulletin de l'Académie de médecine*, June 10, 1919) states that while the seminiferous cells of the testes are very sensitive to the x rays, even the interstitial cells in this organ are more sensitive than the cells of ordinary externally secreting glands. We have as yet only a vague conception of the relative sensitiveness of the gonads, thymus, pituitary, and adrenals, but undoubtedly the normal cells in these organs can, with sufficient doses of the x rays, be profoundly influenced. Thus by treatment of the exposed rabbit thyroid effects similar to those of thyroidectomy were produced, and Regaud and Crémieux with large doses induced permanent absorption of the thymus. The sensitiveness of endocrine organs to the rays seems to be increased by disease of these organs, as illustrated in the effects obtained in thymic enlargement in children and in gigantism, in both of which affections some successful therapeutic results have been recorded. By exact adjustment of the rays over the adrenals in dogs, the author induced definite effects in these organs without harming the skin or kidneys. A marked cytolytic effect was produced in the zona fasciculata; a somewhat less effect in the zona reticulata, and little or no effect in the glomerular layer. In man, weaker doses were used in patients with adrenal overactivity manifested in permanent hypertension with its accompanying symptoms. Nearly always the procedure induced a reduction of blood pressure beginning in two to ten days and ranging in extent from twenty to forty millimetres of mercury. In two instances the systolic pressure was lowered by seventy and eighty millimetres, respectively. The duration of the reduction varied in different patients, but in some it persisted several months. X ray exposure of the adrenals deserves a place in the treatment of hypertension.

Cerebral Origin of Strabismus and Its Treatment with Glasses of Complementary Color.—C. Sauvinau (*Bulletin de l'Académie de médecine*, June 10, 1919) holds that divergence of the visual axes is only a secondary manifestation of strabismus, which may disappear without the latter being influenced. Hence the failures in attempting to overcome squints either surgically or by continuous use of glasses. The true source of strabismus is an inherited brain condition in virtue of which the cortical visual centres perceive an image from only one of the two eyes. The strabismic person is thus afflicted with cerebral blindness. That cerebral vision is monolateral is not due to amblyopia of the deviated eye; very frequently there is no amblyopia and at times both eyes are visually normal. That the brain disregards or neutralizes the image from the deviated eye has been pointed out by Javal and Rémy, but neither of these observers conceived the thought that this neutralization is permanent and is the primary or preexisting cause of the strabismus. This neutralization would be expected to occur in the presence of motor paralysis, in which diplopia is a marked source of annoyance; but it does not, because the brain is normal. When the brain defect predisposing to strabismus exists, the least obstacle

to binocular vision, such as a leukoma or ametropia, is sufficient to bring on strabismus. The author excludes from this category the cases of insufficient convergence with latent diplopia, which are merely instances of pseudostrabismus. The first step in the rational treatment of strabismus consists in educating the visual centres to perceive simultaneously the images from the two eyes. A green glass is placed before the fixating eye and a red one before the deviated eye, the patient seated opposite a lighted candle, and his attention called to the fact that he cannot see the red flame. Alternate occlusion of the eyes soon brings him to the point where he can see both the green and red flames at once, although some distance apart. The second and final step consists in inducing cerebral fusion of the two images into a single image of mixed, easily recognizable color. The patient is invited to relax or increase his convergence, according to the condition present. If the strabismus is slight, he soon succeeds in obtaining fusion, and even marked strabismus of 30° or 40° can be cured by this procedure within three months. In marked strabismus, however, it is well to bring the patient to fusion only in successive stages with the aid of prisms of progressively decreasing strength. By this method a cure is obtained in all cases within a few weeks or months. The simplicity of the procedure renders it available, in regions where there are no oculists, to the general practitioner.

Crisis Induction in the Treatment of Severe Influenza.—Maurice Renaud (*Bulletin de l'Académie de médecine*, May 27, 1919), in cases of influenza with dangerous lung complications, gives an intravenous injection of 0.00025 gram of adrenalin, and twenty minutes later administers from twenty to forty mils of antipneumococcic serum prepared at the Institut Pasteur. This procedure induces an artificial but permanent crisis. The reaction seems rather severe, but the results as regards reduction of mortality justify the means. Within an hour after the injection, sometimes almost immediately, a marked chill and reduction of surface temperature are noted. The pulse goes up to 140 and becomes small, and the temperature rises to above 40° C. Soon after, however, the pulse volume is restored, color and heat return to the skin, a profuse sweat occurs, and the patient experiences a pleasant sensation of well being. The temperature descends to normal by the following day, and remains practically normal permanently. The infectious process disappears, diuresis takes place, and congestive lung foci disappear. Since he began to apply this method the author has treated 120 patients suffering from influenza, of whom seventy had severe lung complications. All recovered. Comparison of the severe cases in which the procedure was applied with the milder ones, in which it was not, showed a definite shortening of the disease as a result of its employment. The simultaneous action of the adrenalin as a powerful excitant of the whole vasomotor system and of the serum as a foreign protein and vehicle of antibodies seems greatly to enhance their effects and renders the procedure superior to the use of colloids or bacterial products.

Miscellany from Home and Foreign Journals

The Cardiovascular Defective.—Louis M. Warfield (*American Journal of the Medical Sciences*, August, 1919) uses the term cardiovascular defective synonymously with effort syndrome, irritable heart, and neurocirculatory asthenia. The syndrome is one that has received attention only since the war began, though it was known before that there was a group of young men who suffered from inability to adjust themselves to their environment, and when they complained particularly of their hearts were likely to be classed as neurasthenics. Certain characteristic symptoms found in all cases are the same as those from which many men suffer after violent exertion, and the differentiation between the defectives and normal men is largely one of degree. Exercise of the lightest character brings out in the defectives an exaggeration of all the symptoms of exhaustion. In typical cases, after slight exertion the patients become breathless, giddy, suffer from precordial pain, palpitation of the heart, and a feeling of utter exhaustion. Frequently they suffer from headache, are sleepless, do not rest at night, have clammy cyanosed hands and feet, sweat profusely at the axillæ, have a mottled skin and unstable vasomotor reaction. These men might never have been discovered except for the army draft, which caused thousands of young men to be examined physically. They have no complaints, as a rule, which lead them to seek medical advice. They find that they are better able to make a living at light or sedentary work than at hard work, so they drift into the lighter occupations. The majority are surprised when told that there is something really the matter with them, although they have recognized the fact that they cannot take the violent exercise which other men of their acquaintance can take. A certain number are taken by their parents to a doctor, who may diagnose heart disease or neurasthenia. There is no common etiological factor among the true cardiovascular defectives—no cause can be found except a constitutional inferiority, a poor quality of tissue which must be supposed to account for the syndrome. Among others, certain chronic diseases or the result of severe acute illnesses are responsible for the syndrome. When there is a definite pathological basis, such as pulmonary tuberculosis or chronic focal infection, cure of the diseases causes the effort syndrome to disappear. In cases resulting from infectious diseases or in those based upon constitutional inferiority the patients do not improve in our experience. Exercise was of great value in determining the fitness of the men for military duty and in obtaining data to aid in the diagnosis in certain cases in which tuberculosis was suspected. The patients were studied primarily for the purpose of sorting the fit from the unfit in military service. This need be done no longer. However, the knowledge gained in observing these men is not devoid of value in civil life. It should materially assist in the handling of a group of cases hitherto poorly classified and insufficiently studied.

Diagnosis of Tuberculosis by the Complement Deviation Method.—Chung Yik Wang and James Crockett (*British Medical Journal*, July 5, 1919) describe in detail the results of their extensive investigations into the problems of perfecting both an antigen and a method of performing the complement deviation test for the specific diagnosis of tuberculosis. Their antigen is a specially prepared emulsion of ground tubercle bacilli from which all of the lipid material has been removed by means of alcohol, ether, and chloroform. The technic of the test differs decidedly from that of the customary Wassermann reaction. Three tubes are used, one as a control containing no antigen, one containing a syphilitic antigen, and one the tubercle antigen. The serum to be tested is also specially treated by heating for two hours at 55 to 56° C. A special technic is described to bring out the specific tuberculous reaction, or to prove its absence, in the case of sera which show suspected cross fixation. Such cross fixation is always due to the fact that the sera are positive to the syphilitic antigen, and every such serum tested proved negative to the differential test for tuberculosis. The tests were applied to 104 tuberculous patients and 220 controls and gave positive results in eighty-five per cent. of the known cases of tuberculosis and uniformly negative results in the controls. It is thus seen that the test is strictly specific for tuberculosis, and a positive reaction is regarded as not only indicative of the presence of tuberculosis, but also of the fact that the disease is active. A negative reaction is significant, but is not conclusive.

The Aftermath of Malaria and Dysentery.—John Cowan (*Glasgow Medical Journal*, August, 1919) says, regarding the aftereffects of dysentery, that the recent investigations into the protozoal content of the stools have led to some rather unexpected results. It had already been shown that the stools of a considerable proportion of the men from the Mediterranean Expeditionary Forces, who were convalescent from dysentery and enteritis, contained amebæ; and that the same obtained in the case of those who were convalescent from diseases other than dysentery, though in a lesser degree. But until Yorke's paper was published, it was not realized that amebæ were frequently present in the stools of persons who had never been out of England. Amebic dysentery, however, is at the present day in England a matter of no practical importance. Carriers are common in countries where amebic dysentery is endemic. Diarrhea may be the sole symptom of an amebic affection, and it not infrequently succeeds an attack of dysentery. In most cases this is due, as the late Colonel Sandwith maintained, to uncured dysentery. The ulceration is deep and a catarrh of nonspecific nature has supervened. Local examination may reveal lesions within the reach of local medication. Cowan has seen small ulcers healed under direct applications of silver nitrate. Stricture may occur. Enemata are sometimes of

use in cases where the character of the stools points to a lesion low down, though above the limits of direct observation. The douching rather than the antiseptic employed seems to be the important factor. The cause of dysentery in Egypt was bacillary in something like ninety per cent. of all cases. But in patients where diarrhea succeeds an attack of bacillary dysentery, the question of an amebic infection should always be considered. Mixed infections are not uncommon, and amebic infection does not respond to treatment of the kind that is successful in bacillary dysentery. Even in the absence of positive evidence of amebic infection the use of emetine is sometimes successful. Recurring attacks of diarrhea, following an attack of dysentery, strongly suggest an amebic cause.

Ulcerative Endocarditis Due to Pleomorphic Diplococcus.—M. J. Stewart and H. L. Flint (*Lancet*, June 28, 1919) report a case of very rapidly fatal acute ulcerative endocarditis in a young adult, the acute disease being engrafted on an old aortic lesion. Death resulted three days after onset, but during the brief period of illness many petechiae and parenchymatous infarcts appeared. From a blood culture as well as from the valve lesion and several of the pyemic infarcts there was isolated a gram positive, pleomorphic diplococcus which resembled closely the organism which had been isolated by several observers during the recent epidemics of influenza. It is interesting to note in this connection that the onset of the endocarditis was marked by symptoms typical of influenza.

Hydrophobia Eighteen Months After Infection.—Peter J. Freyer (*British Medical Journal*, June 28, 1919) presents the detailed account of a case of typical hydrophobia which developed eighteen months after the bite of a rabid dog. In analyzing this case the author concludes that it shows that the virus may remain active but dormant for a long period; that it remains in the region of the original bite, since that area became painful at the time of development of the active disease, and that in view of such a localization all bites which are at all suspicious should be thoroughly cauterized as promptly as possible, or if the wound has healed it and the surrounding tissues should be excised as a prophylactic measure.

Electrocoagulation of Bladder Tumors.—Fernando Miraved (*La Medicina Ibera*, July 12, 1919) in reporting a series of cases gives the following conclusions: First, the action of electrocoagulation depends upon the generation of great elevation of temperature by high frequency currents; second, this method has proved its efficacy in destroying most bladder tumors. The small papillomatous tumors are cured in one or at most a few sessions; multiple papillomata require a greater number of treatments. Malignant tumors with infiltration obtain their main benefit from the control of stubborn hemorrhage. Even epithelioma is greatly benefited, one case having been apparently clinically cured. Electrocoagulation requires nothing more than a cystoscopy, without anesthesia, and the patient can pursue his ordinary mode of life without the inconvenience and loss of time incident to an operation.

Renal Function Influenced by Intestinal Obstruction.—Irvine McQuarrie and G. H. Whipple (*Journal of Experimental Medicine*, April, 1919) found that the excretory function of the kidneys is decidedly impaired in experimental acute intestinal obstruction in dogs. In this condition they demonstrated a great increase in the elimination of urinary nitrogen, and in the nonprotein elements of the blood. These facts point to cell injury. At the same time there was a decrease in the kidney excretory function, which was most clearly shown by the inability of the kidney to secrete the normal amounts of urea, sodium chloride, and phenolsulphonaphthalein. It is emphasized that no physician who is treating a patient suffering from acute intestinal obstruction can afford to overlook the existence of a definite impairment of kidney function, as the two conditions are usually closely parallel. The impaired kidney function is attributed to the action of the toxic substances on the renal epithelium.

Types of Pneumococcus in Lobar Pneumonia.—Russell Richardson (*Journal of Laboratory and Clinical Medicine*, May, 1919) reports type determinations in 413 cases of lobar pneumonia occurring in the winters from 1913 to 1917. In order to ascertain what differences there might be in the infections caused by the organisms of the four different groups, a study was made of the typical symptoms of the disease, and of some of the complications. In the four groups the percentage showing cough and pain was very similar. However, the so-called typical types (Groups I, II, and III) showed a higher percentage of dyspnea and a lower percentage of chill than did the patients in Group IV. The average leucocytosis in all four groups was about the same. Of the complications selected for study there were meningitis, pulmonary tuberculosis, delayed resolution, lung abscess, empyema, and endocarditis. There were twice as many complications after infection with Type IV pneumococcus as in any other group.

The Finger Abduction Sign in Radial Paralysis.—J. Boisseau (*Presse médicale*, May 8, 1919) states that when a patient with organic radial paralysis is asked to spread the fingers apart, the middle finger remains practically motionless while the distal phalanges of the second, fourth, and fifth fingers are slightly flexed and the thumb is moved toward the ulnar side, instead of outward. In hysterical radial paralysis either the fingers all remain motionless or they spread out to a greater or less extent in one plane, as under normal conditions; if the fingers are spread out passively by the examiner and the patient told that he will be able to keep them spread apart himself he will usually succeed in doing so. In mixed, hysteroorganic cases the abduction sign allows one to state that the nerve injury has not yet been repaired or, on the other hand, if abduction occurs normally, that recovery has taken place. If the patient says at first that he is unable to spread the fingers apart, suggesting a hysterical paralysis, passive abduction should be tried. If the fingers then assume the abnormal position characteristic of radial paralysis, repair of the nerve injury is proved to be not yet complete.

The Functions of a Mental Clinic.—Bernard Glueck (*Neurological Bulletin*, June, 1919) calls attention to the many differences between a psychiatric clinic and other medical clinics. On account of the fact that mental disorders are primarily the result of failure to adapt to environment, their victims are usually unable to continue their social and industrial lives as ambulant medical patients are often able to do. Should they attempt to do so, they may become serious annoyances, or even menaces to the community. Hence the important service which the mental clinic can render to society, especially if associated with efficient social service. Another important feature of the mental clinic, as distinguished from the medical clinic, is that it must treat that complex thing known as the personality and, moreover, often must deal with the patient's relatives. Thus the cause of the trouble in a five year old boy, a masturbator, nervous and pugnacious, was found in the mother's mishandling of the situation, and the latter's education benefited the boy immensely. Glueck cites other illustrative cases. The atmosphere of the mental clinic must be tolerant. Sufficient time must be given the patients. Where several physicians handle such a clinic it might be well, if possible, to assign certain physicians to organic problems or to functional problems, according to their respective leanings. The social worker should be trained in mental hygiene and carry it into the homes of the patients.

Ectopic Gestation.—L. K. P. Farrar (*American Journal of Obstetrics*, June, 1919) reports the results reached in an analysis of 309 cases at the Woman's Hospital, New York. Infection or mechanical alteration due to adhesions of the Fallopian tube was shown to predispose to ectopic gestation. The onset of symptoms or an acute attack was shown to occur as frequently at the time of an expected period or just after a normal period as it does when a period is overdue. Pain, with or without bleeding, was present in every case, unless unruptured. Tearing, lancing pain is as common in ectopic gestation as pain of a cramplike or bearing down character. Unusual, one sided pelvic pain, when associated with evidences of peritoneal irritation and fainting, warrants a diagnosis of ectopic gestation. The treatment should be operative in every case as soon as suitable hospital arrangements can be made, examination being deferred until the patient is in the hospital if she is in a serious condition. The end results justify leaving the other tube in the abdomen at the time of operation, unless it is positively diseased. Light anesthesia; a quick, skillful operator; blood transfusion or saline solution intravenously to be given just before or as the operation is begun, and free hypodermic stimulation with camphorated oil, strychnine, or adrenalin solution are important factors of success. An "internal hot water bottle" of a quart and a half of saline solution, or better, soda solution, at 105° F., passed into the colon at the end of the operation, as in Clark's technic—the rectal tube having been introduced high up before operation—aid greatly in immediate recovery. There were three deaths in the 309 cases.

Observations on the Wassermann Reaction.—Paul A. Lewis and H. S. Newcomer (*Journal of Experimental Medicine*, April, 1919) have compared the new system of Noguchi (consisting of native human complement and acetone insoluble lipoids as antigen) with the system suggested by McIntosh and Fildes (the cholesterinized antigen). They found that the cholesterinized antigen was somewhat more sensitive, so that the weaker reactions should be considered with a little less confidence than such reactions with the Noguchi system. The cholesterinized antigen is preferable as a measure of control of treatment. That neither of them alone can be used to establish a diagnosis of syphilis without presumptive evidence is emphasized, as the reaction is not given in a considerable number of syphilitics. On the other hand, a study of 109 patients in the ward suffering from miscellaneous conditions showed that it was positive in diseases other than syphilis.

A New Conception of the Origin of Cancer.—Albert Robin (*Bulletin de l'Académie de médecine*, May 27, 1919) points out that cancerous liver tissue contains a larger proportion of water than normal liver tissue. The increase is greatest in the portions most seriously diseased, amounting here to fourteen per cent., and exceeds ten per cent. in the relatively normal tissues, keeping pace with the rapidity of progression of the disease. Increase of water content likewise occurs in the liver of tuberculous subjects and in tuberculous lungs, but in acute phthisis the proportion of water in the least involved portions of the lung is distinctly below normal, whereas it exceeds the normal in the relatively healthy portions of the cancerous liver. High water content is a property common to all rapidly growing tissues. Like the latter, cancer is capable of constructing from a given amount of solid materials more histological substance than normal tissue. The hydrous condition of cancerous tissue entails a marked diminution of organic and inorganic substances in the solid residue from this tissue. On the other hand, tuberculous lung tissue in its least affected portions contains more solid substances than normal lung tissue; this condition is an expression of the defensive processes taking place against the tubercle bacillus, whereas in organs undergoing cancerous change these processes are lacking. Relatively normal portions of a cancerous liver yield more extractives soluble in ether, boiling water, or hot alcohol than do the more diseased portions. This is evidence against the view that the latter are exerting some form of influence upon the portions not as yet involved; more likely, the organ and perhaps the entire system are from the start under the influence of the cancer producing process. This process might be considered to result from the action of a ferment, which would first dissociate the proteins in the organ that is to become the seat of the cancer, and would then, by reversible action, combine selectively in certain cells of this organ the dissociated amino acids, thus imparting to these cells a capacity for rapid growth and morbid reproduction which would leave no time for them to become differentiated into a special type of tissue.

Cases Resembling Encephalitis Lethargica.—J. Browning Alexander (*British Medical Journal*, June 28, 1919) records in brief a number of cases occurring during the influenza epidemic which closely resembled acute lethargic encephalitis. These cases differed from the usual cases of lethargic encephalitis in having a more gradual onset, in being of short duration, in ending by recovery, and in the lack of marked ophthalmoplegia and ptosis.

Eye Color and the Abnormal Palate in Neuroses and Psychoses.—H. Laing Gordon (*Lancet*, July 5, 1919) investigated the relation of these two factors to the occurrence of neuroses and psychoses due to the war in the endeavor to find out whether there was any definitely determinable evidence for the belief in the preexistence of some susceptibility to the neuroses, or a constitutional inferiority. He found the facts brought out to be insufficient for the statement of definite conclusions, but they seemed to justify certain suggestions. First, that duplex eyes are more than twice as common as simplex among those who are susceptible to the neuroses and psychoses; second, that in the same class of persons the narrow and abnormally arched palate is present in about fifty-two per cent. of the patients, and finally that in the same class the proportion of duplex to simplex eyes is markedly increased in those patients with the abnormal palates, the increase tending to intensify along with intensification of the palatal deformity.

Diagnosis of Empyema in Children.—Frank Spooner Churchill (*Boston Medical and Surgical Journal*, July 24, 1918) finds that empyema developed in five per cent. of 824 cases of lobar pneumonia and in one and one half per cent. of 557 cases of bronchopneumonia treated at the Children's Memorial Hospital in the last ten years. The onset is always insidious, it is almost invariably secondary, a complication. In cases ending by crisis the symptoms may be noticed in from one to ten days after the crises; in cases ending by lysis they develop imperceptibly. The general condition of the child is not good; he looks and acts sick, is drowsy and begins to have a septic look. The respiratory curve stops its downward convalescent course, remains stationary, then begins to creep up, even before an increase is noted in the pulse and temperature; the breathing, however, is not labored. To be correctly interpreted, the respiration and pulse should be taken during sleep. Lack of thoroughness in examination, and inability to interpret physical signs correctly are the main reasons for failure to detect a pleuritic effusion whether serous or purulent. One of the important points is the location of the apex beat which is often pushed away. Percussion gives dullness over a large area merging into flatness in the lower part of the chest; auscultation gives a respiratory murmur over the posterior part of the chest especially, which may be absent, diminished, or feebly bronchial in character; the voice sounds are diminished, there are no râles and no friction rub. X ray pictures are not always satisfactory, and in doubtful cases the aspirating needle should be the arbiter.

Cerebrospinal Fluid in Infantile Spasmophilia.—Giovanni Genoese (*La Riforma Medica*, June 14, 1919) has found that in the spasmophilic syndrome of infancy there is almost constantly increased cerebrospinal pressure due to augmentation of the spinal fluid; the albumin and chlorides are usually normal. In certain cases there is a definite acetone reaction in accord with the finding of this body in the urine. The cell count is always negative, and repeated lumbar puncture does not give constant results although for a short time ameliorating the symptoms.

Chronic Infections of the Large Bowel.—William M. Beach (*Ohio State Medical Journal*, August, 1919) states that the division of surgery known as proctology is at last being given the attention and standing it deserves. He summarizes his article as follows: 1. The colon and anal rectum are subject to infection and ulceration. 2. The types of ulceration are tubercular, amebic, and bacterial. 3. Local symptoms are similar in any ulceration but vary in degree of persistence under treatment. 4. The ascending colon, sigmoid, and the anal canal are important centers of focal infection. 5. The effect of infection of the large bowel is far reaching. 6. The treatment is largely surgical.

Intolerance of Aspirin.—E. J. Tyrrell (*Lancet*, June 28, 1919) records the case of a young, healthy man who took one cachet of aspirin out of curiosity. An hour later he felt a peculiar itching on his face, chin, and lips and soon his arms began to swell and wheals appeared on the skin. His tongue and face swelled and became bloated at about the same time and the swelling increased rapidly. He also felt giddy and sleepy. Speech was possible only with great difficulty, and two hours after the dose his arms and hands were swollen to twice their normal size. His pulse was quick and feeble. After an emetic dose of zinc sulphate, a hypodermic of strychnine, and some sal volatile improvement was very rapid, but he complained of feeling cold. He went home and slept for eleven hours, being quite normal, except for feeling a little tired when he awoke. The dose of aspirin was only 0.6 gram (ten grains).

Thyroendocrine Febricula.—Léopold-Lévi (*Presse médicale*, May 12, 1919) reports several cases of thyroid instability and testicular insufficiency in children and lays stress on the instability of body temperature associated with this combination. These children are sensitive to cold and subject to chills, but also exhibit in succession different types of fever, viz., temporary slight fever; later, more prolonged fever, and finally, actual febriculae, rather persistent and leading to a suspicion of some hidden infection, possibly tuberculosis. These febriculae are due either to some slight inflammation causing fever by autoinfection—from adenoid and lymphatic tissues—the latter provoking a reaction of the heat centres, rendered hypersensitive by the coexisting hypothyroidia; or, to a paroxysmal growth tendency, the patient being subject to the opposing influences of the thyroid and testicular insufficiencies. Thyroid therapy, where applicable, causes improvement, regularizing the temperature and obviating febricular reactions.

Proceedings of National and Local Societies

NEW YORK NEUROLOGICAL SOCIETY.

*Three Hundred and Seventy-third Regular Meeting, Held at the Academy of Medicine,
May 6, 1919.*

The President, Dr. WALTER TIMME, in the Chair.

PRESENTATION OF CLINICAL MATERIAL.

Dr. I. ABRAHAMSON presented six patients who had recovered from epidemic polioencephalitis and showed several photographs of the patients taken during the active stage of the disease. They all gave a history of epidemic influenza a short time before the development of the polioencephalitis.

CASE I.—Present illness dated back five weeks. Patient showed Parkinson face, attitude and gait, typical tremor of paralysis agitans, and cogwheel phenomenon. The condition had recently decidedly improved.

CASE II.—The status showed a typical Parkinson face, attitude, and gait, tremor mainly on intention, cogwheel phenomenon, rigidity of the extremities, and bilateral facial weakness. There had been marked and constant improvement.

CASE III.—Epidemic polioencephalitis one month ago. Patient showed a lack of facial mobility.

CASE IV.—Encephalitis four weeks ago. The patient left the hospital almost well, but recently his head was commencing to move involuntarily, breathing felt hampered, head and neck felt rigid, head bent forward to the right, and there was a beginning masklike face and attitude of a Parkinson. Wassermann of blood and spinal fluid was negative.

CASE V.—Six weeks ago this patient had an attack of influenza. Since then there had been dizziness, tinnitus, altered speech, diplopia, drowsiness, mental confusion, confabulation, spasmodic cough, and hoarseness. There was present an external ophthalmoplegia, partial drowsiness, deviation of tongue to the right, weakness of right face, and tremors. The patient had grown very stout since the onset of the illness. There was marked bulimia, polyuria, polydipsia, loss of ejaculatory power, and impairment of taste. Improvement had been slow.

CASE VI.—Initial symptoms in January, 1919; headache, vertigo, gastric distress, weakness of extremities, especially left, herpes labialis, fever; at first languid, then somnolent, eyes staring, pains in extremities. There developed in the left leg a loss of control, then a tremor, and then control of left arm was lost and tremor developed. Following this the patient's face became masklike, shoulder swing in walking was lost, he perspired freely, lost weight, there was difficulty in turning around quickly, retropulsion, marked slowness of all voluntary movements, and twitching of right toes. On examination he presented all the signs of a typical Parkinson syndrome; masklike face, attitude and gait, tremor, rigidity, and lack of associated movements. The course was progressive at first, but recently there had been steady improvement.

Dr. C. C. BELING, of Newark, presented a patient

who had recovered from epidemic encephalitis who showed the following sequelæ: A general Parkinsonian attitude without muscular rigidity; fibrillary tremors of the tongue, face and lips; a high pitched voice; drooling of saliva; slowness and monotony of speech; paralysis of accommodation of ocular muscles; and double facial palsy, more marked on the right. The patient had suffered from epidemic influenza and pneumonia in October, 1918, from which he apparently recovered. On March 4th he again had influenzal symptoms, followed suddenly by diplopia two days later. On March 8th he developed a spontaneous nystagmus on both sides, more marked on looking toward the right. On March 10th he became somnolent and lethargic and went into a stuporous, semiconscious condition which continued for about three weeks. During this period several lumbar punctures showed normal cerebrospinal fluid, but under increased pressure. On March 29th the outstanding symptoms were a cerebellar attitude; bilateral facial paralysis, more marked on the left; increased knee reflexes, the right more than the left; tendency to hyperextension of big toes on stimulation of the soles, more marked in the right; slight clonic movements in the left ankle and a well marked Oppenheim reflex on the right; all sorts of irregular movements of the eyeballs without any definite isolated nerve palsy; slight ectopia of pupils to inner sides; abdominal reflexes absent except for a slight left epigastric response; marked retardation of speech; general motility; and anterograde amnesia for events of the previous two weeks.

Clinical Experience with Epidemic Central or Basilar Encephalitis.—Dr. B. SACHS read this paper, which was based on his experience with about thirty patients at Mount Sinai Hospital and fourteen seen in consultation. There were only three fatalities in the former group, which was not a high percentage, but out of the fourteen patients five died with symptoms of marked bulbar involvement which made the prognosis in these cases ominous.

The term lethargic encephalitis was ill advised; it was not the encephalitis but the patient who was lethargic, and if one considered the predominance of central or basilar symptoms, a more appropriate name was not far to seek. The clinical symptoms were very striking; broadly speaking, after a brief period of drowsiness, headache, vertigo, and general malaise, the patient passed into a state of lethargy associated with symptoms pointing to involvement of the cranial nerves. Meningeal symptoms were not obtrusive. The ptosis, ophthalmoplegia externa of the nuclear type, abductus paralysis, facial palsies which were often double, cerebellar attitude of the head, difficulties of phonation and deglutition, fibrillary tremors of the tongue, double spastic paraplegias, all suggested an encephalitis that might involve the brain stem from the larger ganglia to the pons and medulla oblongata. In addition to these symptoms, the forced attitudes, cata-

tonic states, occasional impulsive laughter, masklike expression of countenance, even atrophies of the interossei muscles, led to the inference that the anatomical processes might involve the thalamus at one end and the cervical ganglionic cells at the other.

While awaiting definite proof of the nature of the virus, a study of which was being conducted by Strauss, Hirshfield, and Loewe, one might lay stress upon the fact that in many of the cases, and in the majority of those seen in consultation practice, there had been a distinct history of influenza preceding the onset of the lethargic disorder by several weeks. If this sequence was not a mere coincidence, this epidemic encephalitis bore a resemblance to the postdiphtheritic palsies in its occurrence weeks after the initial infection. If this was a postinfluenzal infection, it was curious that previous epidemics of influenza had not been followed more frequently by similar disorders. The condition was so different from anything that had occurred before it was quite impossible that it should not have been noted. The stupor was not the ordinary kind; the patient lay inert with closed eyes and expressionless face, but was apparently aware of what was going on about him, and readily responded by nodding to questions that were put to him in a low tone of voice. There was as yet no proof that the course of the disease was influenced by treatment, but it was a fact that the patients who recovered had received careful nursing and feeding. The treatment was eliminative and purely symptomatic in the absence of a specific remedy. The prognosis was determined largely by the site of the lesion. All the fatal cases in this series had been of the bulbar forms. The patients had not succumbed to the toxicity of the disease, but death was due to the cardiac and respiratory centres being the site of predilection.

Many authors had been inclined to note a resemblance between the poliomyelitis virus and the virus of epidemic encephalitis, but it was a point to remember that there was extreme toxicity and rapid development of the disease in fatal cases of poliomyelitis, while the fatal cases of epidemic encephalitis ran a course lasting from one to seven and eight weeks. The laboratory and experimental investigation would have to furnish conclusive evidence on this point.

Report of the Committee on Epidemic Polioencephalitis (Lethargic Encephalitis).—Dr. I. ABRAHAMSON, chairman of the committee, read this report which embodied the number of cases and the seasonal incidence of all known epidemics of this disease up to the present time. An important difference between the epidemics in foreign countries and in the United States lay in the fact that the lymphocytosis so common here had been the exception abroad. Various names had been given to this disease: epidemic encephalitis, lethargic encephalitis, influenzal encephalitis, pontobulbar encephalitis, epidemic stupor, epidemic botulism, etc. The name polioencephalitis was preferable for three reasons: The brain was mainly affected in most cases, the nuclear involvement dominated the pathological picture, and it was a companion disease to poliomyelitis. It was recommended that the term

lethargic be dropped principally because lethargy characterized only a minority of the cases. It was pathologically and experimentally established that epidemic polioencephalitis was a distinct disease and one which until recently had escaped differentiation and recognition. References were cited which would seem to indicate that there was no direct relationship between influenza and epidemic polioencephalitis. The differential diagnosis between epidemic poliomyelitis and epidemic polioencephalitis was equally demonstrable. As to the clinical manifestations of epidemic polioencephalitis, syndromes of all kinds could be established. This was an infectious encephalitis, the infection originating in the nasopharynx, proceeding by the lymph streams to the basilar cerebral vessels, and then spreading through the brain stem, ganglia and cortex and also involving the upper cord, the meninges and the nerves. Those portions of the brain immediately supplied by the cerebral and basilar arteries suffered first and most severely in the majority of cases.

Dr. M. NEUSTAEDTER suggested that the best way to differentiate epidemic encephalitis from poliomyelitis would be to make the poliomyelitis neutralization test. A mixture of a one to ten serum of a convalescent patient and true poliomyelitis virus injected into a monkey would certainly show if the condition was poliomyelitis or not. If the disease was poliomyelitis the serum ought to promptly neutralize the virus and the animal remain well. This suggestion was made in view of the report by the reader of the paper that encephalitis had been produced in monkeys by injecting them with a filtered suspension of the scrapings of the nasopharynx.

Dr. SIMON ROTHENBERG thought that the most interesting phase of this disease was the variety of neurological syndromes that the cases presented. Although he had had eighteen or twenty patients, very few had shown identically the same picture. One case simulated meningitis, another polioencephalitis with double facial palsy, a third was a cerebellar case, a fourth was of the dyssynergic cerebellar type of Hunt, a fifth patient was blind and showed marked choreiform movements, and finally in two other patients a picture of encephalitis developed during an attack of influenzal pneumonia. These last two patients were seen at the hospital where the first symptoms of encephalitis were observed. In these cases the Pfeiffer bacilli were found in a culture from the throat, showing what was believed to be a connecting link between influenza and encephalitis.

Dr. SMITH ELY JELLIFFE recalled a family in which three patients were taken ill apparently with influenza, one with influenza pneumonia who died, another with herpes, and the third with a typical mesencephalic affection. That incident had been duplicated three times in his experience and it would be interesting if it could be shown that another type of encephalitis had now been isolated which could be differentiated from influenzal encephalitis. The first case of lethargic encephalitis he had seen was in 1890, and it was a fascinating thought that a new type of encephalitis might be pathologically differentiated from the others, as this might make possible a still further separation of

types. From the year 1400 on writers had accentuated the extreme variability of the different epidemic clinical manifestations which seemed to follow what were apparently clearly defined influenzal forms. It would be a great advance if one could get findings that would enable the separation of a new type producing mesencephalic manifestations.

Dr. J. ARTHUR BOOTH said that during the influenza epidemic of 1889 he had seen two cases complicated by eye symptoms in both of which there was an ophthalmoplegia externa, with a bilateral ptosis and a paresis of the external recti muscles. There was an entire absence of undue somnolence and lethargy. In contrast with these he had seen three patients during the past winter in whom, with almost exactly the same eye conditions, there was the symptom of lethargy and in one a marked catatonic condition.

Dr. WILLIAM M. LESZYNSKY referred to six patients whom he had seen; one died at the end of two weeks; another was a physician whose particular symptom was twitching of the muscles in the extremities, but he made a complete recovery. Out of this small series only one died, all the others completely recovering. He had seen two or three cases which had been at first difficult to differentiate from the catatonic type of dementia præcox. In most of the cases grippé had occurred within a month previously.

Dr. ELBERT M. SOMERS of Brooklyn, referred to the reports of forty cases of what were called central neuritis in the 1908 and 1909 issues of the *New York State Hospitals Bulletin*. These cases had presented various stuporous states, muscular tension, jactitations, and focal and mental symptoms. They were found after grippé, cancer, tuberculosis and infective exhaustive conditions. Thereafter, central neuritis was accepted as a cause of death by the health department of the State.

Observations on Gunshot Injuries of the Head.

—Major KARL WINFIELD NEY, M. C., U. S. A., who was senior officer of the Neurosurgical Unit No. 1, A. E. F., in France, read this paper, in which he emphasized the value of several procedures which experience in military cranial surgery had shown to be the cause of the immense reduction of mortality statistics.

The necessity for early surgical intervention had been as pronounced in the cranial field as in others and primary suture was the ideal treatment of all wounds. It had been found possible to effect this if all devitalized tissue could be excised before infection became established, and not only this, but certain wounds could be closed even when it was not possible to practise complete excision. It was in this latter class that gunshot wounds of the brain had been placed. The surprising absence in these cases of sequelæ, such as meningitis, brain abscess, hernia cerebri, or brain fungus, was most significant.

The two surgical principles of profound importance in this war, early and complete excision, gradually having found their places in the treatment of cranial injuries in so far as scalp and skull were concerned, the problem that then presented itself related to the removal of devitalized brain

tissue. It was solved by Colonel Harvey Cushing who combined the two principles just mentioned, and removed the disorganized brain substance by catheter suction and irrigation, completing the operation by primary closure of the dura and scalp.

In the endeavor to do a speedy operation, in the early part of the war, the procedure was often incomplete and frequently subdural adhesions were torn and the subarachnoid space opened to infection. The necessity for speed was due to the profound effects of general anesthesia on these septic patients, and realizing this the speaker became convinced that the same operative procedures were possible under local anesthesia. With the use of local anesthesia he succeeded in avoiding the shock associated with general anesthesia and was able to pursue a more deliberate operative technic without pain to or interference from the patient, thereby insuring greater gentleness in manipulation, as well as a more careful toilet of the wound.

A one per cent. novocaine solution with a few drops of adrenalin chloride was used and complete anesthesia was produced in less than ten minutes, which was a saving in time over general anesthesia. The infiltration of the scalp so reduced the bleeding that when the excision was made much time was saved in that only the larger vessels required clamping, and very often the field was bloodless. The hemostatic effect of the infiltration always lasted through the operation, or sufficiently long for clotting to take place in the constricted vessels, and in no case in this series did later hemorrhage occur. So satisfactory was local anesthesia in head operations that when there was a complication of other wounds the head operations were done under local anesthesia, and a general anesthesia given later for the débridement of other wounds. This applied not only to work at the front where complete operations were done, but it proved to be just as successful at the base hospitals where operative procedures were done for brain abscess and other infective conditions associated with retained foreign bodies, cerebral hernia, fungus, etc. Another great advantage in the use of local anesthesia was the possibility of cooperation by the patient in asking him to blow his breath or cough; by thus increasing intracranial pressure it was possible to quickly remove the disorganized brain tissue, blood clots and often foreign bodies. In brain abscess it had proved most valuable, not only as to location but as to the area through which it might be approached.

Local anesthesia was *par excellence* the method of choice in cranial surgery. There was no pain in the bone, the dura was insensible to cutting though it would not stand traction or rough handling, and the manipulations of the brain itself never reached the threshold of consciousness. The operative technic, however, was of the greatest importance. After shaving the head and making as complete a neurological examination as possible, the following procedure was adhered to by Neurosurgical Unit No. 1:

Complete excision of the scalp wound, avoiding contact with the lacerated edges; removal of the bone injury *en bloc*; evacuation of disorganized brain substance by having the patient blow against

his closed lips or by coughing and also by catheter suction and irrigation; the detection of foreign bodies and bone fragments by catheter palpation and, after their removal, the instillation of dichloramine-T, and primary suture of dura and scalp. If the scalp defect was too large to permit suture without tension the defect was covered by some plastic procedure. This was in many essentials the technic advocated and used by Colonel Cushing. In ventricular penetrations it was found possible, after removing the disorganized brain substance, to remove foreign bodies from the ventricles by direct inspection, using small retractors.

Observations had been made in a series of seventy-nine cases, thirteen of which were fractures with intact dura, the remaining cases representing all degrees of brain injury associated with lesions of venous sinuses, ventricular penetrations, and combined lesions with frontal sinus or mastoid complications. Nine of the thirteen fractures with intact dura were complicated with either extradural or intradural hemorrhage, producing compression symptoms of varying degree. The total mortality was represented by five deaths. Judging from reports on hand and from many cases personally examined by Major Ney, he did not believe that the late complications would be many. In the examination of about two hundred patients not a single one of abscess or cerebral hernia had been observed in any having had the complete early operation.

Dr. ALFRED S. TAYLOR expressed his appreciation of the privilege of listening to Doctor Ney's splendid paper in which there were two things that impressed him particularly: the very great interest of the intrinsic material of the article, and the complete lucidity of the presentation of a complicated and difficult subject. The application of cranial surgery as performed in the army to civil life was plain, and it was also clear that local anesthesia should be used more frequently than had been the custom.

Dr. HAROLD NEUHOF said that Major Ney had presented the best results that had been obtained in gunshot wounds of the brain of the American Expeditionary Forces. The earlier mortality figures in dural penetration were about fifty per cent. With the improvement in technic, as advocated chiefly by Cushing, this was reduced to about thirty per cent. and most of the surgeons were satisfied to have it at that low figure. Major Ney's was therefore a remarkable achievement. The technic he described was one that was followed, with a few variations, by all the teams under Cushing's command with parallel results. The principle had been to permit dural defects, even if large, to remain as such. Doctor Neuhoof himself believed that some form of dural repair was indicated and, when the tear was too large, he employed transplantation of fascia. Fascia lata was employed and entered into the dural defects. The results were satisfactory, both immediately and as later reported upon. Doctor Neuhoof stated his belief that local anesthesia for operations on the head not only proved the method of choice for war wounds but would similarly prove the anesthesia of choice in head operations in civil life. Since his return he had done several opera-

tions on the head under local anesthesia, among them a bilateral suboccipital craniotomy as well as an osteoplastic flap in the parietal region, with results that encouraged its further use in head surgery.

Colonel EDWIN BEER added a few words from his personal observations confirming Major Ney's statements. He declared that there was no doubt that these results were the best attained, but whether credit was due more to Major Ney's own skill than to the use of local anesthesia there was some question. Dr. Du Martell, of Paris, told the speaker that he did all his civil skull and brain surgery under local anesthesia and had even removed a cerebellar pontine tumor, which was a difficult procedure. The most remarkable thing, proved by Ney and others, was the discovery that the brain should be able to stand so much contamination without disastrous effect. One could not possibly get absolute sterility in these war wounds, and yet the dura could be closed as well as one could close up the knee joint, showing that the vital processes could be trusted to cope with the residue of infectious material which could not be removed.

Dr. BERNARD SACHS considered that the two most impressive points about this address were, first, the observation that local anesthesia acted as a hemostatic of the scalp; he had often thought that the large number of deaths in children following cranial surgery was due to loss of blood. Secondly, he was interested to learn that the surgeon's finger was not in future to be brought in contact with the brain substance and hereafter only the catheter would penetrate the depths of the brain. It would also be a great aid to the recognition of the presence of abscess on the operating table if the patient himself under local anesthesia could assist by exerting intracranial pressure through blowing out his cheeks, indicating the exact site and thus doing away with so much of the indiscriminate puncturing of the brain tissue that had been necessary in times gone by. It has been a delightful privilege to listen to this clear exposition of such valuable experiences and remarkable results as Major Ney had attained.

Letters to the Editors.

. OPERATIONS ON BOW LEGS.

SAN FRANCISCO, CAL., August 1, 1916.

To the Editors:

In the NEW YORK MEDICAL JOURNAL for July 12, page seventy-two, is an editorial: "The Indications for Operations on Bow Legs." We can certainly approve of a part of this editorial. Osteoclasia is a brutal and bungling procedure which has been done with ruthless frequency. We would like to add that cuneiform osteotomy is just about as bad, both procedures are very seldom required in bow legs, especially the rachitic type. It is amazing how long it takes our profession to learn how to do some very simple things in the most wholesome and logical manner. It is quite amazing how the profession advances in new achievements and clings with the utmost pertinacity to

traditional blunders. In London, England, rickets is one of the commonest of all types of deformity producing disease. Our English confrères learned, many years ago, how to handle rickets better perhaps than any other men in our profession. Bow legs of any appreciable degree should never be permitted to go untreated after the child has learned to walk. If the deformity exists in exaggerated form, it should be corrected as soon as the infant is old enough to wear a leather shoe. A simple little straight splint of light wood padded so as to protect the internal malleolus at one end and the inner side of the head of the tibia at the other is placed on the inner side of the leg and foot. The lower end of this splint should be attached by a strap of leather sewed to the inner edge of the sole of the shoe so as to hold the splint at the lower end over the malleolus. A small strap should buckle around the head of the tibia, fixing the upper end of the splint at that point. Three strips of elastic webbing long enough to surround the leg and splint also are attached to the splint and a buckle is attached to each piece of elastic webbing so that the buckle will be fixed at the posterior border of this splint. The webbing is then carried around the front of the leg, and the billet buckled at the posterior border of the splint. Care should be taken not to buckle these straps too tightly as they will cause pain. They must be however sufficiently tight to produce mild pressure over the greatest convexity of the deformity. This method will straighten ninety-nine per cent. or more of all cases of uncomplicated rachitic bow legs in from three to four months. They need be applied only in the day time. If the child is able to walk, he can run about painlessly and get well at the same time. The writer saw in the Children's Hospital on Great Ormond Street, London, in one morning fifty-five children wearing a splint similar in type to the one described. Fifteen years' experience with a large number of cases in an orthopedic clinic as well as private practice, has served to convince the writer that this method will do all that he claims for it.

At another time he will be pleased to give his method for the bloodless nonoperative method of curing knock knee. **ETHAN H. SMITH, M. D.**

COMBINED SECRETARY, OFFICE ASSISTANT AND HOME HELPER.

PHILADELPHIA, PA., August 20, 1919.

To the Editors:

Many professional men of limited means need a secretary who may or may not officiate also as an office assistant. Many qualified girls need a safe and comfortable home, and may be willing to lend a hand in domestic economies. A steadily increasing number of professional men's wives need a reliable home helper. Why should there not be made a most suitable combination, upon an equitable basis of mutualities, of these groups of petitioners. The advantages to each will be obvious. They deserve to be discussed upon a constructive and conciliatory basis. Difficulties are by no means insuperable or even serious and can be

fully met and adjusted to the abounding comfort of all the parties in interest. We must realize that the time is upon us when pronounced concessions and adjustments must imperatively be made. Radical changes are confronting society. Those are wise citizens who take candid council with his or her best self and begin at once to discard ancient prejudices, to compromise social preferences and customs in the face of inevitable dislocations. First the wife may object to the unusual, unprecedented sociodomic problem. Here we have the proposition of a young woman, a stranger, in the home who is not a servant, nor a social equal, who yet must be adapted to the peculiar situation. There we have ground for debate at once. No standards must be made to meet entirely novel and somewhat awkward demands. The sooner that situation is accepted and settled fairly and candidly the better for all concerned. The candidate for position of secretary, or office assistant and likewise contributor to domestic comforts will put in claims for special privileges.

Let matters be adjudicated with all the liberality possible. The problem will work itself out if each one is reasonable and also fully appreciates the abundant advantages for all. Some such arrangements must be made, and that speedily. Beware of those dangerous delays in foresightedness and preparedness which proved so vexing and perilous during the war. We then learned the lessons which would serve for many lifetimes. Just consider what is gained by such a triple transaction. Each of the parties in interest acquire three most important assets. Only foolish persons would object to the difficulties.

J. MADISON TAYLOR, A. B., M. D.

Births, Marriages, and Deaths.

- AUSTIN.—In Bagdad, Ky., on Friday, August 15th, Dr. Curtis Austin, aged eighty years.
 BOYLE.—In Philadelphia, Pa., on Tuesday, August 26th, Dr. Ralph R. Boyle, aged fifty-three years.
 COLLIER.—In Utica, N. Y., on Monday, August 4th, Dr. Arthur Meeker Collier, aged fifty-four years.
 COOK.—In San Francisco, Cal., on Tuesday, August 19th, Dr. Christine A. Cook, aged eighty-eight years.
 COOPER.—In Baltimore, Md., on Monday, August 18th, Dr. James C. Cooper, aged sixty-five years.
 GODFREY.—In Bloomington, Ill., on Friday, August 8th, Dr. F. H. Godfrey, aged seventy-two years.
 GREGORY.—In Greenville, Tex., on Monday, August 11th, Dr. Charles L. Gregory.
 MOODY.—In New Haven, Conn., on Tuesday, August 19th, Dr. Mary Blair Moody, aged eighty-two years.
 PIERSON.—In Morristown, Ind., on Saturday, August 16th, Dr. William M. Pierson, aged sixty-nine years.
 SARGENT.—In Lincoln, Ill., on Saturday, August 2nd, Dr. Algernon Millar Sargent, aged sixty-two years.
 SISSON.—In New Bedford, Mass., on Wednesday, August 27th, Dr. Edward R. Sisson, aged ninety-one years.
 SMITH.—In Los Angeles, Cal., on Tuesday, August 19th, Dr. Arthur M. Smith, aged forty-five years.
 THOMAS.—In York, England, on Monday, August 4th, Dr. Henrietta Martha Thomas, of Baltimore, Md., aged forty years.
 THOMPSON.—In Carbondale, Ill., on Thursday, July 31st, Dr. Curtis Thompson, aged thirty-five years.
 WILLIAMS.—In Cardinal, Ont., on Saturday, August 2nd, Dr. J. D. R. Williams, aged eighty-six years.
 WILLIAMSON.—In Bay Head, N. J., on Tuesday, August 19th, Dr. Jesse Williamson, aged sixty-six years.

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Original Communications

THE RELATION OF IMMUNIZING PROCEDURES TO LATENT INFECTIONS.*

By B. M. RANDOLPH, M. D.,

Washington, D. C.,

Major, Medical Corps, U. S. Army.

(From the records of the Walter Reed General Hospital, April 1, 1917, to April 1, 1919.)

Perhaps the most brilliant chapters in the history of medicine are those embracing the prevention of infectious disease. The most conspicuous achievements of science under this head are those for the prevention of smallpox and typhoid fever. The inoculation with vaccine virus for prevention of smallpox is a measure of such well proved efficacy, and its safety is so well established, that it is accepted without reserve by the reasonable portion of civilized peoples. Typhoid prophylaxis, on the other hand, is a recently established procedure and while its efficacy appears as thoroughly established as is that of smallpox vaccination, through the experience of the armies of the United States and of other armies, the recent institution of the practice has not as yet afforded sufficient opportunity for a study of all its relations, and it may be that improvements in technic are yet to come.

The first question to which science must give the answer to the public is, Does it do harm? There are those who have made, or are making, statements based on more or less well supported clinical data that the procedure is not perfectly safe, and may be followed by serious results. While our knowledge of the facts makes us feel secure in the statement that the proportion of serious results is so very small that it is not to be considered in view of the enormous benefit conferred by the eradication of typhoid fever, a presentation of facts is a better way to meet opposition than mere assertion of conclusions drawn from the impressions of individual experience and incomplete statistics.

With a view of collecting the data bearing on this subject, the clinical records of the Walter Reed General Hospital have been reviewed, and the cases in which any possible rôle in causing ill effects have been collected. The period covered is April 1, 1917, to April 1, 1919. During this time, the Walter Reed General Hospital served as a general army hospital in the full meaning of that term, and, in addition, performed the functions of post hospital as follows:

1. Command, Walter Reed General Hospital.
2. Military Personnel on Duty in Washington, D. C.
3. Washington Barracks, D. C.
4. Camp Leach, D. C.
5. Camp Meigs, D. C.
6. Camp Meade, Md., to November 15, 1917.
7. Camp Belvoir (Humphreys), to September 15, 1918.
8. Scattering.

The total number of admissions during the period stated above was 21,033. Of these, eighty-two were admitted primarily for the effects of typhoid vaccination, of which fifteen were rated severe, thirteen moderate, nineteen slight, and in the remainder, the degree was not stated.

SOURCE.

Command, W. R. G. H.	17
Washington (A. S. O.)	19
Washington Barracks	5
Camp Belvoir	2
Camp Leach	7
Camp Meigs	32

The total number of injections of typhoid vaccine given enlisted men at this post was 1,602; thirty-two being typhoid vaccine alone and the remainder being typhoid, paratyphoid A, and paratyphoid B, combined; that is, 1.06 per cent. were made sufficiently ill by the procedure to require admission to the hospital.

Bearing on the efficacy of typhoid prophylaxis, it is noted that thirteen admissions bore the diagnosis of typhoid on admission, or were proved to be such after admission. Of these there was failure to establish positive diagnosis in three cases, leaving nine cases of typhoid and one of paratyphoid B, in which the diagnosis was confirmed. Four of these had received no vaccine; three typhoid, and one paratyphoid. The remaining cases are as follows:

CASE No. 19,080.—Private, signal corps, enlisted June 15, 1918, admitted September 1, 1918; well until August 19th, when he received typhoid vaccine (lipovaccine); ordinary reaction with recovery; well until August 24th, when the usual prodromal symptoms began; ran the ordinary course of typhoid fever; blood culture positive for *Bacillus typhosus*; recovered. Infection was probably present when vaccine was given.

CASE No. 19,405.—Sergeant signal corps; enlisted June 30, 1917; admitted September 14, 1918; three typhoid injections of triple vaccine completed November 5, 1917; onset of prodromal symptoms five days prior to admission, i. e., September 9th; usual febrile course; only one positive culture for

*Authority to publish granted by the Surgeon General, U. S. Army.

Bacillus typhosus, September 21, 1918; recovered; clear case of failure to protect completely. The late appearance of the typhoid bacillus in the blood was unusual.

CASE No. 18,150.—Private engineers; drafted July 9, 1918; typhoid vaccines injected July 11, 1918; onset of symptoms July 21, 1918; blood and stools positive for *Bacillus typhosus*. Infection was probably present when vaccines were given.

CASE No. 22,892.—First Lieutenant A. S. A.; service fourteen months; typhoid vaccines about one year prior to admission; three injections, one week apart; present illness following pneumonia vaccines; diagnosis of typhoid fever confirmed by positive blood cultures; recovered; failure to protect. Was patient sensitized to typhoid by pneumonia vaccines?

CASE No. 18,748.—Private, transportation department; service fifteen days; admitted August 21, 1918; typhoid vaccines two years prior to admission, three injections; transfer diagnosis convalescent from typhoid and typhoid carrier; received typhoid vaccines June 3, 1918; onset of illness one week later; remaining injections not given; duodenal contents positive for typhoid bacilli; cholecystectomy; recovered. Failure to protect by first vaccine which was given two years previously.

CASE No. 19,097.—Private transportation department; one month of service; admitted September 2, 1918; typhoid lipovaccine August 16, 1918; acute onset August 29, 1918; well prior to this date; blood culture positive for *Bacillus typhosus*; died.

CASE No. 19,142.—Private first class, signal corps. Enlisted December 14, 1917. Received three injections of typhoid vaccines, the last on January 21, 1918. Admitted September 3, 1918. Prodromal symptoms began August 28, 1918. The patient died. Autopsy diagnosis, typhoid fever confirmed by positive cultures from spleen and bladder; clear case of failure to protect.

The following group of cases show a history of pathological conditions arising in connection with immunizing procedures undertaken either for immunizing or therapeutic purposes. Their inclusion here is not to be taken as an indication that the relation of cause and effect is regarded as being satisfactorily established. They are offered as a demonstration of the material afforded by this hospital, which might be quoted as furnishing data illustrating an unfavorable effect produced by immunizing procedures.

I.

CASES ASSOCIATED WITH TYPHOID VACCINE ALONE.

A. Tonsillitis.

CASE I (18,393).—Private quartermaster's corps, aged twenty years. Admitted August 8, 1918. History: Tonsillitis every year; had sore throat four days prior to admission, with fever, headache, cough, and pains in chest. The day before admission, received second typhoid vaccine injection which was followed by increase of symptoms and nausea. On admission, temperature, 100.8° F.; axillary, cervical, inguinal, glandular enlargement; urine contained albumin and casts.

Cough disappeared three days after admission. Acute follicular tonsillitis; *Streptococcus hemolyticus*, persisting. Returned to duty October 10, 1918.

CASE II (14,086).—Private quartermaster's corps, aged twenty years. Admitted April 7, 1918. Previous history good. Received typhoid vaccine injection in the morning; same afternoon had malaise and diffuse muscular pains, especially in lumbar region. On admission, had acute, exudative tonsillitis; slight fever. In hospital eight days. Returned to duty.

B. Acute Respiratory Affections.

CASE III (14,284).—Private medical department, aged twenty-one years. Admitted April 12, 1918. Previous history measles, mumps, and typhoid fever in childhood; no serious illness since. The day before admission was given typhoid vaccine injection which was followed by headache and general malaise. Arm injected and swollen. On admission, temperature 102° F. The following day, fever and cough developed. April 15th, diffuse rash; muscles sore and stiff; râles over lungs; acute catarrhal bronchitis. Fever persisted, reaching 105° F. on April 16th, and 105.5° F. on the 20th. Leucocytosis, 23,600; *Pneumococcus*, Type IV, in sputum. Temperature became normal April 21st. April 22d, erythematous, nodular rash all over body; peliosis, rheumatic type. April 23rd, eruption faded; a few scattered petechiæ which faded, leaving a bluish discoloration. Returned to duty, recovered, May 6th.

CASE IV (14,030).—Private quartermaster's corps. Admitted April 5, 1918. Previous history good. A few hours after triple typhoid vaccination, had fever, headache, malaise. On admission, temperature 103° F, which continued four days, after which it became normal. Diagnosis: Typhoid vaccination; acute catarrhal, bilateral bronchitis. Returned to duty April 17, 1918.

CASE V (12,851).—Private engineers. Aged thirty-nine years. Admitted March 6, 1918. Five days before admission, typhoid vaccine injection II. Since injection, had had weakness, generalized pain, chills, fever, headache, cough. Temperature normal, on admission, but rose the following day to 102° F. Next day fell to normal. Diagnosis: Typhoid vaccination, with acute bronchitis. Returned to duty, improved, March 14, 1918.

CASE VI (14,680).—Private quartermaster's corps. Admitted April 20, 1918. The morning of the day before admission, received injection of triple typhoid vaccine; in afternoon, chills and headache with extreme pains in the arm; general malaise, moderate cough. On admission, temperature 99.4° F; acutely ill. Crepitant râles, angle of left scapula. Returned to duty in six days. Diagnosis: Bronchitis, complicating typhoid vaccination.

CASE VII (13,795).—Captain engineers. Admitted March 31, 1918. Was well two days before admission. Received typhoid vaccine injection and same afternoon had chills, fever, headache. Next day, dry cough with tightness and pain in the upper anterior thorax; paroxysmal cough and chest pain; moderate mucoid expectoration. On admission,

temperature 102° F, continued until April 6th; afterwards returned to normal. Diagnosis: Typhoid vaccination and acute bronchitis. Returned to duty April 10, 1918.

CASE VIII (14,261).—Private quartermaster's corps. Aged eighteen years. Two weeks prior to admission, caught severe cold. Had had cough and had been feeling poorly ever since; in hospital five days prior to transfer here. Typhoid vaccine injection two days before admission. Has had night sweats for the last few nights. On admission, temperature 100° F, pulse 120; painful cough, cervical glands enlarged, moist râles over entire chest; tachycardia. Temperature remained slightly irregular for one week after admission. Remarks: Question of cold or bronchitis, apparently aggravated by typhoid prophylaxis. Remained in hospital three weeks and returned to duty.

CASE IX (12,549).—Private engineers. Admitted February 24, 1918. Had a severe cold three weeks before entering the service and felt broken down. Typhoid vaccine I, three weeks ago; has not been well since. Third injection four days prior to admission; a few hours later had chills and fever; has felt cold ever since. On admission, temperature 99° F, pulse eighty, respiration twenty-two; blood pressure 100-75; slight cough with yellowish expectoration; coarse râles generalized over chest; leucocytes, 11,200; urine contained albumin and casts; malaria negative. On day of admission, temperature rose to 102° F; next day fell to normal. March 5th, abrupt rise of temperature. March 8th, death. Diagnosis: Bronchopneumonia; evidence of old syphilitic infection, otherwise the autopsy was negative.

C. Arthritic Type.

CASE X (7,432).—Recruit. Admitted June 10, 1917. In the morning of the day before admission had pain in right shoulder and both ankles and knees. Received second typhoid injection in the afternoon. Admitted seriously ill, with temperature 104° F; fever continued until August 1st; seriously ill with acute polyarthritis. Leucocytosis, 17,800. Diagnosis: Arthritis, with symptoms heightened by typhoid injection.

CASE XI (11,740).—Private quartermaster's corps. Aged twenty-three years. Previous history: measles, chickenpox, in childhood; smallpox three years previous to admission. Admitted February 4, 1918. Was well when he received first typhoid vaccine injection; next day, when on guard, had aching pains in both knees, which disappeared in a few days. A week later he received the second injection. The following day he had severe pains in both knee joints. Pain and swelling of knees persisted till admission. On admission, tonsils hypertrophied and throat slightly injected; slight irregular temperature which continued until February 28. February 15th, received the third prophylactic injection without any reaction. Diagnosis: subacute mild arthritis in both knees. Returned to duty March 18, 1918.

CASE XII (14,652).—Private engineers. Aged twenty-two years. Admitted April 19, 1918. Previous history: no illness sufficient to prevent working.

April 2, 1918, typhoid vaccine I injected, was sick for a day or two but continued working. April 12th, second injection; next day had cramps in both ankles and knees; weakness increased and both ankles, knees, and hips became swollen and tender. On admission, temperature 101.6°; ankles and knees swollen, tender, red; cervical and inguinal adenopathy; pain severe and prevents complete physical examination; acute febrile condition, lasting ten days, with irregular temperature reaching 104°. Leucocytosis 24,800. Temperature permanently normal, May 2d. Third injection not given. Good convalescence; duty July 3d, 1918. Diagnosis: acute rheumatic fever, following typhoid vaccination.

CASE XIII (18,552).—Private quartermaster's corps. Aged thirty-four years. Admitted August 14, 1918. Previous history: three years before had pain in the left hip which lasted five weeks and he then recovered. Has had no trouble since. Three days before admission, when perfectly well, received an injection of typhoid vaccine II, which was followed by headache, fever, and general illness. August 13th, fever, headache, diarrhea; throat somewhat sore and slight dyspnea. On admission, acutely ill. Temperature 103.2°; returned to normal the following day, and remained so until September 2d. August 21st, had pain in left hip joint. August 22d, received the third injection. September 2d, acute rise of temperature with pain in sciatic nerve attributed to taking cold. Discharged as recovered, October 28th.

CASE XIV (12,800).—First lieutenant, medical reserve corps. Aged thirty years. Admitted March 4, 1918. History: acute muscular rheumatism with iritis, 1906; typhoid fever, 1910. February 12, 1918, received an injection of typhoid vaccine III. One week previous to admission, slight sore throat with some cough and expectoration. On the evening of March 2d, dyspnea on exertion. March 4th, before admission, temperature 102°. On admission, showed a diffuse erythema of the entire body. He was held under observation as a scarlet fever suspect. Tonsils enlarged and hyperemic; eruption faded in two days; temperature continued four days. Discharged but still had a slight persistence of muscular pain. The question arises as to whether typhoid vaccine had any effect in activating the tendency to rheumatism.

D. Tuberculosis.

CASE XV (8,781).—Private engineers. Aged twenty-two years. Admitted October 14, 1917. Family history negative. Previous history of typhoid, two and a half years before. Two days before admission, received an injection of typhoid vaccine. Soon after, began to feel badly at drill, and had chills the same night. On admission, temperature 102.4°, pulse ninety-eight, respiration twenty. Left arm inflamed, and pain in the right side. Diagnosis: Pulmonary tuberculosis. November 28th, contracted diptheria, a hospital infection, from which he recovered.

CASE XVI (8,682).—Private field artillery National Army. Aged twenty-four years. Service one month. Admitted October 7, 1917. Occupa-

tion, lumber business. Family history negative. Had pneumonia nine years ago; has been treated for weak lungs since this illness. While at camp, caught cold and began to cough. Received an injection of typhoid vaccine I, and had pain in back for a week. October 3d, received typhoid vaccine II, and soon began to feel so badly that he had to go to bed. Sent to Walter Reed General Hospital. On admission, temperature 103.6°, pulse 108, respiration twenty-six; face and body red and swollen, throat much inflamed, no membrane; numerous râles, right upper, and middle lobes, and left upper lobe. Diagnosis: pulmonary tuberculosis. Discharged from the army.

CASE XVII (13,408).—Private engineers, aged twenty-nine years. Service nineteen days. Admitted March 21, 1918. Family history: father died, cause unknown. Otherwise negative. Previous history: measles, mumps, pertussis and scarlet fever in childhood; pneumonia five years before; otherwise well. Felt perfectly well up to the time of entering the service. In February, after receiving vaccine, became very sick, bronchitis developed and he was admitted to the post hospital. Returned to duty February 28th, lost nine pounds, was very sick, and continued to cough. Reentered post hospital March 4th, and was transferred to Walter Reed General Hospital March 21st. Examination showed extensive pulmonary tuberculosis, which was confirmed by positive sputum findings.

E. Adenitis.

CASE XVIII (7,784).—Private engineers. Admitted July 19, 1917 with left inguinal adenitis, nonvenereal, which went on to suppuration and he was treated by incision and dilation. Recovered. Duty August 7, 1917. Patient thought that the heavy labor, to which he was not accustomed, caused swelling of the glands. He did not become acutely ill until after he had received typhoid vaccine. Other factors not properly excluded by the record. The only question arising is whether the local irritation of the gland was stimulated by the typhoid prophylaxis.

F. Albuminuria.

CASE XIX (15,576).—Private medical department. Aged twenty-four years. Admitted May 15, 1918. Two days previously had received typhoid vaccine which was followed by chills, fever, vomiting, diarrhea, rigidity and loss of control of facial muscles; teeth chattered; persistent nausea. Admitted, acutely ill with severe headache, face congested, and general malaise. Temperature subnormal but rose to 101.3° three days after admission; felt promptly and remained normal. Urine contained albumin and granular casts. Recovered and returned to duty, May 21, 1918.

G. Gastrointestinal.

CASE XX (19,037).—Private medical department. Admitted August 30, 1918. Two days prior to admission had received typhoid vaccine III. Has not been well since. The afternoon following injection, vomited, had abdominal cramps, and diarrhea, which lasted twenty-four hours; temperature on admission, 101.4°; some tenderness over abdomen; temperature normal second day in hospital.

Returned to duty September 4th. Diagnosis: colitis following typhoid vaccination.

CASE XXI (15,021).—Private engineers. Aged twenty-two years. Admitted April 29, 1918, with transfer diagnosis of hyperpyrexia. History: in good condition on the morning when he received typhoid vaccine. He was brought into infirmary at noon, delirious, with no cause ascertained; admitted at 2:40 p. m. same day. Semidelirious; fifteen minutes after admission totally unconscious. Temperature 104.6°, pulse 108, respiration twenty-eight. Passed almost continuous stools, of blood and mucus. Body cold, with clammy perspiration. The anus measured 1.5 inches in diameter and was ulcerated; vomited greenish mucus; pulse febrile and weak; pupils pin point and fixed, later becoming dilated; cyanotic. Physical examination negative except as noted. Mark of typhoid inoculation not visible. Died five p. m. The following history received from the camp surgeon: On the 29th he drilled in the morning, at 10:30 a. m. received first typhoid inoculation, apparently in normal condition at the time. 12:30 p. m. brought to infirmary with a temperature of 106° (axillary), semiconscious and delirious. Incontinence of stools developed in ambulance. Was said to have ivy poisoning. Autopsy showed acute hepatitis, gastroenterocolitis. Metallic poisoning excluded.

CASE XXII (14,521).—Private engineers, aged thirty years, in service eleven days. Admitted April 17, 1918. Previous history, negative. One day after injection of typhoid vaccine, began to have severe pains in the right lower quadrant of the abdomen. The pains were cramplike in character, and he did not improve. On admission, temperature 99.2°. Abdominal distention, marked tenderness right lower quadrant. Operation on day of admission. The appendix was found to be infiltrated from base to tip; lumen patent throughout; contents fluid; plastic exudate and a little feces. About the appendix were a few adhesions and a little clear fluid. The patient recovered.

CASE XXIII (13,127).—Private engineers. Aged twenty-eight years. Service, twenty-one days. Admitted March 14, 1918. Previous history: diseases of childhood; no serious illness. Never had appendicitis before. On March 12th he received an injection of typhoid vaccine while on duty. While lying on the ground he felt chill and ached all over. The same night he was awakened by severe abdominal pains and has had no sleep since. Magnesium sulphate was given the next morning and this was vomited. On admission the temperature was 99.8° F., leucocytes, 16,600. Operation, March 14th. Appendix found gangrenous and purulent. The wound was drained and the patient recovered.

CASE XXIV (18,249).—Private engineers, aged twenty-six years. Admitted August 6, 1918. History: acute appendicitis two years previously; another attack two months previously. June 31st he received an injection of triple typhoid vaccine which was followed by headache, fever, general malaise, pains in loins and abdomen. Admitted for operation, chronic appendicitis. The patient recovered and reported for duty October 20, 1918.

H. Additional.

CASE XXV (16,268).—Private quartermaster's corps, aged twenty-four years. Was in service one month. Admitted June 11, 1918. Previous history: whooping cough and tonsillitis, dates not given; other infections, including venereal, denied. Present illness, one day ago, had a slight cold in morning. In the afternoon received an injection of typhoid vaccine. Returned to work and felt sick. Had a severe chill, vomiting (five times), fever, and general pains. Investigation showed that he had received two previous inoculations and had had no trouble; that this was the third; that the vaccine used was the regular post stock of army vaccine, and that others were inoculated at the same time without abnormal reactions; that at the time of receiving inoculation, appeared well. On admission (June 11, three p. m.) temperature 105.4° F, pulse 104, respiration twenty-four. Acutely ill; face and eyes congested; dyspnea present; cyanosis of lips. Patient feels drowsy and this morning vomited twice. Examination showed, in addition to this, a systolic murmur at apex of heart, not transmitted; swollen area due to vaccination, left arm. Progress: June 12th, morning, somewhat better; still cyanotic, especially the finger tips and mucous membranes; muscular quality of heart sounds more feeble. Complained of some epigastric pain. Has vomited three or four times. June 13th, considerably worse; fever increased; pulse poor quality, rapid; general cyanosis; picture of vasomotor collapse. Marked epigastric tenderness and rebound sign; more or less diffuse abdominal tenderness; picture strongly suggests peritonitis. Rectal examination shows generalized tenderness; leucocytes, 45,400; blood culture sterile. Eleven a. m. pulse imperceptible; muscular quality of heart slightly improved since stimulation began; treatment by adrenalin, camphor, caffeine; intravenous saline 250 c. c. The patient is emotional, tossing and attempts to get out of bed. Temperature rose to 107°. The man died at 1:25 p. m.; no bowel movement. The autopsy, which included a microscopic examination, showed, in addition to congestion of spleen, bronchi and meninges: 1, Acute destruction of liver cells with fatty degeneration and infiltration; 2, acute toxic nephritis with parenchymatous and fatty changes, and, 3, fatty inflammation of gastric mucosa; edema of coats and loss of surface epithelium of alimentary canal. Cultures negative. Metallic poisoning excluded. Diagnosis: acute toxic gastroenteritis.

A board of investigation was held, at which it was brought out that on the evening of June 10th, this soldier attended a dance, and that half an hour after eating ice cream, he felt badly; that of two other soldiers attending the same dance and eating the same ice cream, one had nausea and regurgitation the same night, the other cramps in stomach the next day, with loose bowels, weakness and headache. Further, that the patient had purchased some pills which, on analysis, were found to contain acetanilide. In view of which, the board found that the illness was due to ptomaine poisoning, possibly complicated by acetanilide poisoning. Final diagnosis: Acute toxemia of undetermined origin, following an injection of typhoid vac-

cine III. Acute vasomotor paralysis. The case is presented with this series not as offering an instance of death due to typhoid vaccine, but because this factor has not been scientifically excluded as being a factor in this soldier's illness.

II.

VACCINE INJECTION REACTIONS ASSOCIATED WITH SMALLPOX PROPHYLAXIS ALONE.

Tuberculosis.

CASE XXVI (8,017).—Private engineers; aged twenty-seven years. He was in service one month. Admitted August 12, 1917. Mother and one brother died of tuberculosis. Has never been well, always tired, had digestive disturbances all his life. Has lost ten pounds in the past month. Smallpox vaccination eight days prior to admission. Had been coughing for one week. On his admission temperature was 100.6°; cough, headache; pain in cardiac region, dyspnea, and stuffy sensation in chest. Examination showed impaired resonance and crepitant râles, left base posteriorly and laterally; moist râles, diminished resonance, impaired respiratory excursion, lower segment, left lung. Smallpox vaccination positive. The x ray showed mediastinal adenitis, both sides; infiltration midposterior portion, left lung. Diagnosis: pulmonary tuberculosis. Later note.—Prior to enlistment, was a farmer and used to outdoor work. States that lung condition has become noticeable since vaccination.

III.

VACCINE INJECTION REACTIONS ASSOCIATED WITH SMALLPOX AND TYPHOID VACCINE.

A. Cardiac.

CASE XXVII (7,929).—First lieutenant medical reserve corps. Admitted August 3, 1917. Previous history: measles, mumps, pertussis, diphtheria, tonsillitis, all in childhood; none since. July 26, 1917, received typhoid prophylaxis, and smallpox prophylaxis at the same time, but the latter did not take. Six hours after injection had dizziness, nausea, diarrhea, muscular pain and stiffness of left shoulder and elbow (the arm was injected). The following morning the temperature was 102.4° F; dyspnea and precordial distress; urticarial spots diffuse. Duration of symptoms, three days, then gradual improvement. On admission, felt well, but had dyspnea on exertion. Diagnosis: mitral insufficiency. In 1916 passed civil service examination and life insurance examination. July 25, 1917, examined for commission at Army Medical School, the day before typhoid injection, and was accepted. Remark: Question of the relation of the typhoid prophylaxis to cardiac condition.

B. Appendicitis.

CASE XXVIII (11,385).—Second lieutenant signal corps. Was in service ten days. Admitted January 22, 1918. Previous history: measles, pertussis, tonsillitis, nasal perforation, all in childhood; no illness since. Two days prior to admission, caught cold on sleeping car. Next day received an injection of typhoid vaccine I; severe local and systemic reaction; headache, high fever, diffuse aching, slight diarrhea and soreness in bowels. On admission, the temperature was 99.8°; feeling better.

January 28th, he received an injection of typhoid vaccine II, and smallpox vaccination. January 29th, moderate reaction from typhoid prophylaxis; leucocytes 7,400. February 3d, smallpox vaccination beginning to take; coincident onset of appendicitis; leucocytes 15,400. Transferred to surgical service, February 4th. Operation, appendectomy and liberation of adhesions. Recovered. Diagnosis: Typhoid prophylaxis; acute appendicitis developing after smallpox inoculation.

C. Tuberculosis.

CASE XXIX (9,004).—T. S. W., lieutenant colonel national guard. Aged twenty-eight years. Has had eleven months' service. Long service as officer in national guard. Previous history: measles, chickenpox, pneumonia, 1896; no illness since; when twelve years of age, coughed up a little blood. Five weeks previous to admission, received vaccination for smallpox and triple typhoid. In four or five days chills developed with sweats and fever; in bed at intervals ever since. Diagnosis: pulmonary tuberculosis, both upper and right middle lobes. Cavity formation and positive sputum.

CASE XXX (10,603).—E. D., second lieutenant 154th depot brigade. Aged twenty-eight years. Was in service four months. Admitted December 28, 1917. Family history excellent. Previous history: always well, no infectious diseases; in hospital last November, 1918, for five days for bowel trouble; good recovery. Shortly after going to duty, December 1st, caught cold from exposure. Received triple typhoid vaccine, smallpox vaccine, and meningitis vaccine within two days. About December 14th, he showed a severe febrile reaction, cough, and hemoptysis; symptoms improved; shortness of breath persistent. On admission, he had dyspnea and asthenia. Examination showed acute exacerbation of old tubercular infection, both lungs, all lobes. Discharged.

CASE XXXI (12,204).—First lieutenant engineers. Aged twenty-six years. In service two months. Admitted February 15, 1918. Occupation before commission, civil engineer. Maternal grandfather, paternal aunt, and two children of latter had tuberculosis. Previous history of measles, mumps, chickenpox, and pertussis, in childhood; subject to winter colds. Nine days prior to admission, received smallpox vaccination and typhoid vaccine I. Six days later, at one p. m. received typhoid vaccine II. Three hours later, fever, nausea, chills developed and sweats the next night. Had had a cold for four weeks previously, with a cough and blood streaked expectoration; pain and soreness in the chest. He gave a previous history of active tuberculosis, with positive sputum. On admission, slight fever, generalized aching; left arm painful, cough and blood streaked expectoration. Diagnosis: Cellulitis, left arm, following smallpox vaccination; pulmonary tuberculosis, right upper and middle lobes. On April 18th, he returned to duty for limited service, improved.

CASE XXXII (9,534).—Private engineers; aged twenty-two years. Was in service less than one month. Admitted November 16, 1917. Family history negative. He gave a previous history of measles, pertussis, tonsillitis; otherwise negative.

Six days before admission, he was taken ill following typhoid and smallpox inoculation, with severe cough, slight hemoptysis, constipation, weakness; has lost nine pounds. Diagnosis: active pulmonary tuberculosis, right upper and middle lobes.

IV.

ASSOCIATED WITH VACCINE THERAPY OF GONORRHEA. *Tuberculosis.*

CASE XXXIV (9,667).—Private infantry; aged twenty-nine years. Has been in service three years. Previous history: rheumatism at fourteen years; gonorrhea, 1915; recurrence of rheumatism, 1916. August 7th, 1917, admitted Ancon Hospital, Canal Zone. Diagnosis: Gonorrheal arthritis, and estivo-autumnal malaria. Received about twenty-five vaccine injections for gonorrheal arthritis, without improvement. Under observation in this hospital, arthritis disappeared but active tuberculosis developed in both apices. Transferred to Ft. Bayard.

A review of the literature since 1913 does not yield a great amount of material. Doubtless when the material furnished by the present war is put in tangible form, there will be more data from which to draw conclusions. Much of the literature of the war is not available at present.

The French Ministry of War excluded from the general typhoid vaccination men whose state of health is doubtful; those who are affected with the prodromes of a malady; also those with tuberculosis, rheumatism, and those who had had typhoid. Men with acute alcoholic symptoms were inoculated at a later seance (Godart).

Bardach (1) reports a case of tertiary syphilis becoming active following typhoid prophylaxis.

Budde (2) Herpes zoster, cervical.

Morax (3) Herpes zoster, mucous membrane and cornea.

Hirsch (4) Vestibular neuritis.

Poirenu-Delpech (5) Latent gastric ulcer becoming active with hematemesis.

Von Dziemboski (6) Recrudescence of Malaria.

Bourges (7). The following very interesting case of intense anemia, abrupt and transitory in a former malarial subject, following typhoid prophylaxis. Sailor, aged thirty-two years, admitted August 16, 1915. Previous history of malaria, 1907; recurrence, 1910, of malaria with liver abscess. Latter operated upon; recovery. 1911, recurrence of malarial symptoms. Since 1912, no recurrence, and habitual good health. Present attack morning of August 14th, while in good health, and on full duty, received an injection of typhoid vaccine. In the afternoon he had malaise, lassitude, violent headache, dizziness; same night severe chill, followed by high fever, disappearing with abundant sweat. August 15th, striking pallor noted and the patient was sent to the hospital. On admission, he showed extreme pallor of skin and mucous membranes; dizziness, ringing in ears, dyspnea on exertion. Blood hemoglobin thirty-five. Leucocytes 17,000. Red blood corpuscles 1,800,000. Anisocytosis and nucleated red cells. Progressive and uniform improvement. September 26th, hemoglobin ninety. Red blood corpuscles 3,990,000 and of normal appearance. Subjective and objective signs

of illness disappeared and patient discharged, convalescent. Careful search failed to disclose any cause for clinical picture other than the typhoid vaccine.

Cecil reported 30,000 typhoid vaccinations from Camp Upton, and noted no evidence of tuberculous activation. Brown, Heise, Petroff, and Wilson (9), at Saranac Lake, gave antityphoid inoculations to 124 tuberculous patients; incipient twenty-five; moderately advanced, ninety-three; far advanced six. While a few (4), had temporary exacerbations of pulmonary symptoms (one a nonactive case), the conclusion of the authors is that there is probably no influence upon the tuberculous process by the administration of typhoid vaccine. No permanent untoward results followed in any case. Mark (10) reports vaccination of 200 tuberculous patients of all stages against smallpox; there were fifty takes; and no changes in the lungs incompatible with the usual course of tuberculosis.

Relative to typhoid reactions, from chief medical service, Camp Meade, Maryland. "Three types of reactions attracted our attention, particularly because diagnostic difficulties arose. These types were: 1. A reaction simulating acute appendicitis. A number of these cases were operated upon, but both the surgeon and the pathologist agreed that there was little or no inflammation in the appendix. Latterly very few of these cases were operated upon. 2. A type of reaction simulating meningitis, with stiff neck, suggestive of Kernig and excruciating headache. Lumbar puncture was done on many of these cases, the fluid always being normal. The headache was relieved by removing some of the cerebrospinal fluid. This type of reaction was regarded as a meningismus. 3. Purpuric reactions. These cases varied from severe epistaxis, back of the nasal pharynx, associated with blood in the urine, for a few days, to extreme epistaxis, hematuria, and a diffuse general purpuric eruption which was associated, in a few cases, with effusion of blood in some joints. One patient had to be operated upon after convalescence, in order to remove a large growth from an elbow joint. No patient in any of the series died."

The report from the chief surgeon of the United States General Hospital No. 14, November 1, 1918, noted twenty-five cases of an acute gastrointestinal type following typhoid vaccine injection, seven of which were admitted with diagnosis of acute appendicitis. Three of these had previous attacks of colic and indigestion, suggesting the acute lighting of a chronic condition. One of these patients was operated upon and the diagnosis confirmed.

SUMMARY.

The evidence furnished by the records of this hospital indicate that in rare instances latent infections may be made active by immunizing procedures, especially in those harboring tubercle bacilli and streptococci.

In exceedingly rare instances, there may be an acute and even fatal reaction of the nature of anaphylaxis.

CONCLUSIONS.

The anaphylactic reaction is so infrequent as to be of the nature of an idiosyncrasy. The lighting

up of an inactive tuberculous process is a calamity for the individual concerned. The activation of latent streptococcal infection is not, in every case, a misfortune, as it may determine a curative procedure. This would not hold good in case of metastases which might occur, such as septic arthritis or endocarditis.

The occurrence of such accidents is so rare as not to be weighed against the irradiation of smallpox and typhoid by universal prophylaxis.

The question of the existence of a latent infection should be weighed before subjecting an individual to elective vaccine therapy.

Improvements in the technic of handling the prophylaxis of those who give evidence either from history or examination, of the possibility of latent infection, are suggested. Fatigue, exposure, indiscretion of diet, should be prevented by authority and not left to the responsibility of the soldier.

REFERENCES.

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THE EMOTIONS AND THEIR MECHANISM IN WARFARE.

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THE RÔLE OF EMOTION IN MILITARY UNFITNESS.

It is alleged that the emotional strain of the war is the direct cause of many functional disturbances of long duration seen in the soldiery. There are strong reasons against this interpretation. In the first place, the number of men showing emotional perturbations apart from those having organic disease or definite toxic conditions is comparatively small, as shown, for instance, in the following figures of the army centre of Eprenay:

Among ninety patients there occurred emotional confusion in 1.3 per cent.; commotion in 5.10 per cent.; general neuroses, 2.5 per cent.; alcoholic psychoses, 2.5 per cent.; various trench life neuroses, 5.8 per cent.; confusion, 15 to 31 per cent. In army zones, among 1,600 patients, of which forty-five per cent. showed mental symptoms, forty-five per cent. showed psychoneurotic symptoms, and ten per cent. showed organic nervous disease.

If it is contended that most of the cases of emotional disturbances are undetected in the army centres and the patients are evacuated to the interior, figures again show the contrary, for the proportion of cases in the army centre of Marseilles is as follows:

In 1,249 cases of functional nervous disorders only seventy patients were classed as emotives, but it is proper to observe that there must have been several others among the 102 classed as neurasthenics and psychasthenics, and even among the 143 classed as commotions.

At Maison Blanche out of 305 patients who would have been placed in the category of functional nervous disorders by other clinicians twenty were diagnosed as emotives, that is, one per cent.; at Rennes emotional syndromes were diagnosed in twenty-two per cent.; at Bourges out of 10,000 patients emotivity was diagnosed in thirteen per cent., but these included also asthenics. All these figures show that the relative number of emotional cases compared with those definitely hysterical in nature and rapidly cured is very small. Furthermore, patients of the emotional type, such as those who have been called psychasthenics, are able to remain in the firing line without greater inconvenience than they would suffer in civil life. Indeed, they do not break down until they are given responsibilities too great for them to bear.

It must always be remembered that in really severe fear physical signs such as pallor of the face, changes in the pulse, sweating, pilomotor reactions, and pollakiuria, are always present. Tremor, when it occurs, does not possess any characters which enable us to distinguish it from an assumed tremor, and is a very poor ground on which to make a diagnosis. Tachycardia is not a diagnostic criterion, because tachycardia is often developed in many patients who are not at all in a state of fear. It is a result of cardiac exhaustion, intoxication, or disorder of the thyroid gland, none of which may have anything to do with the emotions as regards their origin. True anxiety states tend to make themselves felt during sleep by modifying the dreams and even by creating insomnia. Indeed, in some instances, the patient shows himself capable of overcoming his dread during the day but he is overcome by it when his volition is in relative abeyance as during sleep. In these cases the patient is awakened by terrifying dreams and gradually loses the power of resistance in consequence. It is a very different state from that of the alleged emotive type, which in reality is the hysterical type. When these last cases are genuine they must be completely differentiated from asthenic conditions. The real mechanism is an associational fear psychosis.

The importance of the distinction in practice is that such cases are readily curable but only by proper psychotherapy, whereas it is perfectly useless to cure by psychic means symptoms which are the result of asthenia whether constitutional or acquired. These latter patients are in any case unfit because of their physical weakness for hard campaigning. The men we are considering, however, are those who break down suddenly in consequence of what is alleged to be an emotional shock or the culmination of prolonged emotional strain.

Among these patients are two distinct types, namely, 1, those who are simply fatigued, and in whom in consequence the power of inhibition has

been lowered by the mechanism previously alluded to, and, 2, those in whom there is no question of exhaustion—the psychogenetic cases. The real mechanism of this latter type is the conditioning of the mental attitude by a belief that they are no longer capable of withstanding what they have learned to believe is the exceptional psychic strain of life at the front, i. e., by suggestion.

It is this vicious mental attitude which has to be changed in order to cure the condition. It is much easier to do this in the case of soldiers recently affected in this way, than in the case of civilian patients with associational fear psychoses and anxiety states of long duration. It can be done, however, in these latter patients in a comparatively short period of time by a proper understanding of the patient and a reconditioning of his reactions toward the situations which have hitherto provoked dread. Such instances are the following, briefly summarized:

They are types of accidental phobias of an intellectual order, which are derived from a misunderstanding due to autosuggestion, and are easily curable. Thus, in a lady without the least psychopathic heredity, who for eight years had severe claustrophobia accompanied later by agoraphobia necessitating a companion when she left the house, a cure was effected in ten days. This was done by finding out the circumstances which had induced the first symptoms and then reconditioning the patient's reactions by compelling her to explain them in writing, by persuasion of the most impersonal, indirect kind, and finally by psychomotor exercises directed toward overcoming one particular difficulty, viz., that of crossing a wide space alone.

Again in a lawyer, twenty-eight years old, who had always been obsessed by a fear which he could not define, and apropos of no particular event or circumstances, it was ascertained that his dread originated in the teachings of a relative who had done all he could to inculcate in the minds of the boys with whom he dealt that "fear of the master was the beginning of wisdom," and so he had succeeded in poisoning the patient's life. In addition there was a highly charged psychopathic heredity on both sides of the family, and two brothers seriously defective, so that the patient strongly believed that his fear was the product of a degenerate constitution causing moral cowardice which the great efforts he had made in subjecting himself to all sorts of danger had failed to overcome. Nevertheless he has remained well under very trying professional conditions for eight years as a result of the reconditioning of his attitude toward himself which was effected in less than two weeks' time.

A farmer lad of twenty-three years, not of high mentality, impressed by a notion of his own inferiority, made four attempts at suicide after a long period of seclusion and mental depression. He has now for six years been a successful producer on his mother's farm as a result of a few days' resetting of his ideas, during which he was taught the error of his inductions about onanism and learned to respect himself once more. The fundamental difference between the mechanism of the two types of phobic obsession is that in the one case we find an

emotional predisposition of the patient inherent in the constitution of his organism which compels him to react unteleologically to circumstances which the average man deals with without serious perturbation. The behavior of the pantophobic of this kind is only an attenuated example of the very easily excited uncontrollable phobic reaction of the patient who is in a state of intoxication such as one so commonly sees in the eruptive fevers, in chronic alcoholism, and in other forms of mental confusion, and resembling those ensuing upon malnutrition or exhaustion, where the confusion indeed may be very slight, but where the phobic reaction may be most incommoding. A fact which points to another important element in the symptomatology of the phobic is the wish to conceal his foible from others, his belief that his morbidity is very grave, his dread that his disease will progress to a degree constituting insanity, his fear of discovery. In many cases there is added to these feelings that of shame at his own weakness concerning what he feels to be an absurdity. In such cases the discovery of the mechanism of the origin of the particular phobia is an important element in enabling the patient to comprehend the real nature of his condition.

It is only when this is understood that he is able to view his reactions rationally, almost impersonally. He learns to see in what way they have occurred, and is thereby enabled to forestall them. This must not be done by a cowardly avoidance of the situations which provoke the phobia, but by facing them with a clear and open mind and analyzing his own relationship to the situation each time it arises. In this way, the situation rapidly becomes shorn of its emotional aspect, for the patient has learned to view it scientifically, whereupon the morbid affect, which it has formerly aroused, ceases.

This method, which I have always found successful, is essentially very different from the former methods in which these patients were treated, such as emphasizing the lack of gravity of the phobia, by pooh-pooing it, by ridiculing it, or worse still, by attempting to distract the patient in occupations, recreations, or, worst of all, by hypnotism, isolation, or rest cures. These methods, so far from being beneficial, are really harmful. The rest cure, for instance, gives the patient more occasion to brood upon his trouble, and even hard work and occupation sometimes fail to arrest the morbid process. Indeed in some instances intense occupation only gives opportunities for the patient to multiply the circumstances capable of provoking his phobia, while hypnotism further aggravates suggestibility.

For instance, in one exceedingly hard working lawyer his phobia of the number 13 and of the day Friday so fastened itself upon him that there was scarcely any hour of the day which he could not associate with his superstition by methods of addition, subtraction, multiplication, and division of numbers, so that the more engagements he made the more he had to struggle against this tendency. In the case of another patient, also a lawyer, intense application to study only made more prominent his consciousness of the difference between himself and others.

None of these methods of treatment aim^{at} the

cause of the condition as all medical art should. The essential cause of phobias of this type is a conditioning of the affective reaction toward a given situation because of a mistaken notion regarding it. The mechanism is most simply and clearly illustrated by the reactions of the animal in whom a given signal has always been associated with a given experience.

THE PRINCIPLES OF CURE.

Now, each of these patients suffered a true emotion of fear during the periods in which there was brought to consciousness the situation which was in each case legitimately enough the subject of dread on account of the way in which it was regarded.

The principle was no different from that of the way in which the dog in Pavlov's experiment learned to regard with dread the signal which warned him of the arrival of his master bearing a whip with which he would be beaten. The signal immediately provoked a severe state of fear with all its physical accompaniments. But this reaction was very easily reconditioned into a reaction of pleasure at hearing the signal after reeducation of the dog taught him that the warning was no longer one of a beating but of a piece of meat.

On the same principle, the patient, who has hitherto feared to cross an open space because of the dread that his heart may give way and that he may be run over by a passing vehicle, and in whom the physical reactions of terror develop in consequence, can, when he is taught that the basis for his dread was a false one and that there is no danger of his fainting, very quickly learn to cross that open space without qualms. Even when this more natural type of substitution of one belief for another is not available, as for example when the patient's fear is well founded, yet his reaction toward the fear provoking situation may be changed by imbuing him with a different attitude toward it. This is really quite a commonplace procedure, for it is the means by which the vast majority of men willingly encountered the great probability of severe injury or death in the war. The attitude of the physical coward is replaced by that of the patriotic hero. Indeed in most cases the ordinary solicitations, such as those of *esprit de corps*, suffice to secure the mental attitude of bravery. It is in the cases where the usual motives have not sufficed and where the emotion of fear dominates the patient that the psychiatrist is called upon to exercise his skill in providing the patient with insight and motives powerful enough to change the way in which he looks upon his own relation to duty, country, and death. Here again the psychotherapist is only performing the kind of task he is asked to perform in civil life, namely, the reconditioning of a patient's reactions toward difficult situations which the usual motives of business, social or family life have not been able to effect.

It must be remembered that the majority of patients who present emotional reactions of this type tend to exaggerate them in order to justify in many instances an apparent cowardice which they themselves honestly reprehend. They, so to speak, nourish their emotional reaction by keeping that which

stimulates it in the foreground of their consciousness. They become beset by that which disturbs them. Indeed they take a certain pleasure in watching the consistency with which they start at a sound, recoil at a movement, tremble at a loud word. Some of these patients are of the mythomantic type, and are really playing a rôle without being themselves quite aware of the fact.

It must always be remembered that an emotional reaction to sudden and unexpected fright is natural although quite variable in different individuals. It is only its persistence that is abnormal. This persistence, however, is not due to the quality or gravity of the emotion itself, but is due to the fact that the state is, so to speak, fostered by the patient who has allowed himself to believe that he can no longer control every childish reaction which he shows, and thus persists in playing out the rôle he has assumed.

The following military cases should be studied in relation to the foregoing factors and to those which follow.

ACUTE EMOTIONAL SYNDROME.

While waiting for the assault of a village perched on the top of a hill, the despatch riders of the Forty-sixth R. I. placed themselves under a rudimentary shelter in the advanced trenches. The regiment had just had the benefit of six weeks' rest and had taken its position during the night. They had been there a few hours when a shell plunged into the shelter, struck and beheaded a man, and, luckily for his neighbors buried itself in the soil without bursting. Almost all the survivors came to themselves immediately. One of them, a hairdresser in civil life, now a sergeant, came in great haste to the dressing station at about 150 metres distance downhill and sat cowering in a corner. There he gave free course to his emotion. He wept abundantly. He was agitated with intense trembling. It was not a faint tremor, but consisted of large oscillatory movements of the upper limbs and of almost his whole body. Even after resting for a few moments his respiration was very rapid, as well as his pulse, which was 150. He related in broken and hurried words what had just happened to him. He cursed the enemy, spoke of his beheaded comrade, of the assault which was imminent, and of his comrades waiting for him. Visibly he was making great efforts to recover. He was helped by reassurance and stimulants. Suddenly he got up and though still trembling ran away to resume his post. When he was seen two hours later a bullet had gone through his thigh. Although his wound was not severe he succeeded in evading active service. Two years later he had not yet been sent back to the front.

Those patients all show tremor at some time or another. Their tremor is wide in extent, and stops during distraction. It is very significant that the patient can be taught in a single sitting to control these provoked tremors, when the method of powerful faradism is intensively applied. In most instances the tremor can be got rid of without this unpleasant procedure, but the treatment then requires great skill on the part of the psychotherapist. For that matter so does the application of painful electric currents, the manner of its use being

much more important than the fact of its application.

PERSEVERATING PSEUDOMOTIVITY.

In many instances of pseudomotivational behavior the patients at first really suffered from uncontrollable severe emotional reactions due to toxic or fatigue states. They are still more often the result of emotion. The patients are perseverators, who having had formerly a real justification for their behavior, continue to think they are still justified in letting themselves give way in an exaggerated fashion to every solicitation. Most of them do not themselves realize that the physical state which caused their earlier disturbance has long ceased and that their reactions have become illegitimate. It is a delicate task to demonstrate their error to them and to persuade them to cooperate in their restoration to health.

INFLUENCES ADVERSE TO CURE AND WELFARE OF THESE MEN.

The manner in which this task must be approached is unfortunately dependent upon many considerations quite outside of the sphere of psychotherapy, such as the policy of the army toward functional nervous diseases and the policy of the country toward cases of cerebral commotion.

Each of these influences brings to bear upon the soldier powerful suggestions which may seriously interfere with his efforts to get well and which may indeed encourage his efforts to remain sick. Popular articles and conversations about shell shock are most detrimental in this respect. They should be discouraged if not forbidden, during war at least, and if they are permitted, the newspapers should cooperate in refusing to print those not written by psychiatrists authorized by the war council to do so. But even within these limitations it is possible to cure these men, and that perhaps without the enormous expenditure of money in the elaborations of such an organization as has been adopted in England in order to compensate for the grievous leakage which was permitted during the first three years of the war on account of the attitude of the country toward functional nervous diseases.

SIMULATION OF EMOTIVITY.

It must never be forgotten that the condition of emotionalism is apparently easy to simulate, and that such patients viewed superficially appear quite unfit for service. In a number of instances patients, who afterward confessed to having deliberately simulated this syndrome were returned among the prisoners of war and repatriated as completely incapacitated for further service. Under ordinary conditions the opportunity of receiving confessions of this kind of course does not occur, as it is not to the patient's interest to admit that he allowed himself during the war to remain unnecessarily in the hospital by maintaining artificially an illness of which he could have been cured long before.

THE MECHANISM OF SOME FEAR STATES.

Everyone is familiar with the different ways in which individuals react to impending accident. For instance, when an automobilist precipitately crossing the street has to stop his car suddenly with the

emergency brake in order to avoid a vehicle which he had not at first seen, some spectators may gasp with horror, some may shrink aside, while some may even scream out. This is because their imagination pictures what might have happened had the brake not been applied. It may be called a morbid direction-*tioning* of the imagination; it is the kind which produces timorousness or pessimism. Other spectators, on the contrary, may be rather impressed by the speed and skill of the driver in averting the accident, which might have happened to one less competent. This may be regarded as a wise direction-*ing* of the imagination. Other spectators may pass by with complete indifference. These are of two kinds. One kind is incapable of feeling emotion. They are the lymphatic or indifferent persons. They are not common. Far commoner is the type which is incapable of feeling emotion about what may happen to other people. It is only when they, so to speak, place themselves in the position where the accident might happen to them that they feel alarmed. These people are very numerous. Most people, however, become so inured to the usual dangers of everyday life that they cease to manifest, and often indeed cease to feel, the emotions which alarming incidents first excited. The great majority of the soldiers find that their first dreads gradually cease. The cause of this is an intelligent use of the imagination, the man reflecting to himself that so far from the chances of his being injured being considerable it is indeed very slight at any given moment. Even when he knows that in the long run he is bound to be killed or injured other motives can be brought to bear regarding each individual expedition. Of course, if he considers the number of men who have been killed without fighting at all, or the number who had been killed in their first combat, he could feel only fear. But when on the contrary, he considers the number of men who have survived a score of combats, and when he thinks of Guynemer who was successful in fifty-four, he sees no reason for despair. The same reasoning is cogent in the case of the infantry and few men feel that an impending battle is to be their last.

In the case of desperate enterprises, however, the case is a different one. Most of the men, had they reflected upon this particular aspect of the case, would recognize the high probability of their being killed; but other motives remove the fear of this. Such motives as the lust of battle, the desire for glory, the feeling of indifference to danger, a high sense of duty, belief in a happy chance, or sometimes indeed the shame of appearing to be afraid. Each has its share in inducing the warlike spirit in the face of almost certain death.

Collective suggestion is a most important factor in maintaining high courage in troops. This, of course, largely depends upon the officers. However, men who enter the neurological services on account of bombardment hysteria do so in the main because the cravenness of the individual has overpowered the influence of the collective morale. They can no longer be appealed to on the ground of *esprit de corps*. In some instances, however, it is only because the man feels he has a legitimate excuse for abstaining from the dangers of battle. The impor-

tant business of the neurologist is to be able to demonstrate to such men that the excuse in which they believe is not legitimate; that they are not indeed suffering from a physical disorder of the nerves, but that they are mistaken with reference to the real motivation of their illness. With rational persons this is all that is necessary, but there are some men with whom reason is less powerful than the appeals of imitation and suggestion. The most powerful weapon against these men's disorders is the spirit or morale of the hospital such as has been so well illustrated in the preparatory treatment of the men at Salins. In some instances the men are accessible only to direct effects of unpleasantness, being neither of a reasonable type nor amenable to gentle collective suggestion, and being imbued with a desire to escape the rigors of warfare, they can be appealed to best by vigorous treatment which shows them that the service has its compensations after-all. There is more than a suspicion of dishonesty of intent in most of these patients, but it is not wise for the doctor to declare openly the guilty motive behind the men's behavior. The man cannot become a good soldier unless he maintains his self-respect or perhaps rather the ability to hold up his head before his fellows. He does not mind feeling that the doctor knows he has not been quite honest with himself, but will be only too glad to have a chance of getting out of the affair without probable disgrace. He will do his very best to place himself in the recovered list for a doctor whose consideration he understands, and whose insight and firmness he respects.

However, it must not be forgotten that in very many men whose morale flinches, it does so because of a reduction of the resiliency of the organism, that is, physical wear and tear, which prevents the man from responding to a difficulty he formerly surmounted with comparative ease. The greatest attention must be paid at the beginning in each case to the signs of the milder functional incapacities of circulation, internal secretion, metabolism, and lowered neurone reaction. Even the disorders of the associational systems must not be attributed to pith-tatism. They may be dependent upon functional inadequacies of purely physical nature. An example of this mechanism is the following case extracted from my discussion of the management of confusional states read before the American Medico-Psychological Association in 1916.

CASE.—A woman, thirty-five years old, was referred by Dr. Ada Thomas because she became disturbed about botanical investigations she had conducted successfully, which she could not seem to finally formulate although she had made a preliminary report to the satisfaction of her superiors. She would keep on starting experiments, but they did not seem to go right. She felt dazed and as if everything was out of joint. The work seemed easy and yet she could not accomplish it. As there was neither insomnia nor loss of weight, she felt that her trouble was psychological, but her reflexes were exaggerated, her hand trembled, her eyeballs were prominent with congested lids, and the breath was very foul. However she persisted that it was temperamental as she had had an attack as a teacher

some years before, and thought that she was prone to it as a child. She was hyperconscientious and had too much ambition for her strength.

Though her blood pressure was but 128, her diet was lacking in succulence, and she had been taking extra milk but without causing constipation. Thinking that improved metabolism might help her I prescribed a week's vacation with golf, a more succulent diet, and a mixture of hormones. In a few days the blood pressure fell to 105, diastolic 55, and she "felt like doing nothing at all and without mind," so that the golf was stopped and she was put to bed. Whereupon the blood pressure after five days, slowly rose to normal, the reflexes diminished, the tissues were firmer, but the pulse rate mounted to over 100, going to 120 sometimes, and slight exophthalmos appeared with the sign of Moebius. There were no sweats, and the breath was less foul, she felt clear mentally. Mixed hormones were stopped. She was then given secretogen and advised to return to work the next week, which she has accomplished satisfactorily ever since.

That thyroid and adrenal disturbances must be quite usual in hyperemotive individuals we have experimental warrant *a priori* and indeed a considerable number of observations of long continued tachycardia show a morning maximum which points to hyperthyroidism. A detailed study of a series of these cases is much to be desired. The war provides an opportunity which should not be neglected.

It is only by thorough attention to the details of mental examination that one can pronounce upon the character of such manifestations, many of which can be successfully imitated, and many occur from a purely psychogenetic mechanism. Glaring examples are the Ganser syndrome, and some of the amnesic and dissociated states in which many clinicians have formerly shown great credulity. Too great caution cannot be used against allowing oneself to find without due criticism some ill understood syndrome which has filtered into the neurological literature from the garrulous report of some armchair clinician usually from beyond the Rhine. Even the law of regression has been shown to be without proper basis as the beautiful study of post-comotional amnesia by Mairé and Pieron clearly demonstrates.

1621 CONNECTICUT AVENUE.

Advisability of Injecting Tetanus Antitoxin before Secondary Operations Among Wounded Subjects.—A. Broca (*Presse médicale*, May 15, 1919), reporting the decision of a committee appointed to study this question, states that undoubted cases have occurred demonstrating that the tetanus bacillus may remain dormant for a long period at the site of a former wound, and then be set free and brought into activity again by an additional surgical operation. Preoperative reinjection of antitetanic serum is thus opportune, to obviate the danger of tetanus. It is not, however, an absolutely necessary measure. Surgeons have performed thousands of secondary operations without it and without any instance of tetanus. Reinjection of serum entails, moreover, some risk of an anaphylactic reaction.

CEREBROSPINAL SYPHILIS WITH SPECIAL RELATION TO THE OPTIC NERVES.*

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Blindness, regarded by those mostly concerned as the greatest of all tragedies, is like accidents and infectious diseases—frequently preventable. Syphilis of the cerebrospinal system in general and that of the optic pathways especially, causing blindness in a great proportion of patients, could often be prevented if the general practitioner, who sees the patient at the beginning of the infection, would properly treat him. This is why the subject of this paper, including the question of prevention of blindness caused by syphilis of the optic pathways, is of greater interest to the general practitioner than to the neurologist or ophthalmologist.

Are the optic nerves affected in syphilis of the nervous system? Yes. From ten to fifteen per cent. of the tabetic patients and four per cent. of the parietic patients become blind from optic atrophy. Out of 100 cases of brain syphilis forty per cent. show an involvement of the optic nerves (choked disc, optic neuritis or optic atrophy), and a large number of these end in blindness.

Can we prevent blindness from an affection of the optic nerves in syphilis? Yes, the general practitioner can prevent blindness from syphilis, in a certain number of cases; the neurologist and eye specialist are generally unable to do so. Why the general practitioner? Because we believe that the nervous system is invaded in one out of every four or five cases of syphilis; that the invasion usually takes place at the beginning of the infection, during the secondary stage, and that the time to prevent the thorough diffusion of the infection in the central nervous system is during the secondary stage, when the patient is in the hands of the general practitioner.

What has this to do with preventable blindness? The optic nerves and retina are but an offshoot of the central nervous system; they share in its physiology and pathology, and whenever we deal with a syphilitic optic neuritis or optic atrophy, we have to deal with syphilis of the central nervous system, and syphilis of the central nervous system should be fought at the moment of its invasion. It is too late to fight it at the terminal stage.

Can we recognize the invasion of the nervous system by examining the eyes? Yes, we can, very often. We only have to master the simple methods of examination of the eyes. They are: the examinations of the pupils, the use of the ophthalmoscope, the measurement of the acuity and field of vision, and the examinations for double vision.

Are these methods available for the routine work of every physician? Yes. Medical stu-

*Read at the meeting of the Yorkville Medical Society, February 17, 1919.

dents at the College of Physicians and Surgeons acquire these methods in ten hours—when taught in groups of fifteen to twenty pupils. It would be so much easier for smaller groups of say two or three general practitioners to acquire these methods in the same length of time.

Is the examination time consuming and impracticable from the busy general practitioner's point of view? No. A routine eye examination can be made in from five to fifteen minutes, and in view of the fact that this examination may reveal the only visible changes pointing to an invasion of the central nervous system, I believe that it is worth while spending this time for every patient with syphilis.

What information may routine eye examination in luetics give us? We may discover a beginning rigidity of the pupils to light, to accommodation or to both. We may find them unequal, irregular, or both. We may discover a sudden or gradual loss of vision in one or both eyes, or a disturbance of field of vision. We may discover a paralysis of one of the muscles of the eyes, causing double vision. Finally, we may find by the use of the ophthalmoscope an edema or inflammation of one or both optic nerves with or without impairment of vision. Any one of these findings may be discovered in the secondary stage of syphilis and are a strong indication that the nervous system is becoming invaded by the infection. So we see, the eye examination is a very valuable help in the early diagnosis of syphilis of the nervous system.

In the eye clinics and in my private practice I have, just as the neurologists have, encountered so many patients with rapidly progressive blindness due to uncontrollable optic atrophies and optic neuritis in the tertiary stage of syphilis that I began to despair from my utter helplessness. But my pessimism began to give ground to optimism since I had the good fortune to become associated with Dr. I. Rosen, Chief of Clinic, in the Department of Syphilis of the Vanderbilt Clinic, where I began to make routine eye examinations of all syphilitic patients. For me, the most interesting and important of all are the primary and secondary cases. I have discovered patients with incipient Argyll Robertson pupils in the secondary stage. I have seen a few patients with choked optics discs and perfectly normal vision. Such patients have been overlooked in the past, because their eye grounds were not examined. I have seen patients with occasional, temporary, double vision due to a paralysis of the sixth or partial paralysis of the third cranial nerve which have been looked upon as neurasthenics in former times.

Some of these patients had a negative blood Wassermann, were clinically normal in every other respect and in former times would have been discharged as cured. Now we know better. We have to make sure that there is no active process going on, that the patient is well clinically as well as serologically (both for blood and spinal fluid), before we discontinue treatment. And one of the most important means of telling when the patient is clinically well is by a careful ophthalmological examination which gives us precise information as to the

condition of not only the second cranial nerve, but also of the third, fourth, fifth, sixth and seventh.

SUMMARY.

Every patient with a primary lesion should have, in addition to a careful general and neurological examination, a routine ophthalmological examination. This examination should be repeated at regular intervals during the secondary and tertiary stages. The pupils, the nerves directing the mobility of the eyes and the optic nerves are frequently affected during the early stages of syphilis and indicate the invasion of the central nervous system. The general practitioner can acquire the necessary knowledge for a careful eye examination in a very short time.

OPTIC ATROPHIES OF SYPHILITIC NATURE.

It is a well known fact that a patient with tabes and a beginning optic atrophy is doomed to blindness. The same thing is thought of paretics and of patients with cerebrospinal lues. The outcome of these optic atrophies has been so invariably bad that ophthalmologists were always glad to shift them to their colleagues or to the neurologists as quickly as they could. And the general practitioners have remained with the traditional idea that nothing can be done for syphilitic optic atrophies.

Nothing is so remote from the truth as the assumption that there are many types of optic atrophies. Some of the types rapidly terminate in blindness, others have a slow course. The malignant types usually occur in patients who had been infected many years previously. Their optic nerves had begun to atrophy long before the patients noticed any disturbance of their central vision, and the moment when the acuity of vision (that is the central vision) begins to fail, the optic nerves are so far gone that treatment is usually of no avail.

In other types, the optic atrophies are due to an acute or chronic inflammatory process of the optic nerves or of their meningeal sheath. Here the optic fibres are gradually choked by the syphilitic exudate and infiltration and treatment is frequently able to cause an improvement of vision by resorption of some of the exudate and recovery of function of many optic fibres which have been in a state of physiological blocking.

During the past few years I have seen a number of patients with optic atrophies of various kinds and types. Some of these patients, which I would have regarded before as doomed to complete blindness, have had the process arrested by general and spinal treatment, and others have improved. Their treatment consisted of the usual medication with mercury, iodide, and salvarsan. In those patients who continued to fail in spite of the general and spinal treatment I made intracranial injections of salvarsanized serum. The work on intracranial therapy is a chapter in itself. There is yet a great deal of preliminary work to be done before we can reach any conclusion on this subject. But regarding the spinal therapy I am certain—from what I have learned from my own experience—with certain types of optic atrophies, that it offers us better results than the general treatment alone. I have had occasion to present before the section of ophthalmology of the New York Academy of Medicine

and before the members of the Yorkville Medical Society, last year and two years ago, patients with cerebrospinal lues and failing vision due to optic atrophies. General and spinal treatment had arrested their failing vision at that time, and now, after from twelve to twenty-four months, the patients have retained their acuity and field of vision.

Regarding the results obtained in the treatment of these patients with syphilitic optic nerve lesions, one thing is certain, they are relatively good if treated early, during the secondary stage of lues; they are not very bad if we treat them properly, even in the tertiary stage at the earliest appearance of the process, but the results are very poor if the patients come with an old process in the completed atrophic stage. The optic nerves, as much, or even more than the other cranial nerves, must be watched in every luetic patient throughout his entire life. Prompt diagnosis of an involvement of the optic pathways means prompt treatment, and often prevention of blindness. Is this sufficient reward to the physician for the time invested to make a routine ophthalmological examination of all his luetic patients?

103 EAST EIGHTY-FIRST STREET.

INFLUENZA AND ITS SEQUELÆ.*

By THOMAS F. REILLY, M. D.,

New York,

Professor of the Practice of Medicine, Fordham University School of Medicine.

In most acute diseases the subsidence of symptoms is usually followed by a return to normal and a freedom from all symptoms. In the recent epidemic of influenza we had to deal with an almost diametrically opposite clinical picture. In about one half the cases a syndrome or group of symptoms materially different from that observed during the course of the disease appeared on the subsidence of the acute symptoms. These sequelæ have been often more annoying and resistant to treatment than the primary attack of the disease itself. In some cases one set of these symptoms was present, in others several independent groups were in evidence. Almost every portion of the body and every organ were affected. Many of the patients had had several recurrences of the disease and said that they had not felt well at any time since the first attack.

COUGH.

Among these late symptoms, first and foremost, was cough. This cough frequently resembled whooping cough, and the patient coughed continuously until stopped by exhaustion. Generally it was an unproductive cough, although at the end of the coughing spell a small amount of tough mucus was often expectorated. Physical examination revealed one or more of the following findings: 1. A peculiar pinkish redness of the pillars of the fauces, sometimes forming a complete arch, and from one third to one sixth of an inch in width; at other times extending half way up on the pillars. 2. Enlarged follicles in the pharynx. 3. One or two

enlarged follicles on the uvula. 4. On auscultation, there were a few râles and crackles at the bases. This cough persisted for weeks and even months. When it followed a well marked pneumonia there was commonly much expectoration, and in these cases frequently a fibrosis of the lung with bronchiectatic cavities was present.

CHEST SYMPTOMS.

In this type of case only repeated examination of the sputum made it possible to rule out tuberculosis. The x ray picture of this condition can not be differentiated from that of tuberculosis. Formerly it was thought by most practitioners that involvement of the apex of the lung by any such fibrotic process meant tuberculosis, whereas, when the base was involved, it was likely to be due to other causes. But this year we have seen many cases, undoubtedly influenza, long persisting in the apices and finally clearing up. After an x ray examination in these cases months after the attack it seems a physical impossibility that such lungs can ever become absolutely normal; in fact the x ray has made it possible to explain definitely what one only surmised in the past.

In these postinfluenzal cases presenting chest symptoms the x ray, by means of fluoroscopy or by stereoscopic plates, shows one or more of the following: 1. Enlarged hilus shadows with marked, feathery shadows running down and out to the costophrenic sinus; 2, enlarged glands, at the base of the lung; 3, enlarged right heart; 4, areas of bronchopneumonia; 5, Vague shadows indicating pleural adhesions. Any of these will fully explain the cause of the persistent cough.

REFERRED PAINS.

The next group of troublesome symptoms were various painful and paresthetic areas in the chest. In the past one could not do more than classify them as referred pains. The x ray findings mentioned above explain most if not all of these painful areas. These pains or cold feelings were sometimes between the scapulae, and the picture showed either enlarged glands or exaggerated hilus shadow. Sometimes they were lower down on the back, radiating to one or the other side of the abdomen. In one case the pain was so severe and persistent as to suggest cancer of the stomach. Frequently Muzzy's sign could be demonstrated. This is a point of tenderness at junction of a line drawn from the tenth costal cartilage with the parasternal line, indicating an involvement of the diaphragmatic pleura. Early in the disease this pain sometimes raised the question of appendicitis, and in several instances of well marked bronchopneumonia with evident physical signs was present, and at the same time a full blown suppurative appendicitis. In appendicitis the pain was more sharply localized and there was a high leucocytosis, while in influenza the pains were more diverse and the patient seldom drew up his legs to relieve the pain. Nausea and vomiting were present in both.

HEADACHE.

Headache was very common. It was mostly suboccipital, or temporal when it was induced by coughing. This headache persisted for months

*Read at the annual meeting of the American Therapeutic Society, Atlantic City, N. J., June 7, 1919.

with very little change. Close examination showed in the vast majority of cases a sinusitis. This was best revealed by x ray pictures. In some cases it was accompanied by a myringitis. This likewise persisted for long periods of time without any apparent effect on the hearing. Occasionally the patient complained of stuffiness in the ears. This headache was made worse on damp days and when the patient bent forward. It did not ordinarily keep him from sleep.

HEART SYMPTOMS.

Dyspnea and palpitation were quite common. The x ray picture of the heart, mentioned above, explains both of these symptoms. The pulse frequently became rapid upon the slightest exertion and allorhythmia was sometimes present. This meant that the pulse registered a different number of beats for the various quarters of a second. Closely associated with these phenomena are sweating of the hands, night sweats, weakness, loss of memory and initiative, or, as many put it, "loss of pep." This condition is described by others as a lack of a sense of well being without any particular form of discomfort or pain.

Another group suffered from breathlessness on exertion, easily induced fatigue, and sometimes pain over the heart. In many cases a dull aching over the left breast, that lasted for hours, was complained of. Albutt firmly believes that influenza is a frequent cause of aortitis; but thus far I have seen but few cases that might be definitely placed in that category. Patients who formerly suffered from cardiac disease and who afterwards had influenza, no matter how mild it may have been, have been very slow in recovering and weakness was a universal complaint. Those who acquired an influenzal pneumonia almost invariably died, whereas patients who had tuberculosis nearly always recovered.

DIGESTIVE TROUBLES.

Digestive troubles are so common after any severe illness that one can scarcely consider them as pathognomonic of this affection. They have been exceedingly common, but did not seem to produce any well defined clinical picture unless it is that of hyperchlorhydria or atony. Former ulcer cases were prone to recur.

KIDNEY.

A trace of albumin was commonly present in the early stages of influenza and often persisted for months, but no definite clinical syndrome could be attached to it.

EYE.

A blurring of the disc with some impairment of vision—or double vision—was present in a few cases, but all such patients recovered after a few months. Sometimes double vision was complained of several weeks after the disappearance of the attack.

TEMPERATURE.

A continuous subfebrile temperature 100° – 100.5° F., by rectum, lasting for a month or two was not uncommon. It was our experience that as long as the swelling and redness of the puncta of Steno's ducts persisted, relapses were likely. Of course

these temperatures persisted when there was no such swelling present.

NERVOUS SYMPTOMS.

Among the nervous symptoms, melancholia and sleeplessness were prominent. These patients worried about their sleeplessness constantly, and they felt that they were growing worse because they could not sleep well.

Loss of the sense of taste and smell for a few weeks was not uncommon. The falling out of the hair was quite general; probably in no disease except typhoid fever was this falling out of the hair so frequent.

PROGNOSIS.

In general, the prognosis of all the sequelæ is good, so that one can assure the patient that he will eventually get well no matter how severe his symptoms may be.

TREATMENT.

For the cough, the repeated use of a two per cent. solution of silver nitrate, applied to the pillars of the fauces, nasopharynx and nose, was more efficacious than anything else. When the cough was very distressing, the combination of codeine—one quarter grain, and heroine—one sixteenth of a grain, every three hours, was sufficient to control it. When expectoration was present, creosote was of very great service and was worth more than all of the other expectorants together. In persistent cases terebene ten minims on sugar four times a day was often efficacious.

In the cases associated with enlarged glands—and one could often differentiate such glandular swelling by the presence of the Eustace Smith sign, and by the persistent, fine, whistling râles heard over the sternum—iodine in some form was most valuable. Either the iodide of sodium, two grains—or syrup ferri iodide might be used. However, iodide of calcium in two grain doses, four times a day, acted better in my hands than anything else.

Personally I was formerly quite skeptical as to any positive action of calcium iodide in the treatment of enlarged mediastinal glands and the cough associated with them, but last winter I became quite convinced that it was a valuable agent.

In the group presenting the sympathicotonic syndrome—i. e. weakness, loss of energy, sweating, etc., the following prescription was of decided service: suprarenal extract, three grains; arsenious acid, one tenth grain; strychnine, one thirtieth grain; quinine sulphate, two grains; one capsule to be taken before meals.

This seems like polypharmacy, but I have tried out most of these agents separately and did not get anything approaching the results that were achieved by the combination.

Because of the concomitant nervous disturbance, either of excitement or depression, it was frequently necessary to give to this same group of patients bromide, twenty grains, after supper and at bedtime—to secure sleep. Of course this is the physiological antagonist of the strychnine, and in such cases the strychnine was omitted.

For the cardiac neurosis, crætagus was of great service. It was frequently combined with bromide;

twenty minims of the fluid extract of crætagus, or its equivalent, and twenty grains of the bromide, three times a day.

The place of crætagus in the treatment of uncomfortable sensations about the heart cannot be satisfactorily stated, in the present state of our knowledge of pharmacology, but it is of undoubted value in these cases, although it cannot be proved by any physiological testing. This, combined with rest and often a change of climate for about two weeks, was generally successful. This treatment was especially successful among physicians who were the most common sufferers from this syndrome.

The headaches, which for the most part originated in the frontal sinus, were best relieved by cleansing with: 1. An alkaline solution, 2, followed by an iodine solution, such as potassium iodide and codeine of each grains $1\frac{1}{2}$; carbolic acid mm. 1, glycerine two drams, and Aq. menth. q. s. ad. one ounce; 3, this to be followed by an oil spray.

Here again a change in climate for a couple of weeks was often a sovereign remedy, although occasionally an operation was necessary. Temporary relief was generally afforded by an adrenalin spray, or a three per cent. antipyrine spray, locally, and acetphenetidin and aspirin in five grain doses, four times a day.

Personally I did not see any depression from moderate doses of the coal tar derivatives, the opinion of others to the contrary notwithstanding. I believe them to be a great boon, on account of the relief from pain afforded by their use.

In the cases of continued relapses of fever after periods of normal temperature—or in those patients whose temperature never went quite to normal—the use of a foreign protein injection was of undoubted service. We used a pneumococcus lipovaccine—such as is furnished by the U. S. Government. This particular protein was employed because it was at hand; any other doubtless would have accomplished the same purpose.

When a definite reaction was obtained after the use of one or two c. c. given intravenously, positive results in the shape of continued normal temperatures were frequently secured. In other cases the temperature curve dropped to the lower level and ran on for a week or two, a second injection depressing it to a still lower level, and so on.

For the digestive troubles, a diet such as usually is prescribed for hyperchlorhydria was satisfactory. Alcohol in the form of red wine, or whiskey and water, with meals, was quite frequently efficacious, and did much to promote the sense of well-being the lack of which was so bitterly complained of. The eyes usually return to normal without the use of any medicine.

For the myringitis, which was often very stubborn, local treatment of the nasopharynx with a two per cent. solution of silver nitrate yielded the best results.

Finally there are few complaints that cannot be placed in the general classification outlined above and that fail to react to all the treatments suggested.

37 WEST EIGHTY-EIGHTH STREET.

AN INTESTINAL TUBE.*

BY MAX EINHORN, M. D.,
New York,

Professor of Medicine, Postgraduate Medical School; Visiting Physician, Lenox Hill Hospital.

The duodenal tube has made it possible to examine the fluids of the digestive tract as they are found, directly at their source in the duodenum. On first thought it appears hardly worth while to have a tube extending below this organ into the small intestine for investigation of the fluids, as they will be much altered there. Further consideration, however, makes it evident that a tube permitting the entire length of the small intestine to be reached is useful.

The intestinal delineator (1) has satisfactorily demonstrated that it is feasible to have an instrument pass through the entire digestive apparatus without injury to the patient. With the object of making the entire small intestine and the cecum accessible to direct examination and therapeutic measures, I have devised an intestinal tube. The apparatus consists of a soft rubber tube of about the same diameter as the duodenal tube, fifteen to twenty feet long. At one end is fastened a perforated metal capsule with numerous openings. The opposite or outside end contains a stopcock and an attachment arrangement similar to that of the duo-



FIG. 1.—Radiogram of the intestinal tube in Miss B. twenty-two hours after insertion. The tube is seen curled up in the stomach.

denal tube. Through the entire length of the tube and firmly fastened to both ends runs a strong braided silk thread (English No. 3). The tube is

*Read before the American Gastroenterological Association, Atlantic City, June 10, 1919.

marked with a paint of asphalt and lead. The first eighty centimetres are marked the same as the duodenal tube, and further down it is marked in meter and half meter divisions. The tube is provided with a hard rubber holder (like the delineator) and wound upon a reel in such a manner that the cap-



FIG. 2.—Radiogram of the intestinal tube in Miss B forty hours after insertion. The tube is seen in the small intestine.

style end of the tube and the holder form the free end on the reel.

METHOD OF USE.

The intestinal tube is best given in the morning after a light breakfast. The capsule is put deep into the pharynx and the patient given water to drink, and the instrument thus starts on its journey to the stomach and further down through the entire small intestine. The reel is kept in a pocket not too far from the mouth, and there should be no obstacle to the unwinding of the tube from the reel. X ray pictures should be taken or fluoroscopy practised every two hours during the day until the capsule appears in the duodenum and later in the cecum.

When employing the intestinal tube the following rules should be observed:

1. In introducing the tube attach it in such a manner that it cannot go beyond sixty centimetres. This can be done by fastening the tube to the reel with a rubber band after enough length has been unwound so that sixty centimetres can enter the mouth.

2. Release the tube from one half to one hour later. The patient should not swallow the tube intentionally and should not keep his mouth closed too tightly so as to let it go whenever there is a pull.

3. At night the holder should be pushed up to the teeth and held there in the same manner as when smoking a cigar. The holder may be fastened to a tooth where feasible or to the cheek, but care must be taken not to interfere with the gliding of the tube.

4. After the x ray shows the tube in the duodenum thirty to fifty centimetres should be unwound from the reel from time to time so that it hangs in a loose curve. Otherwise the tube should not be allowed to go further as it may curl up in the stomach.

5. When washing or dressing the patient must be careful not to interfere with the tube.

6. When eating the tube should be fastened to the reel with a rubber band so that not more than thirty to fifty centimetres can move into the stomach during the meal. After eating, the rubber can be taken off and the tube released.

7. An x ray picture should be taken or fluoroscopy practised a few minutes after the tube has entered the stomach and then every two to three hours, from nine a. m. to five p. m. until the capsule end appears in the cecum, when the last plate is taken.

8. The tube should be left *in situ* for the entire period of examination or treatment. The patient



FIG. 3.—The same forty-eight hours after insertion. The tube is seen along the greater portion of the small intestine.

eats and drinks in the usual way, there being no interference from the position of the tube.

9. After the examinations or therapeutic measures have been finished, the tube can be withdrawn through the mouth or made to go through the rectum. Withdrawal by the mouth should be done



FIG. 4.—The same eighty-eight hours afterward. The end of the tube is visible in the lower part of the pelvis.

gently. When much resistance is encountered the operator should wait awhile, then resume gentle pulling until the entire tube has been disengaged. If it is desired to let the tube pass through the

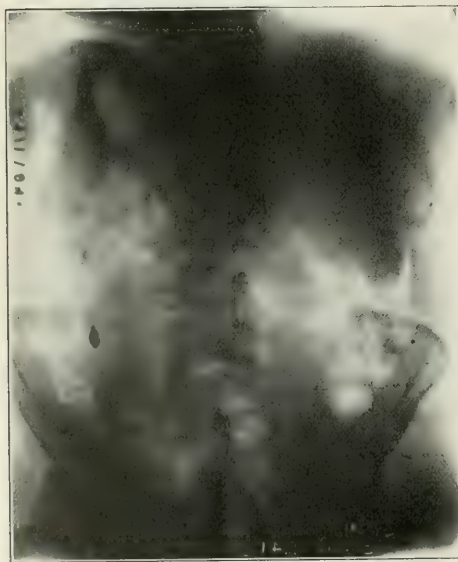


FIG. 5.—Radiogram of the intestinal tube in patient S, twenty-four hours after insertion. The tube is seen in the small intestine. The duodenal ring is clearly mapped out.

rectum, the hard rubber end piece is removed or the tube cut at the lips and made to go into the stomach. After a few days it will be found in the stools.

The intestinal tube was used three times on two patients. The first time Miss B. swallowed it too quickly and it curled up in the stomach so that the capsule end did not enter the duodenum (Fig. 1). The tube was gently withdrawn, no difficulty being experienced. On May 7th Miss B. was again given the tube, with the precautions described above. This time it gradually entered the duodenum and passed through the small intestine (Figs. 2, 3, and 4). On May 10th, at three p. m., I withdrew the tube by mouth, at times encountering slight resistance which was easily overcome with a gentle pull. The patient experienced no discomfort whatever during the time the tube re-



FIG. 6.—Radiogram of the intestinal tube in patient M, 152 hours after breaking. The tube is visible in the descending colon.

mained in her digestive tract. She ate and drank in the usual way.

The next case was that of a patient suffering from a tumor of the pancreas and chronic jaundice. The tube was used to ascertain whether a patient with a severe malady would be able to stand the introduction of this long tube. On May 3d the patient took the intestinal tube without the slightest inconvenience. It entered the duodenum and passed through the greater part of the small intestine (Fig. 5). In this particular case it was of importance that the tube showed no obstruction all along the duodenum.

In order to report all our experiences with the intestinal tube I shall mention an accident which fortunately was not serious. Patient M., with lues and gastric crises, was given a tube not containing a silk thread on the inside. It happened

that fluoroscopy could not be practised, and the plates were not ready for inspection. On May 19th I withdrew the tube. After pulling out seven feet I encountered considerable resistance and the tube broke, leaving the other half in the digestive tract. This in itself would not have caused me any anxiety, for if the tube had been in the intestine it would easily have passed through the rectum. Another x ray, however, showed that the rest of the tube (about seven feet was curled up and much entangled in the stomach. As the patient felt no discomfort I decided to wait and see whether the stomach would not disentangle the tube and let it pass into the intestine. A week later, on May 26th, an x ray revealed the tube in the descending colon (Fig. 6) and it appeared in the stool at eight p. m. the same day.

The intestinal tube thus far can be employed for the following purposes:

1. Like the delineator, it shows the course of the duodenum and the small intestine and in this way is of diagnostic help.

2. It enables the physician to instill fluids (nutriment or medication) at any place along the small intestine and probably also at the cecum.

It is my intention to undertake examinations along these lines and to report the results to you at some future date.

I am indebted to Dr. William H. Stewart, radiologist of the Lenox Hill Hospital, for these beautifully executed radiograms.

REFERENCE.

1. EINHORN, MAX: X Ray Visualization of the Gut by Means of a New Intestinal Delineator. *Medical Record*, March 29, 1919.

20 EAST SIXTY-THIRD STREET.

DESCRIPTION OF A MONSTER.

By J. GUIDOTE, M. D.,
Leyte, Philippine Islands.

Twenty-eighth Health District, Leyte Province, Office of the District Health Officer, Tacloban.

I was at the Farmacia Nueva, at Tacloban, on May 26, 1919, when a man from San José, Tacloban, came in informing us that a woman in that neighborhood had given birth to a child with only one eye in the middle of the forehead, that the newly born child had died and was about to be buried. Moved by curiosity to see the monster, the pharmacist, Mr. P. Callardo, the man who brought the news started off with the writer for the San José quarter. We went into a small house and found the infant monster in its little wooden box or coffin, ready for burial.

This fetus was the offspring of Dorotea Datuin, aged about twenty-five years of medium height, and of Angel Ganede, a laborer aged about thirty-three years, over five feet in height, and of a good constitution. They had had five healthy, normal children, the sixth being the monster referred to. The economic condition of this family was rather poor.

I examined the fetus, the characteristics of which were as follows: Visual apparatus: The ocular

globes were fused into one and were contained within an oval cavity, this cavity in turn being composed of the two unified orbits, with eyelids found in ectropion and situated in the middle of the forehead. The external respiratory apparatus (mouth and nasal fossa) was not to be found, but



FIG. 1.—General appearance of monster.

in the angle formed by the cheeks there was a hole through which I was able to introduce the stilette for a length of nearly a centimetre, touching the bone. The external auditory apparatus, markedly developed, was situated horizontally to the neck. All the abnormality of this fetus was confined to the face, the body and upper and lower limbs being normal.

The mother gave no history of accident, blow, or fall during pregnancy but remembered that she had once had some whim about a poorly made cloth doll. This declaration from the mother would seem to give some weight to the superstitious belief, held both by the common people and some



FIG. 2.—Deformed portion of monster born at Tacloban.

intelligent persons, that the maternal impression may produce disastrous effects. Nevertheless this superstition should disappear, as in these modern times scientific investigators no longer believe that the formation of a monster is due to maternal impression.

The absence of the glabella, ethmoids, and sphenoids, which contribute to the formation of the inner surface of the globular cavity as shown in the accompanying illustrations, has determined the fusion of the ocular globes and the orbits; the



FIG. 3. Body of the monster.

nondevelopment of the upper terminal portion of the entoderm has determined the rudimentary state of the mouth and the olfactory apparatus. Mall, Stockard, and Werber believe that the origin of monstrosities is due to the pathological condition and chemical constitution of the fluids of the body.

This monster left the maternal uterus on May 26, 1919, at six a. m., lifeless, as was certified by Dr. José Rosales, who performed the autopsy. I have no doubt that this freak will attract the attention of the medical profession.

WHAT THE WAR HAS TAUGHT US.

Compound Fractures.

By JULIUS A. MILLER, M. D.,
New York.

Every type of compound fracture that was produced by the implements of modern warfare is daily being reproduced in civil life and will continue to be reproduced forever more. The railroads will continue to have wrecks with their accompanying injuries, children will be run down by vehicles, machinery will entice people in their meshes, chemical factories will still have their explosions, and men, women, and children will go on injuring themselves intentionally or otherwise. And thousands of other ways and means and common methods of sustaining injuries can be mentioned. All will more or less reproduce compound fractures simulating in character those produced in the war by bullets, shrapnel, shell, bombs, etc. We shall profit in civil practice by what we learned from the treatment of similar injuries sustained in the war.

The abundance of cases so recently at hand has left its lesson for the surgeons in civil practice to learn at second hand, just as surgeons during the war were taught by those cases under their immediate care. It shall be my endeavor to facilitate and lessen this period of study by relating first hand experiences.

In this paper I shall relate briefly the methods used and the principles practised that gave the best results, namely, recovery with unimpaired function of the parts affected, and restoration to normal,

or as near the normal state as possible, in the shortest time, and I shall for the most part confine myself to the discussion of compound fractures of the long bones.

In a previous paper I discussed primary, delayed primary, and secondary suture of wounds of the soft parts. These operations can be performed also when there exists an injury to the bone. As soon as possible after the injury has been sustained the wound should be examined minutely under the most careful asepsis, as described formerly in the treatment of all wounds of the soft parts; all foreign bodies and small specula of bone removed; the wound cleansed or completely excised when possible; the fracture reduced, and the part immobilized in suitable splints. In this way a compound fracture is turned into a simple fracture almost immediately and, provided there is no infection and no great loss of bone substance, the injury will mend rapidly and the patient's troubles will be ended in the course of a few weeks.

Then there is that type of compound fracture that cleans up readily, resuturing of the wound being possible two or three weeks after injury. Care must be taken in the selection of cases suitable for resuturing, and in this the surgeon must be guided by the bacteriological and x ray reports. The wounds being ready for resuturing from the point of view of the bacteriologist, the operation must be performed in accordance with the x ray reports, taking into consideration the position of the fragments of bone, the advisability of their removal, and the question of the presence of foreign bodies. The reduction of the fracture is done on the principles of a simple fracture and the immobilization can be carried out on such lines. Under these conditions the problem is not as difficult as in continued infection of compound fractures, and the only conditions to be guarded against in the after-treatment are malunion, or nonunion.

Unfortunately these types of compound fractures constituted a small minority of the cases occurring during the war. The injuries usually were accompanied by more or less loss of tissue, soft and bony, and a great deal of splintering. Complete excision and thorough cleansing of the wound were often impossible. Here we had to content ourselves with cleansing the wound as thoroughly as possible, cutting away dead or dying muscle tissue and skin; removing all fragments of bone and foreign bodies; trying to prevent or minimize infection, and reducing the fracture in the best manner possible. The wounds were then treated by the various methods described before, such as Carrel tubes, brilliant green, flavine, or bipp. I used Carrel tubes with eusol injections and was well satisfied with the results even after trying other and simpler methods. For immobilization during the first week no better splint was in use than the Thomas splint. Dressings were facilitated and extension when necessary made easy; moving of the patient was more convenient, but the pain was not noticeably reduced, and an accurate reduction of the fracture was not possible.

It was found necessary to reduce the displacement as soon as possible. It has been repeatedly

shown that, if the wound was allowed to clean up and heal and then reduction of the fracture attempted, there would often be a lighting up of a secondary infection of a serious nature and the whole process of cleaning and healing must again be gone through.

The skeleton and Thomas splints were modified to meet various conditions and fractures and served their purpose better than any methods used previously. Extension was best applied by means of gauze, glued to the skin and fastened to a movable stirrup at the end of the splint, and tension could be increased or lessened by means of a screw arrangement connecting the stirrup with the lower end of the splint.

But these splints had their drawbacks. For early emergency treatment and for purposes of transportation and convenience in dressing while in transit, there was scarcely any room for improvement. But from three to seven days after their application the patient had reached a permanent base hospital and here conditions changed. Immediate danger and necessity for rapidity in dressing were greatly diminished. Here the method of treatment was such as would aid the process of nature most expediently. It was founded on a rational anatomical basis and aimed to give as great comfort to the patient as possible. The immobilization had to be made more perfect. In different hospitals and under different surgeons the methods used to attain these ends were varied. Personally I was greatly in favor of plaster of Paris if used judiciously. I never applied a cast, but I used molded splints, made of plaster of Paris. I am not going into the details of their making or the methods of applying; their use brought the thanks of the patient and nursing staff. They were the best and most agreeable substitute for the hinge splints that went awry and caused pain and great discomfort to the patient and inconvenience in time of dressing. Healing was more progressive, labor was saved, and all forms of treatment could be continued as efficaciously as with the Thomas splints, and besides, the immobilization was absolute and at the same time comfortable to the patient and the setting of the fracture was permanent. These splints when correctly applied would not in any way interfere with the treatment of the wounds; in fact, they were of material aid. The Carrel-Dakin treatment could be continued or the biop, or flavine, or any other treatment favored by the surgeons.

With this method of immobilization the patient is not confined to bed as long, recuperation and convalescence are greatly aided, and in cases of multiple wounds the patients can be moved about freely without any injurious effects to the fractured members. Infection having ceased and the fractured member reduced, the healing progresses favorably and rapidly from this stage onward, and, after a time, further principles in the reparative treatment can be considered in accordance with the possible development of complications and sequelæ.

The most frequent cause for trouble is sequestræ. The effects are flaring up of localized infections with all their inconveniences; the formation of sinuses delaying the healing process, and the

prevention of union of the fracture ends. The formation of one or more sinuses, the mouths of which are protruding and covered with thick granulation, leads one to suspect the formation of sequestræ. The discharges vary in character from pus in infected cases to serum in aseptic or uninfected ones.

On first thought the treatment of this troublesome factor would seem to be immediate operation and removal of the offending foreign substances. I am decidedly against such a method. Here is room for the display of good surgical judgment. The conditions for consideration are, Will later surgical interference be necessary for the reestablishment of function, as in cases where there is a possibility or probability of nonunion or malunion, or where there is a great loss of bone substance?

We must remember the original wound, the great amount of scar tissue already present, and the necessity of injury to and removal of good bone in order to get at the sequestræ. Here our most efficient aids are the x ray and the conditions accompanying the sequestræ. The x ray tells us in the majority of cases the size and location of the sequestræ. If the position of the foreign substance is such that it is easily accessible and the removal of it will in no way injure the reparative process nor disturb the return of the injured part to its normal function, it should be removed as soon as possible; by that I mean if union of the fracture has taken place, or will be only slightly delayed by the removal of the sequestræ, or the operation will in no way prevent later repair by the addition of scar tissue to the parts already greatly scarred.

Special thought should be given to cases wherein future repair will need transplanting of bone. It must be remembered that although the graft may take, even after all the scar tissue has sloughed away, the increase in scar tissue impairs greatly the healing process following the transplantation of bone and is a great handicap to the good results obtainable. If the sequestræ are very small and the infection not dangerous and not greatly interfering with the healing, it is to my mind best left to the processes of nature, the sinuses being treated aseptically or antiseptically depending on circumstances. But when the formation of the sequestræ brings with it a lighting up of infection in any way dangerous, locally or generally, immediate removal of the sequestræ is necessary. The wound is laid open, Carrel tubes placed to their best advantage, and the cleansing and healing process again gone through with.

Very often after a long process of healing many of these compound fractures unite without further surgical intervention. Unfortunately, however, there are types of injuries that need repair and again the surgeon is confronted with the question of the best method applicable in each individual case. For the most part these cases are all amenable to bone graft. Some few cases at first thought are best treated by wiring or plating; others need shortening; but in my experience, in the great majority of cases where wiring or plating seem indicated, bone grafting was found to be the more ideal plan of procedure. Foreign bodies necessary in the former methods were found to delay and

even prevent union. One of the main reasons that I avoided wiring or plating of bones was the fact that ordinarily fragment ends of the bones are usually surrounded by dense scar tissue and the addition of foreign substance, such as wire, plates, or screws, was only an added source of irritation to the fragments whose resistance and nutrition were greatly diminished by the severance of anatomical continuity and by disuse. Foreign substances introduced into the field of scar tissue only add more substances to be combated by the forces of nature.

The shortening of bones for repair is a matter of necessity and not of choice, though it was found practicable during the war, yet to my mind this shortening can and should be avoided and other methods of repair substituted. Here bone graft again will be found to be the best substitute if time is taken to allow for healing to take place, especially where the time is of no greater value to the patient than a permanently shortened limb. It is far better to have a slightly deformed limb that is useful than a limb which may be more useful but is five inches shorter than the other. The shortening of bones is often necessary in such types of cases where there is marked malunion of the femur, and bone graft was thought to be contraindicated or thought to be impracticable. The surgical interference in shortening was the excision of the entire defective area and the bringing together of the bones of the lower and upper fragments and making them fast in good alignment. In this way the further healing was that of an ordinary bone operation, but the afterresults always made the man a continuous friend of the orthopedic bootmaker when the affected part was a lower limb.

In cases of malunited fractures causing inversion or eversion, these deformities could be corrected by an operation above or below the point of malunion. For example, in cases of marked inversion or eversion of the foot due to a malunited fracture of the femur, the correction could be made by the cutting of the femur transversely, either below the union or above the union and straightening the deformity by turning. The new fracture thus made can be sutured through holes bored at either end and tied together and kept in place by heavy chromic catgut or kangaroo tendon. After repairing the limb, it should be placed in plaster splints and treated as a clean case of open operation for reduction of a fracture. The same holds true of similar conditions of the upper limbs.

Where the malunion was of different type, such as angular deformity, methods of procedure were either refracturing of the bone and setting into proper alignment, or, where this was impossible the entire deformed area of union could be excised and bone graft attempted. In the cases where bone graft was tried the success was invariably good. In cases where there was marked overriding and the chief deformity was shortening, the chances were that satisfactory lengthening could not be accomplished, on account of the contracture of all the soft tissues about the limb, and if the increase of bony tissue was in any way interfering with the use of the limb, the excess of bone could be re-

moved and the fragments jointed in the normal width of the injured part.

If, however, the nonunion persisted, the cause usually being great loss of bone, the best method of procedure was bone grafting, which was successful in the greatest percentage of cases, care being taken that the graft was of sufficient size and had with it the necessary elements that make a transplantation successful, such as periosteum and endosteum. I held all my grafts in place by either laterally placed sutures, through holes in the graft and edge of the bed, of chromic gut or kangaroo tendon, or by sutures placed completely around the bone on either end, taking in the transplanted portion of the bone, the graft and bed being grooved. Often the causes for nonunion would be foreign substances, such as metal or cloth, and the removal of these would allow perfect union.

75 FORT WASHINGTON AVENUE.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

COMPLICATIONS OF ENLARGED MALARIAL SPLEEN.

In the present communication I should like to consider two important complications of enlarged malarial spleen, namely torsion of the pedicle and intraabdominal rupture of this viscus in a megalic state, based on the more recent work of both French and Russian writers.

Torsion of the pedicle is unquestionably the most frequent and most dangerous complication of an ectopic malarial spleen, and it can roughly be said to occur in twenty per cent. of the cases. As a matter of fact this figure is probably too low, and less marked torsion is quite common. The twist may vary from one of 90° to three complete twists and usually takes place from left to right and from above downward. This mechanism can be explained by the fact that after rupture of the phrenosplenic ligament has taken place, the upper extremity of the spleen, being deprived of its attachment and also being the heaviest portion, slides downward and inward. During the contractions of the stomach it is drawn in the same direction by the gastrosplenic ligament. Body movements and those of respiration aid in causing the spleen to descend from left to right, and this is why the ectopic spleen is so frequently found in the right iliac fossa. Under the influence of weight the splenic ligaments slowly became stretched and thinned, so that finally the organ is suspended by a long thin pedicle.

The spleen continues its rotation in the midst of the movable intestinal mass, under the influence of the body movements. Its pedicle, the thickness of which varies from that of the little finger to that of an umbilical cord, may reach from six to ten centimetres in length. It is made up of the gastrosplenic and pancreaticosplenic ligaments, bloodvessels, and the drawn out tail of the pancreas. The latter organ and the vessels undergo torsion along with the pedicle. The lumen of the bloodvessels is occasionally so reduced as to amount to complete

occlusion; thrombi consequently form and an endarteritis follows. The venous circulation being thus interfered with, a rapid swelling of the gland ensues which ends in parenchymatous hemorrhages, as well as under the capsule. The splenic pulp softens and infarcts and necrosis occur.

According to Jonnesco the normal splenic tissue does not contain bacteria, and during the first twenty-four hours following torsion the necrosis is aseptic. But later on bacteria emigrate from the intestine and stomach and moist gangrene of the gland develops. The surrounding peritoneum then reacts, and from the peritonitis arise adhesions which have been known to produce intestinal occlusion.

In most cases the symptoms of torsion are sudden in their onset, occurring after an effort on the part of the patient or without any appreciable cause. They are ordinary ones, but the spleen will be found to be rapidly increasing in size on account of the venous stasis. These two concomitant phenomena—peritonism and increasing size of the spleen—are characteristic of complete torsion of the pedicle. Symptoms of peritonitis became added to those of peritonism, namely, high temperature and abdominal distention, while if occlusion of the intestine exists at the same time the vomitus becomes fecal and stools will be absent. If the torsion is incomplete and if it takes place gradually, the symptomatology will be less marked.

In cases of uncomplicated splenic ectopy a tumor similar to the spleen will be detected in the abdominal cavity. If there are no adhesions it is movable and occasionally the pedicle can be distinctly felt. Splenic dullness will be wanting.

An ectopic spleen may sometimes be mistaken for a movable kidney, but the shape of the tumor and above all its position in front of the intestine speak in favor of its being the spleen. During the period of acute pain it is impossible to say whether or not torsion has taken place. If the abdomen is painful and greatly distended, a diagnosis can be made only under narcosis or after abdominal incision.

When the ectopy is not complicated by adhesions and when the spleen is not greatly enlarged, the gland may be maintained in place by a properly made abdominal supporter, which will cause the pains to disappear, but naturally will not cure the patient. In all cases of movable spleen surgical treatment is indicated in order to prevent torsion of the pedicle and its resulting complications.

The malarial spleen is friable and greatly hypertrophied, so that splenectomy is a poor operation to resort to and doomed to failure. If adhesions are present splenectomy is not less dangerous than splenectomy. Finally, in the case of torsion it is, to say the least, risky. When the adhesions are numerous they may give rise to hemorrhage, thus complicating the operation. To free a spleen bound down in the pelvis is no easy matter. If torsion of the pedicle occurs, operation must be resorted to before the advent of peritonitis.

Intraabdominal rupture of the normal spleen is uncommon and is caused only by severe trauma, but in malarial countries rupture of the spleen is

much more frequent. Febrier, who practised for years in the southern part of Tunisia, found that splenic rupture represented five per cent, of all the medicolegal autopsies made. On account of the enormous size and superficial situation of this organ it is exposed to external violence. Its friability makes it more susceptible to trauma. The adhesions binding it to the stomach and diaphragm contribute to rupture by pulling on the capsule of the organ and prevent the gland from escaping external violence.

Lacerations, the mechanism of which varies from one case to another, can be conveniently divided into: 1, spontaneous ruptures produced by internal causes, and 2, traumatic lacerations produced by external violence. Spontaneous ruptures usually occur during acute malarial paroxysms, at the time when the hyperemic spleen rapidly increases in size. The parenchyma becomes turgid and the thinned capsule is greatly stretched. On the contrary, it occasionally tears over those areas where the capsule is thickened and this is due to the loss of its normal elasticity. These ruptures occur from some slight effort made by the patient, even while in bed, and they have been known to arise after massive doses of berberine. Berberine, the alkaloid of *berberis vulgaris*, contracts the spleen powerfully from its action on the muscular fibres of the splenic parenchyma during the phase of acute congestion. This drug is used by the Italian practitioners in the treatment of malaria, but less so now than formerly.

It must be admitted that spontaneous rupture of the spleen is, on the whole, exceptional, the traumatic variety being by far the commonest.

Rupture of the splenic capsule does not give rise to any serious consequences, as the loss of blood is small and the wound quickly heals. Laceration of the spleen itself undergoes repair by the formation of a connective tissue cicatrix, which progresses quickly on account of the rich blood supply of the splenic tissue.

Pain, dyspnea, vomiting, syncope, and other symptoms of an internal hemorrhage are the principal clinical signs of rupture of the spleen. Death may occur from shock and not from the loss of blood, but the hemorrhage is usually so severe that death may be almost instantaneous. On the other hand, it may not take place for several hours or even days following the rupture. The collection of fresh blood in the abdominal cavity does not set up an inflammation of the peritoneum, but quite the contrary: rupture of a splenic hematoma may give rise to an acute peritonitis from the bacteria it contains, the origin of which I have already alluded to.

Splenectomy is the ideal treatment, but the operation must be of short duration, which is not always possible in a malarial subject. When the adhesions are extensive suture of the laceration and plugging with gauze may be essayed, and if these fail ligature of the pedicle should be attempted. These measures, however, offer great technical difficulties in malarial subject. Stitching the omentum over the splenic wound may possibly be effective in some cases in arresting the hemorrhage when the wound is not too considerable.

Editorial Notes and Comments

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PROHIBITION SEQUELÆ.

It has become clear since the beginning of the enforcement of the prohibition laws that certain complications and sequelæ are to result from the new social condition. Some of these interest the hygienist and the public health official, but many of them are to have very definite significance for the ordinary practitioner of medicine and must be taken into account in the treatment of at least the subacute affections of this generation. Alcohol will be replaced by certain substitutes and some of these promise to be at least as deleterious as alcohol. Many who take the substitutes will have no idea of the effect produced on them by the unaccustomed materials or by the large increase of fluids to which they had been accustomed before in smaller quantities, and symptoms will develop the proper treatment for which can only come after due recognition of the forces at work. One thing is sure that the suppression of alcoholic liquor is going to increase greatly the consumption of tea and coffee. There are many physicians who are inclined to think that these fluids, especially as prepared in our Western civilization and taken by habitués, are much more likely to do harm to the human system than alcoholic beverages. Tea and coffee in popular use have become stronger and stronger until now they represent to some extent at least concentrated solutions of the essential principles of what are in reality drug materials. They are both of them real stimulants, which of course alcohol was not. We had learned to look upon alcohol as a narcotic, while

tea and coffee are rather irritating nervines.

What we need least of all here in America is stimulants. There is a definite tendency in this country to lead a rather strenuous life even without any stimulant or even, as has been often exemplified, under the influence of such a narcotic as alcohol represents. The late Major Woodruff insisted emphatically that this was due to the fact that the Europeans from Northern Europe who came to this country had to live under much more sunlight than they were accustomed to in their homes across the water. The sun is at a higher elevation, has more direct actinic effects, and above all the blond peoples of the northern nations are irritated into almost constant activity by this increase of sunlight against which they have not been protected by pigmentation in their native countries. Along the Rhine in Europe there is an equilibrium of blonds and brunettes in the population, and the 50-50 of this longitude rapidly changes into very unequal proportions as we go north and south of this line, until in Norway ninety per cent. of the people are blonds while in Naples ninety per cent. of them are brunettes. It is not usually realized that New York is on the latitude of Naples and that therefore, as Doctor O'Malley of Philadelphia has shown by carefully collected statistics, the Irish who come here from their foggy island to be submitted to our intenser sunlight rapidly deteriorate and have a very definite tendency to disappear. The third generation of Irish families have all deteriorated sadly, according to his statistics.

The same thing is true for the English and Scotch and the Scandinavians, and to make such people increased tea and coffee drinkers is to irritate nervous systems still further until proper relaxation becomes almost impossible. Relaxation is needed to afford relief to overwrought nervous systems. With the limitation of the manufacture of malt liquors and spirits in England during the war there was a great increase in tea drinking in what were already tea tipping populations. Coffee was the one thing that remained cheap in this country while all other prices were going up during the war and this led to a great increase in coffee drinking, particularly with the rise in price of the alcoholic liquors generally. It is said that before the war every man, woman and child in this country was consuming the equivalent of twelve pounds of dried coffee beans every year. This is of course only about half an ounce a day, but as the coffee bean contains on the average six-tenths of one per cent. of caffeine and as each ounce contains let us

say in round numbers five hundred grains, it is a comparatively easy problem to work out how many grains of caffeine we take every day. As there are a number of people who have an idiosyncrasy for coffee—calculated to be more than one in ten of the population—who cannot take coffee and as a certain number more take tea by preference, a definite average amount has to be added to what all the coffee drinkers take every day.

There is no doubt that already there is a noteworthy increase in the amount of coffee taken since prohibition went into effect and the afternoon tea habit is growing; beside some of the so-called temperance drinks which are being substituted for alcoholic liquors of various kinds contain theine and caffeine. Iced coffee has become a favorite drink during the summer time and a large glass of it contains more than twice as much strong coffee as the demitasse that used to be taken.

It will not be surprising, then, to have an increase in functional nervous diseases, for they are dependent to a great extent on this overstimulation of the nervous system, this keeping it on edge and not permitting it to relax. There will almost surely be an increase of insomnia and related affections, for the prohibition substitutes practically all have exactly the opposite tendencies with regard to sleep as that exerted by the alcoholic drinks. Tea and coffee, though not intoxicating in the accepted sense of the word, are distinctly toxic and definitely increase blood pressure. As increased blood pressure with its deteriorating effect on heart and arteries is the characteristic pathological development of our time, one unfortunate result can be readily foreseen. Already the death rate above forty has increased instead of diminished and just when men are most valuable the degenerative diseases are carrying them off. The next five years will surely show some very interesting effects of the new régime that has been inaugurated.

THE TREATMENT OF PERIGASTRIC ADHESIONS.

The treatment of adhesive perigastritis is only surgical when medical measures fail. This occurs most frequently in perigastritides which accompany old ulcers, the original cause having long since disappeared. Rest in bed, a milk diet, ice over the epigastrium are often sufficient to control the painful phenomena, but if this treatment—which should always be tried—does not bring about a marked and rapid amelioration, surgical measures must be resorted to. The principal indication for operation therefore is failure of medical treatment, but the presence of an epigastric tumor should hasten

the surgeon to act. There are cases of perigastritis which manifest themselves only by intense pain and repeated vomiting, and in them the pain itself is enough to indicate an exploratory operation. Surgical intervention should be delayed whenever subacute inflammatory phenomena exist in the gastric area. Operative treatment is of two kinds. Some operations directly attack the adhesions and causal ulcer, the others exclude the diseased parts. Among the first are gastrolysis, excision of the ulcer, gastrectomy, or pylorotomy; among the second gastroenterostomy, with or without anatomical exclusion, gastrostomy, and jejunostomy. The choice of the procedure should be based upon the clinical examination, confirmed by direct examination during laparotomy. The adhesions should be carefully destroyed and when the perigastritis is simply the relic of an extinguished ulcer gastrolysis is usually sufficient for overcoming the symptoms.

If lax adhesions cover an ulcer in activity—a florid ulcer on the point of perforation or a callous ulcer—a large excision is indicated. In the case of thick, dense adhesions gastrectomy or pylorotomy may be indicated. If gastrolysis is impossible or dangerous, one must be content with a gastroenterostomy combined with exclusion if the pylorus is patent. If gastroenterostomy cannot be done, jejunostomy is the last resort. Should these general rules be applied in particular cases, one must take successively into consideration the pyloric and pericardiac adhesions as well as those of the mid-portion of the stomach, likewise their nature and location. Lax posterior adhesions, often having an indefinite symptomatology, do not greatly disturb gastric motility; therefore the ulcer should be excised, as gastrolysis will be insufficient.

Pyloric adhesions should not be excised on account of the dangers created by the anatomical relationship of the pylorus. They are a distinct indication for gastroenterostomy—anterior or posterior—with or without exclusion, reserving the radical cure of the causal lesion for a future occasion and which will be greatly facilitated by the disappearance of the adhesions. Pericardiac adhesions are difficult to approach. If not extensive an attempt should be made to excise the underlying ulcer, space being made by resection of the left costal border, otherwise a gastrostomy, or better still a jejunostomy, must be done. Adhesions at the midgastric area create special indications according to their location. In adhesions to the anterior abdominal wall the tumor mass should be removed *en bloc* whenever this is possible, or after separating the adhesions the gastric ulcer and diseased parietal peritoneum are to be excised separately. In adhesions at the lesser curvature a prudent gas-

trolysis should be attempted, followed by annular resection of the gastric segment bearing the ulcer. In posterior adhesions, gastrotomy is dangerous and it is better practice to approach the ulcer directly by the transgastric route. Should callous adhesions unite the stomach to the transverse colon, a resection *en bloc* should be done, beginning with the colon. Finally, in total symphyses, jejunostomy is probably the most rational procedure.

THE STUDY OF ENERGY REQUIREMENTS.

Intensification of interest along any one line of investigation is necessary for the production of practical results in investigation. It has, however, associated with it the danger of neglect of the broader setting in which its results should fit. It is therefore a true recognition of the value of such work that calls attention to this danger and recalls the scientific world to the broader whole of human welfare and efficiency of which such a study forms an essential and indispensable part. The application of years of intensive investigation to a study of the energy requirements in the individual in terms of food intake and output as reported by Dr. Francis G. Benedict before the Massachusetts Medical Society in June, 1919 (*Energy Requirements of Children from Birth to Puberty*; *The Boston Medical and Surgical Journal*, July 31, 1919) gives evidence of the clinical value as well as that which pertains to the building up of a healthy social fabric, of proper and sufficient nourishment measured in terms of energy output.

Nevertheless it should never be lost sight of that the human individual, even the as yet unreasoning babe of a few days, is a marvelous machine of most varied intake, transformation and output of energy, which, however important this one line of consideration may be, has only begun to be measured or even taken account of when all has been said and done that may pertain to food intake and food values. The individual is not alone a diverse physical or physiological machine: Energy value needs also to be considered and most practically so in the interpretation which belongs to desire, wish, effort, which, although dependent for expression and gratification upon the physiological mechanism, are commonly subsumed under the term psychic. The individual use of energy in such a broad sense demands consideration of all the many avenues for intake and output furnished by the variety and complexity of the body makeup, the variety of receptors and effectors afforded by the many sense organs, the activity of organs and tissues. It demands also the interpretation of the appropriation and use of energy according to each individual

personality and this causes variation in personality, its physical health and its psychic success. More than this it lays a special weight of importance upon any one form of consideration, such as that belonging to the studies here cited. The broader psychic background, which is the basis of the interrelations which exist between the various physiological functions, presents variations in any laboratory experiments; and factors of nutriment, for example, which can be most accurately and definitely determined are still subject to the elasticity and variability which belong to this broadly variable background. They receive an interpretation through it which makes them of service not so much in prescribing rules more or less precise, as in making certain more general rules applicable and workable through a wiser training of the whole personality. This demands an understanding of its wider and continuously changeable outreach for energy, the intake of energy through receptors of all sorts, the grasp and transformation of this energy to satisfy individual needs and the healthy effective output in a manner to insure a fresh intake along the necessary lines.

It is the interest of the medical world of the present day, as of the educational world generally, to intensify upon any one line of investigation. There could be no progress, no sure foundation without this. Just as essential, however, is the fitting of any such line into the contemplation of the whole movement, of the individual life as of society, because after all nothing individual can exist alone, not even the function of nutrition. Perhaps also the everyday problems which confront physician and parent in the proper distribution of children's interest upon food would be brought nearer to solution if the attack upon energy intake and output were intelligently open along all lines and all these were kept in consideration as essentially interdependent.

CANADIAN JOURNAL OF MENTAL HYGIENE.

The table of contents of the new *Canadian Journal of Mental Hygiene*, the first number of which appeared in April of this year, gives promise of the important place this journal is to fill in the progress of events. It gives evidence not only of the quickened interest in the variety of problems which fall under the practical term mental hygiene but of the broad way in which these problems are to be definitely attacked on the part of the newly formed Canadian National Committee for Mental Hygiene.

The editors profess their interest in a similar movement, which was initiated in the United States about ten years ago, for bringing these problems within the range of physicians, clergymen, legal au-

thorities, and all others interested in the understanding of society and its improvement in regard to those who need especial examination, care and treatment. In Canada, too, the aim is to bring to the attention of the public in an official and intelligent form the problem of the criminal, the juvenile delinquent, the prostitute, the care and treatment of the insane, in short the whole question of human behavior, especially in all its phases of deviation and abnormality, with a psychological conception of it.

The broad consideration of the functions of a psychopathic hospital, as outlined in this first number of the journal, by Dr. E. E. Southard, of Boston, gives an idea of the extent of the problems assumed and the practical bearing of the task undertaken by the committee and the journal, as it also shows the close coöperation in interest and sympathy which must exist between these formulated efforts on the part of Canada and workers in the United States. The outline of the scope and aims of the mental hygiene movement in Canada presents the various directions in which the practical work must be pushed forward. Other articles which appear suggest the range of medical, psychological, economic problems, the social interests of all sorts, which modern thought realizes more and more keenly must be considered first of all as mental problems and which demand an intelligent and practical hygienic consideration. Such a movement formulated thus is not merely a sign of the times. It is a sweeping movement which belongs to the times themselves, indicating not alone the fields to be entered and the possible inroads that might be made. Much more it represents the actual forward effort while at the same time it invites members of society to an appreciative attitude and an active coöperation in this most fundamental progressive movement.

IN REMEMBRANCE OF FRENCH DOCTORS.

How best to preserve the memory of the doctors and medical students who died for their country is a question which is giving the Faculty of Paris some trouble to decide. The idea of a commemorative monument in Paris itself seems the most reasonable. A proposed statue in front of the Faculty of Medicine in Place Danton seemed to some banal. Others would utilize the old amphitheatre of the Ecole de Chirurgie, an architectural gem of the eighteenth century, condemned to demolition and to transport it brick by brick into the little square at the angle of the Rue Racine and the school. In 1915, Doctor Landouzy, never thinking the war would last so long, put up a large mural tablet in the Salle des Pas-Perdus with the names of doctors dead in war service, but, on went the war, the names increased in towns and villages, many dying of exhaustion engendered by an overwhelming daily task, so that the idea of using the building as a kind of temple on whose walls all the names shall appear, seems to be a suitable one, for unto Paris all doctors do, or hope to journey during their medical life and a universal temple seems more dignified than isolated monuments in other towns and villages.

News Items.

Influenza in Montevideo.—Despite the efforts of the government and the medical profession, influenza is still ravaging the interior of the country, according to press dispatches.

British Medical Association.—At the annual general meeting of the British Medical Association on July 25th, Sir Clifford Allbutt was reelected president of the association for 1919-20.

Pan-American Conference on Influenza.—The Uruguayan National Bureau of Hygiene is planning a Pan-American conference on influenza, to be held in May, 1920, in Montevideo. Other South American republics will be invited to send delegates.

Medical Classes to Be Larger.—Classes in medicine are expected to be larger than usual this fall, according to announcements from Johns Hopkins University and the University of Maryland.

Fewer Sick Babies.—The Baby Health Stations of New York city report an increased enrollment for the first six months of 1919 over the corresponding period of 1918 and a reduction of 506 infant deaths for the same period.

New White Cross Hospital Planned.—The White Cross Volunteer Hospital, which for some years has maintained a first aid station on the ocean front at Rockaway Beach, is contemplating opening a larger station next summer at Hammels, Long Island.

Tuberculous Children in the War Zone.—Dr. Alice Barlow Brown, of Winnetka, Ill., who has just returned from France, is quoted in a published interview as believing that at least sixty per cent. of the children in the war zone are afflicted with tuberculosis.

Tuberculosis Hospital Not a Menace.—The Supreme Court of Louisiana, in a suit to enjoin the city of New Orleans from establishing a tuberculosis hospital in the city, decided that a well kept tuberculosis hospital is not a menace to the health of the people living in the vicinity.

Cholera in Petrograd.—Cholera and dysentery are reported to have broken out in Petrograd. Secrecy is maintained regarding the number of cases, but public meetings have been held for the teaching of elementary precautions. There is a lack of the drugs necessary for the treating of these diseases, and many of the hospitals have been closed.

New York and New England Association of Railway Surgeons.—The twenty-eighth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York city, on Monday, October 20th. A very interesting and attractive program has been arranged, which includes a symposium on the Modern Treatment of Infected Wounds, which will be presented by leading surgeons. Railway surgeons, attorneys, and officials and all members of the medical profession are cordially invited to attend. Dr. J. S. Hill, of Belkows Falls, Vt., is president of the society and Dr. George Chaffee, of Binghamton, N. Y., is corresponding secretary.

Canadian Department of Health.—A bill creating a federal department of health has been passed by the Canadian Parliament.

Physicians Form Labor Union.—More than two hundred physicians in the Bronx, New York city, have organized a labor union, which is intended to take in eventually the entire city and to affiliate with the American Federation of Labor. The aims of the new union include bringing about union conditions for physicians in the employ of insurance companies and in hospitals and to fix union rates for physicians generally.

Meetings of Local Medical Societies.—The following medical societies will meet in New York during the coming week:

MONDAY, September 15th.—Psychiatric Society of Ward's Island.

TUESDAY, September 16th.—Federation of Medical Economic Leagues of New York.

WEDNESDAY, September 17th.—Society for Experimental Biology and Medicine; Medico-Legal Society.

THURSDAY, September 18th.—New York Celtic Medical Society.

New Association to Fight Tuberculosis.—The Maryland Tuberculosis Association has been incorporated as the successor to the Maryland Association for the Prevention and Relief of Tuberculosis. The incorporators are Dr. Henry Barton Jacobs, Dr. C. Hampson Jones, Dr. Martin F. Sloan, and Dr. John S. Fulton. Doctor Jacobs is president. The new organization is actively engaged in promoting a children's health crusade, in the establishing of county tuberculosis associations and tuberculosis visiting nurse work, in various educational activities and in maintaining a children's preventorium.

Graduate Medical Teaching in Glasgow.—An emergency postgraduate medical course was instituted in Glasgow during May and June, especially for the benefit of medical men who had served in the military forces. Some American medical men were in attendance, as well as others from India, the West Indies, South Africa, and China. Another course along the same lines will begin early in September. It will include classes in medicine, surgery, obstetrics, and various special subjects.

Montana State Medical Association Officers.—At the annual meeting of this association in Missoula, July 9th and 10th, the following officers were elected: President, Dr. Edward M. Larson, of Great Falls; first vice-president, Dr. Lawrence Stevens, of Laurel; second vice-president, Dr. Patrick H. McCarthy, of Butte; third vice-president, Arter W. Deal, of Lewistown; secretary-treasurer, Dr. Elmer G. Balsam, Billings; delegate to the American Medical Association, Dr. Edward W. Spottswood, of Missoula.

New Officers of Iowa Society.—The Iowa State Medical Society recently elected the following officers for the ensuing year: President, Dr. W. L. Allen, of Davenport; president-elect, Dr. Donald Macrae, Jr., of Council Bluffs; first vice-president, Dr. George C. Stockman, of Mason City; second vice-president, Dr. Granville N. Ryan, of Des Moines; secretary, Dr. Tom B. Throckmorton, of Des Moines; treasurer, Dr. Thomas F. Duhigg, of Des Moines; editor, Dr. David S. Fairchild, Sr., of Clinton.

Personal.—Dr. Seymour Oppenheimer, of New York, has been appointed consulting otologist to the Willard Parker Hospital.

Air Medical Service Bulletin.—Congress has been asked by Secretary of War Baker to authorize the publication, at government expense, of what would be known as the *Bulletin of the Air Medical Service*.

Women's Medical Association.—A special meeting of the Women's Medical Association of New York City was held Thursday, September 11th, to arrange an appropriate welcome for the women physicians attending the international conference and to appoint delegates to the convention.

Dublin Hospitals Close.—The entire Whitworth Hospital, Dublin, consisting of eight wards, has been closed, and the Richmond may also be closed by the time this item reaches print, due to the government's refusal to increase the subsidy. The eastern departments of all hospitals have been closed for some weeks. It is reported that the dearth of patients makes it impossible for students to received the necessary clinical instruction.

New Flight Surgeons for Army.—New surgeons picked from the regular Medical Corps are being trained as flight surgeons for the Air Service of the Army to replace men who have been discharged. A class of seventeen recently completed a course of instruction at the Medical Research Laboratories, New York, and a class of twelve will terminate their course on September 15th. A third class of ten may be assigned. Nearly all these student officers have passed the physical examination for flying, and it is hoped that all of them will qualify as pilots.

Exchange of Medical Literature.—One of the activities of the Fellowship of Medicine, London, has been the establishment of an Anglo-American committee to bring about a better interchange in the medical literature of both countries. The committee will endeavor to secure articles on varying subjects from medical men throughout the United States and Canada and to have these published on the other side in whatever journals the articles seem best suited for. Dr. Joseph Beck, of Chicago; Dr. James J. Walsh, of New York; Colonel A. M. Whaley, Medical Corps, United States Army, and Major J. C. Carrol, Medical Corps, United States Army, of Plattsburg, have been asked to form a similar committee in the United States. Colonel C. F. Martin, C. A. M. C., is taking care of Canada. Upon the organization of these committees similar contributions now being collected in England will be sent over for publication in American journals. The personnel of the English committee consists of: Sir William Osler, Sir Arbuthnot Lane, Dr. Leonard Williams, Major William Byam, R. A. M. C.; Dr. Harry Campbell, Doctor Richardson, of Philadelphia; Dr. Carl Browning, Dr. Arthur Giles, Doctor McLean, Mr. E. Bradner White, Brigadier General H. S. Birkett, C. A. M. C.; Dr. Robert Leiper, London Tropical School; Lieutenant Colonel D. Harvey, Sir Humphry Rolleston, Dr. Arthur Latham, Dr. R. McNair Wilson, Dr. V. E. Sorapure, Dr. Robert Knox, Mr. J. Y. W. MacAlister, Mr. Philip Franklin and Mr. H. J. Paterson.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING TYPES OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 428.)

The mode of invasion and earlier stages of gonococcal rheumatic disorders often greatly resemble those of rheumatic fever. A recognized means of differentiation lies in the fact that the gonococcal condition as a rule involves but one or a few joints at a time, while in rheumatic fever involvement of several joints is typical. Yet even in the latter affection, frequently but one articulation—in particular the ankle joint—is involved at the beginning for several days. Again, a monarticular form of rheumatic fever is sometimes met with, while on the other hand, gonococcal rheumatism is not infrequently polyarticular. The opportunity for confusion is augmented in that the gonococcal joint remains inflamed for a considerable time, so that even though at first but one joint has been involved, one or more others may be attacked before the involvement of the first has subsided, thus creating, in a sense, a polyarticular type of the disease. Both in rheumatic fever and gonococcal rheumatism the involved joints are ordinarily very painful and greatly swollen. In each case the skin overlying the joint is hot, tense, and edematous, and pain is aggravated by motion or pressure. Extreme severity of the joint inflammation has been held suggestive of gonococcal arthritis; yet in some instances of this nature, joint swelling is absent, the diseased condition being manifested merely in arthralgia. Another recognized differential feature is the greater persistency of the articular involvement in the gonococcal affection. Yet as a matter of fact the acute stage of the latter is not, as a rule, of long duration, the pain declining and effusion diminishing after some days or weeks so that from superficial observation, a distinction of the condition from rheumatic fever may not be very evident. On the other hand, rheumatic fever runs a variable course and while in many instances the acute symptoms pass off completely in three weeks there are also many with a tendency to recrudescence of symptoms, suggesting a different, more protracted species of disease.

From these facts, the necessity will be realized of a fairly careful study of the accessory clinical features accompanying an acute joint involvement suggesting rheumatic fever, if confusion of this condition with acute gonococcal arthritis is to be avoided. The history or coexistence of urethritis is the most important accessory factor in differentiating the gonococcal disorder, for it applies from the very beginning of the case. The presence of a specific urethral discharge is the indication particularly to be sought, though its absence does not

exclude gonococcal rheumatism. Other differential features, available later, are the sudden migration from one joint to another in rheumatic fever, the more marked constitutional symptoms, the less constant involvement of the tendon sheaths and serous bursæ in the proximity of the diseased joints, the greater tendency to cardiac complications, the subcutaneous nodules, the lesser frequency of iritis and involvement of the plantar fasciæ, and finally, if practicable, the demonstration of gonococci in the blood stream or affected articulation.

In the treatment of gonococcal rheumatism, sodium salicylate, while not entirely useless in the more acute cases, is of less service than in rheumatic fever; though affording some symptomatic relief, it exerts little or no influence on the course of the infection. According to some, methyl salicylate, in doses of five to twenty drops in milk, frequently repeated, is of appreciable value in the gonococcal disorder. Others recommend potassium iodide or syrup of ferrous iodide in ascending doses. At the outset of the disorder castor oil or calomel followed by epsom salts should be given. The diet should be light, avoiding stimulants and condiments, and the patient encouraged to drink plenty of water. For pain, if the salicylates do not afford relief, antipyrine, codeine, or morphine may be required.

The chief factors in the treatment, however, are to subdue the primary urethritis, apply suitable local measures, and administer vaccines. Affected joints should be kept at rest by having the patient remain in bed and applying light splints. Pain may be influenced locally by means of ice bags, evaporating lotions, an ointment of ichthyol, or counterirritation with iodine or turpentine. Balzer used an ointment consisting of five parts each of salicylic acid, oil of turpentine, and hydrated wool fat, with 100 parts of benzoated lard. Where swelling is marked but pain not severe, firm bandaging has been advised. After the more acute symptoms have subsided, massage and passive movements, dry hot air applications, stasis hyperemia, and the use of blisters or the thermocautery are in order. Some advise, however, the institution of obstructive hyperemia treatment as soon as the diagnosis of gonorrheal arthritis has been made.

From vaccine treatment good results have frequently been reported in acute as well as in subacute or chronic cases. Stock vaccines prepared from a number of different strains of the gonococcus are often employed, though according to some an autogenous vaccine is to be preferred. The initial dose of killed bacteria in acute cases ranges from five to fifty million, given every two to five days; later, in the more chronic cases, from fifty to 100 or even 500 million, in ascending amounts, administered at intervals of five days to a week. According to Eyre and Stewart, an aggravation of

joint symptoms, corresponding to the "negative phase," is likely to occur in from twelve to twenty four hours after the injection, but in thirty-six to forty-eight hours the symptoms clear up, pain and tenderness pass off, and joint movements become much more free. Others report cases with distinct improvement within twenty-four hours. Persistent vaccine treatment is necessary if the maximum degree of benefit is to be secured.

In cases of gonorrheal arthritis that fail to show reasonable improvement after the acute and sub-acute urethral conditions have cleared up under the usual measures, J. R. Dillon, 1918, recommends the operation of seminal vesiculotomy, which he has carried out in ten cases. Rapid improvement of the joints followed the procedure, especially as regards the periarticular lesions. The vesicles were slit longitudinally and gently curetted. The prostate gland was found to require attention also in some cases.

(To be continued.)

DIET IN HEALTH.

The *Practitioner* for July, 1919, is devoted to an excellent symposium on this subject, the scope of which is best shown by the titles of the papers: Vitamines, by Kenneth Goadby; The Physiology of Nutrition, by W. M. Bayliss; Dietetics in Childhood and Youth, by J. Porter Parkinson; Dietetics in Adolescence, by Clement Dukes; Dietetics in Senescence, by Charles Mercier; Dietetics in Old Age, by Thomas Bodley Scott; General Observations on Diet, by Harry Campbell; and Dietary of Troops in the Home Army During the War.

In an introduction the editor suggests that the almost universal habit of man to overeat may be due in part to the increased palatability of food produced by cooking, and in part to an unsatisfied craving for material of which the food has been more or less deprived by the cooking. His statement that "Raw foods do not provoke to surfeit, they stop at satiety" may be questioned as to its correctness when we remember the gorging of savage peoples with raw food, so often mentioned by travelers, and perhaps raw food does not compel mastication to the degree he thinks, but it is possible that in the vitality destroyed by cooking there are some elements which are valuable, if not essential, to the economy.

This idea is borne out by Goadby, as he states that if cabbage is boiled from thirty to sixty minutes it loses at least fifty per cent. of its antiscorbutic power, which is completely destroyed by heating to 120° C. for sixty minutes. This proves that certain vitamins are impaired or lost by cooking. He tells us also that butter contains a vitamin which is essential to growth, that this vitamin does not exist in coconut, cotton seed, and other vegetable oils, and that margarine made from these sources cannot therefore replace butter, as it is inferior to it in nutritive value. This is a matter of importance, if Goadby is correct.

Parkinson gives as a suitable diet for an ordinary healthy child between the ages of three and six years: Breakfast—porridge and milk three days a week; on the other days, a soft boiled egg or bacon; toast or bread and butter; marmalade, if

liked. Dinner—mutton, beef, or fish, rabbit or chicken, with potatoes and a green vegetable, followed by jam roll or suet pudding, or milk pudding with treacle or jam, and afterwards some raw fruit. Tea—cocoa and milk, or milk; bread and butter and jam; cake or biscuits. Bed time—Half a breakfast cupful of milk, or bread and milk. A child should never be coaxed into taking more food. In a healthy child the appetite is the best guide to the needs of the body and the digestive powers. The following should never be given to children under six, and only occasionally, in small quantities, after that age: Pork, ham, sausage, tinned goods, goose, duck, game; cucumbers, radishes, tomatoes, raw celery; hot new bread, cakes containing dried fruits, any kind of pastry, nuts, bananas, tea, coffee, wine and beer. The feeding of children from six to twelve years of age approximates more to that of adults, but care should still be taken to eliminate the more indigestible foods. Fish of all kinds and all meats may be eaten except pork, lobsters and crabs. Pastry should be taken in small quantities only. Any fruits may be given, unless certain ones disagree with the individual child.

With regard to the diet of adolescents Dukes asserts that it is almost impossible to overfeed rapidly growing young people, between the ages of thirteen and nineteen, provided the food is not rich in quality. An adult should rise from table hungry, but a youth should not arise until he has attained a sense of repletion. A healthy appetite in adolescence, not the caterer's own appetite or desires, is the surest guide, so long as the food is plain and wholesome. A larger quantity of all the essential kinds of food is demanded than at any other time of life, and a relative excess of proteins is indispensable if the highest state of growth and development is to be attained. Milk is the standard growth food. Children who have milk for breakfast and supper grow nearly four times as fast as those who have tea and coffee. Meat should be eaten twice a day, about three quarters of a pound for the younger ones, a pound for the older. Some adolescents have an antipathy to meat, and to them cheese is invaluable. Soup is beneficial and fat in some form is a necessity, but is required in less quantity than sugar. • At certain periods some adolescents have an instinctive dislike to fat, especially if they are tired; at other times they will eat it with avidity. The best forms in which it can be supplied are milk, butter, margarine, bacon, and suet puddings, for they will eat animal fat in that form when they will not touch the fat of meat in any other. Green vegetables are needed to insure the best health, but there is difficulty in getting young people to eat many of them; their place can be taken by fruit, which is much appreciated. Finally Dukes maintains that the chief cause of indigestion in healthy adolescence is not over eating, or bolting food, but is the drinking of tea and coffee too strong, too much, or too frequently.

Mercier begins by saying: "Less is known about dietetics than about any other department of physiology, and if anything is known of the modifications of diet that are desirable in senescence, it is not known to me." A certain quantity of food is necessary to keep the body in health and working

order. It varies much with the age, size, and activity of the person, with the climate, and with other external conditions. The quantity appropriate to any given person in any given condition has not been estimated with accuracy, and as the conditions in which he lives and the amount of his activity are constantly varying, an estimate would not hold good for any length of time. A temporary deficiency, if not too great, can be made good from the stored resources of the body, and a temporary excess can be disposed of in both cases without permanent harm, but continued and considerable deficiency or excess will in time be disastrous. In senescence the body has attained its growth, the energy of the body begins to slacken, for both internal and external work, while the upper layers of brain tissue continue to develop. As the man grows older his capacity for muscular exertion is diminished, and therefore he does not need as much carbohydrate food as formerly. A man does not dispose at forty of the carbohydrate he dissipated in muscular exertion at thirty; if he continues to consume the same quantity he becomes corpulent. As age advances we begin to "feel the cold," and need an ample ration of fat; as long as we are free from migrainous disorders we are not taking too much. Mercier has found in his practice deficiency of the protein ration far more frequent than excess. He does not believe that any one knows how much protein in the diet means moderation and how much excess; all he is sure of is that the same quantity does not mean the same for different people. The man, senescent or not, who cuts his protein below an ill defined minimum will suffer from inefficiency and confusion of mind; he cannot attain or maintain his intellectual best without an ample ration of protein. The beverages appropriate to oncoming old age are alcohol in its various preparations, tea and coffee. Alcohol is unnecessary, and as a rule undesirable, for the young, but only the exceptionally healthy are not the better for it at senescence. It aids digestion and it aids sleep, both of which are likely to show the first signs of failure at about fifty and it promotes euphoria. Tea and coffee stand much upon the same level; poor substitutes for alcohol, but not without merit as adjuvants.

The border line between middle age and old age is very ill defined, and Scott says that as the passage from one to the other is very gradual, so should be any change of diet. In a sound old person, with normal blood pressure, who has lived a reasonable life, there is no need for any change in the nature or quality of the diet, but as old age increases and activity decreases the change must be in the quantity. The intake of food should be regulated by the output of work. The chief thing for the old to avoid is the flesh extracts, beef tea, strong meat soups, and rich gravies. Meat, fish, and chicken are better boiled than fried or roasted. Vegetable soups made with bone stock may be taken, but should not be thickened with much starchy material. Cheese, eggs, and milk should supply the greater part of the nitrogen required, with the help of oatmeal, lentils, wheat bread, and macaroni. Fat is needed badly and is best supplied in the form of cold boiled fairly fat bacon or cold

pickled pork. Sugar is craved for and is beneficial. Coffee and tea are good stimulants, but coffee is a tension raiser. Alcohol is not a tension raiser and is a great help to old people in the form of wine or beer. Finally monotony must be avoided in the diet of old people and a sufficiency of vitamins be provided for.

Wright describes the dietary of the British home troops and makes these three points: 1. Good food badly cooked is no longer good food, for unless it is appetizing it is not eaten with the keen desire which should precede good digestion. 2. Good food properly cooked is not appetizing when badly served. 3. Good food properly cooked and properly served can become almost nauseating unless plenty of change is introduced.

Extraction of Intrathoracic Projectiles.—Robert G. Le Conte (*Annals of Surgery*, July, 1919) describes the method of delayed extraction of foreign bodies in the thorax as developed by Le Comac and Petit de la Villéon at the naval hospital at Brest. The method depends upon the localization of the projectile in regard to its anatomical surroundings and not to its mathematical relationship to surface markings. The localization is made through a fluoroscopic screen, as is the removal also. The anatomical localization is made with the patient standing and the permanent situation of the shadow of the projectile by frontal and lateral examination, which gives the intrathoracic position. For example:

1. The displacement of the shadow downward during inspiration, following the diaphragm, and upward during expiration, i. e., in reverse direction to the movement of the ribs, shows the projectile to be in the freely working lung.

2. If the shadow follows the rib movement, the foreign body is in the lung adherent to the rib or in the pleura.

3. When it is in that portion of the lung which lies in the costodiaphragmatic angle, by turning the patient there will always be a position in which the projectile will be viewed clearly between the shadows of the diaphragm and the thoracic wall, and separate from these shadows.

4. If the projectile is in the cul de sac and adherent to the pleura, it will follow the movement of the ribs or diaphragm.

5. The projectiles on the dome of the diaphragm are localized without difficulty, but where the shadow of the foreign body is continuous with the shadow of the diaphragm, the question of anatomical localization is difficult. At times the exact location can only be determined by an exploratory operation.

6. When the shadow is on the quadrilateral space bounded by the internal borders of the scapula and the fourth and eighth ribs, its anatomical position with regard to the great vessels and large bronchi at the root of the lung is most important. On a lateral view the hilum of the lung will be between the plane made by the anterior portion of the bodies of the vertebrae and the posterior shadow of the plane of the heart. If the shadow of the foreign body lies posterior or anterior to this

space, the projectile is in the lung at a safe distance from the hilum. Above the fourth and below the eighth rib it is also in an accessible region.

7. In the left chest the relations of the foreign body to the heart and pericardium must also be determined and if it moves with the heart beats and not with respiration removal by means of the fluoroscope should not be attempted. An open operation is indicated.

Technic of operation.—The patient is fastened to a table, the top of which is movable on its long axis with the x ray tube below. The anesthesia is given in the lighted room. Then in the darkened room the x ray is turned on and the point of approach noted on the skin. The light is turned on and a small opening is made in the pleura large enough to admit the forceps which are placed in the opening. The x ray is turned on in the dark room and the forceps are forced toward the projectile gently. The shadows of the end of the forceps and the foreign body are brought into line by the shifting of the table from side to side. The foreign body is gently pried away, grasped and removed. The three essentials for this operation are: 1. The radiosopic eye; 2, the correlation of the shadows of foreign body and forceps; 3, gentleness and dexterity of the hand. The closed forceps can safely pass through the lung tissue without causing injury to the vessels or nerves.

The danger from hemorrhage comes with the extraction of the rough unprotected projectile. The forceps should fit the opening in the chest wall snugly in order to avoid the production of pneumothorax.

Ethyl chloride anesthesia was used for the shorter operations, and chloroform was added if they were prolonged. The anesthesia was continued in the dark. After the operation the patients were given a sixth of a grain of morphine and an injection of antitetanic serum. Codeine was given to prevent cough. The patients were up in a week and left the hospital in a month. Extraction of foreign bodies from the lung should not be attempted by the novice until he has worked for some time with an expert radiographer, has acquired the necessary dexterity of hand, and has learned to correlate intuitively the shadows of the projectile and tip of the forceps.

Value of Solid Paraffin in Facial Surgery.—Spencer Mort (*Lancet*, July 19, 1919) advocates the use of solid paraffin in plastic facial surgery as the material giving the best results, having tried all others. The technic of its use is simple. Where it is desired to build up a part or to elevate an adherent scar a prick is made in the skin near the part where the wax is to be placed, using a tenotome, and not making an opening wider than a quarter of an inch. The tissues around this incision are elevated and one or more small shaped splints of the cold, sterilized wax are dropped, one at a time, into the subcutaneous tunnel and pushed into position. The incision is closed immediately by a fine catgut stitch and covered with a collodion dressing. The part is massaged vigorously before the patient recovers from the anesthetic.

Note on Reamputation.—A. E. Chisholm (*British Medical Journal*, July 19, 1919) has found the following points to be of practical value in the performance of reamputation operations. A terminal scar should be avoided, which is usually easy in the thigh, but often not possible in the leg if the knee joint is to be preserved. In the latter case the scar must take its chance, but troublesome adherence may be avoided by guarding against infection, and probably also by including a thin layer of muscle in the flaps. A retention suture left in for a few days tends to prevent the adherence of the scar to the bone in the wrong way. It is seldom necessary and probably rarely wise to include muscle in the flaps, and a good fibrous pad is usually formed between the skin and the end of the bone. The reamputation should be made clear of the disability for which it is being performed, and an effort should be made to be sure that no further operation will be required. It is much better to sacrifice a little extra bone, which can usually be spared, than to risk a poor result with the possibility of having to amputate again. The flaps, therefore, should be cut clear of the old scar unless there is some valid reason for not doing so. If there is the slightest suspicion of sepsis the scar should specially be avoided, since pathogenic organisms may lie latent for considerable periods. Anteroposterior flaps should usually be employed for the thigh, the anterior being the longer and providing the pad for the newly sawn bone end. It is seldom good treatment to dissect the adherent scar off the bone end; the skin should be undercut and sutured, leaving the bone intact. Even when the end of the bone is healthy such a scar is likely to be terminal and to readhere, reproducing the original disability. A difference must be made in dealing with terminal sequestra between those which show pronounced sepsis and those in which there is little or no sepsis. No reamputation should be performed in the presence of an actively septic wound, but healthy granulation is not a contraindication. Where healthy terminal granulation exists it may be swabbed with pure phenol and covered with gauze clipped to the skin before beginning to cut the flaps. When the wound fills up with clot it should be opened up under general anesthesia, the clot cleaned out, the wound re-sutured and drained in the usual way. If this be not done there is great risk of sepsis. Where the available skin is scanty it may be stretched by extension applied for days or even weeks before the reamputation is undertaken. To avoid flexion when operating a short way below the knee a posterior splint should be applied before the patient recovers from anesthesia. Fomentations or Carrel's treatment may be applied for a few days where mild sepsis follows reamputation. Where there is a mildly septic sinus, or when the muscles do not appear very healthy, and a reamputation has to be performed the wound should be left open and a flavine pack applied, delayed primary or secondary suture being performed a few days later. Or the wound may be sutured after the application of bipp. Before suture of the wound the author swabs the fresh, raw surface with ether, which acts

as an antiseptic and encourages bleeding so that small vessels which might later prove troublesome can be ligated. Ether also tends to show up unhealthy muscles. After applying the ether and securing all the small vessels, the wound is closed and sutured accurately. A narrow rubber dam is introduced at each end of the wound and left in for two or three days, after which they are removed if no sign of infection has appeared. A thin rubber dam gives very efficient drainage and is far preferable to tubing. If these rules are adhered to few failures will result, though not all the wounds will heal by first intention.

Prophylactic Heliotherapy against Tuberculosis in Children.—P. F. Armand-Delille (*Bulletin de l'Académie de médecine*, June 24, 1919) attributes to Rollier the credit of definitely showing, not only that sunlight therapy is curative in local tuberculous disease, but also that it yields prophylactic results in children with enlarged glands or anemia, suspected of tuberculosis. The author, in the summer of 1918, sought to apply this method by establishing a sunlight school in Savoy for about fifty refugee children whose mothers were being treated elsewhere for pulmonary tuberculosis. Whenever the weather permitted, these children were taken to a suitable location in the country, clad only in drawers, and carrying light, folding desks. The proper place for the sunlight school was chosen each day according to the direction of the wind and the temperature. Study periods were alternated with periods for play and breathing exercises. The classes were held in sunlight in this manner both morning and afternoon, the work for the day being concluded at 4:30 p. m. On rainy days the school work and exercises were held under a shed, with the children clothed. Each child attended the sunlight school for from four to six months. Favorable effects already began to appear, however, at the close of the first month. After three or four months, the children were vastly improved. Pale and anemic at the start, with weak musculature, round shoulders, heads sagging forward, and prominent abdomens, the children took on good color and a general tan, their heads were held high, chests enlarged, and the abdomens drawn in owing to strengthened abdominal muscles. All follicular inflammations and abscesses of the skin disappeared, suspicious glandular enlargements subsided, respiration and regularity of heart action were improved, appetite and sleep were excellent, and the disposition of the children seemed greatly influenced, nervousness and peevishness giving place to a bright, sunny state of mind. Similar results were obtained in 125 children who attended sunlight school during the winter at Sylvabelle, Var. The author thinks all children should be given the benefit of this form of preventive heliotherapy. In view of the fact that exposure to direct sunlight is attended with some danger where there is actual pulmonary tuberculosis, such exposure tending to produce a congestive reaction in the diseased lung, the children's lungs should be carefully examined before they are allowed to attend the sunlight school and kept under medical supervision during the course.

Preparation and Properties of Antipneumococcic Serums.—C. Truche (*Bulletin de l'Académie de médecine*, June 17, 1919), in preparing these serums, cultivates highly virulent pneumococci on his special T and MM media. After incubation for fifteen to eighteen hours, the sediments obtained by centrifugation are treated with a mixture in equal parts of alcohol and ether, then dried in sulphuric vacuum. Finally, the product is ground and kept in sterile flasks. In immunizing a horse, known amounts of the alcohol-ether germs are injected intravenously on ten successive days. The horse is bled eleven days after the last injection, fifteen days later, ascending doses of germs are injected on four successive days, rest for eleven days allowed, the animal then bled again, and so on. Death of the animal from hypersensitiveness to injections is always obviated by diluting the germs in a large amount of tepid saline solution. Mice are used in titrating the serums. Four different serums, representing four types of pneumococci, are prepared. Three of these correspond to the first three American types. The fourth, likewise an active germ, is different from the American Type IV, and is a special strain isolated by Borrel and Kérandel from colored troops. The serums are primarily specific as regards prophylaxis, but when highly active are also polyvalent. Precise bacteriological diagnosis is clinically necessary before serum is used. In lung infection, the affected area is punctured with a fine needle and a few drops of fluid obtained by suction with a syringe, to be grown on agar. In established pneumonia, eighty to 100 mils are injected subcutaneously on the first day, and twenty to forty mils on succeeding days.

The intramuscular route, is to be preferred, and requires only thirty to forty mils on the first day and twenty mils thereafter. The procedure of choice, however, is intravenous injection. To obviate reactions in patients who have already had therapeutic serums, the twenty mils for intravenous use—hitherto sufficient—are diluted with 180 mils of normal saline solution at body temperature. The first twenty mils of the dilution are given very slowly, the remainder more rapidly. The pulse rate is carefully watched during the treatment. If the pulse rate falls before or along with the drop in temperature, the prognosis is favorable; if not, the injection must be repeated. If the pulse remains high, the treatment has probably been started too late. In pneumococcic pleurisy, sixty mils of serum should be introduced after evacuation of the effusion and on subsequent days, twenty mils. In meningitis, forty mils are injected intraspinally after puncture and twenty mils intravenously, to be repeated for at least four successive days. In endocarditis, twenty mils are injected intravenously and repeated. In pneumonia, deferescence occurs in one or two days and the pulse drops to an average of eighty. In pleurisy, the serum seems a good adjunct to surgical treatment. As for the efficacy of the serum in pneumonia, the author is in possession of much evidence showing that the mortality in grave forms is greatly lowered.

Miscellany from Home and Foreign Journals

Microscopical Versus Clinical Diagnosis of Ectopic Pregnancy.—M. Caturani (*American Journal of Obstetrics*, June, 1919), with the object of controlling with the microscope the accuracy of the clinical diagnosis, examined microscopically a series of 100 Fallopian tubes removed at operations performed for presumptive clinical evidence of ectopic pregnancy. In only fifteen instances did the specimens fail to yield positive microscopical evidence of the condition. The rupture of the tubes, ragged in appearance and typical of the erosion of the chorionic cells, is almost pathognomonic of ectopic gestation. Of forty-two cases of rupture, only one was negative. Complete tubal abortion and hematosalpinx of old standing present serious difficulties to the finding of microscopical evidence. The information derived microscopically in cases of hematosalpinx or hematocele considered to be due to causes other than ectopic pregnancy is at times incomplete. The detailed and convincing observations of Freund, Schamberger, and Bazy are sufficient to demand at least a revision of the older teachings. The microscopical diagnosis of ectopic gestation is not always easy, and the absence of this evidence should not be considered as absolutely excluding pregnancy. In doubtful cases, a cause of the hemorrhage other than ectopic pregnancy should be sought; if it is not found, the importance of the clinical data for diagnostic information should not be disregarded in favor of microscopical examination.

Cerebrospinal Fever.—J. Dorgan (*Lancet*, July 19, 1919) enters into an extended discussion of several of the factors concerned in the question of the epidemiology and prevention of cerebrospinal fever, basing his arguments upon intensive study of a large military garrison and of other outbreaks or local instances of family epidemics. He lays special stress upon the finding of a large proportion of atypical, and usually unrecognized, cases of the disease at an early stage of an epidemic. Such unrecognized cases range from mild, indefinite febrile attacks to attacks of acute and fatal illness. They are invariably found in close relation to proved and typical cases, but usually largely outnumber the latter. During a given outbreak of cerebrospinal fever the relative frequency of these atypical and vague illnesses runs closely parallel with the numerical involvement of different groups of men with typical cases. It is very often possible to show the existence of an intimate association in barracks, and other places of congregation, between one or more atypical cases of illness and a case of definite cerebrospinal fever, and the same is often found to exist in families. In the present state of imperfection of methods many of these atypical cases remain bacteriologically undiagnosed, but a considerable proportion of them can be found to be harboring the meningococcus as the infecting organism. The author contends that the variation in the types of illness is not attributable to differences so much in the meningococci as to variations in the sus-

ceptibility of the different individuals. He argues, with supporting evidence, that the so-called types are not valid differentiations, but are mere slight mutations of the same organism, and he points out that in no other epidemic disease is it contended that any single epidemic outbreak is due to the simultaneous activity and prevalence of several different biological strains of organisms. He contends that such a conception with reference to cerebrospinal fever is quite analogous to contending that a given epidemic of enteric fever is due to the simultaneous presence of the typhoid and the paratyphoid bacilli. The author also seeks to make a case against the importance of healthy carriers as the cause of epidemics, and lays great stress on the apparent importance of the large prevalence of the atypical cases. He supports his arguments against the importance of carriers by statistical studies of the relation of carriers to cases in definite groups of men, and also shows that in any large unit of men only a small proportion of the carriers are discovered. The author also cites evidence against the common belief that the infection of the meninges takes place by direct passage of the organisms through the nasal passages, and contends that the infection is commonly primarily of the blood. He shows that only a very small proportion of men in whom there subsequently develops cerebrospinal fever show the presence of the organisms in their nasopharyngeal passages even just prior to the development of the definite disease. From extensive studies he also shows that the transmission of the disease is not to be feared if good conditions of housing and properly enforced ventilation are rigidly maintained. The provision of such conditions, together with the immediate isolation of all suspicious cases and of all cases of indefinite illness, are the most efficient measures for the prevention of the spread of the disease.

Oxygen Peritoneal Inflation and X Ray Examination.—Stein and Stewart (*Annals of Surgery*, July, 1919) describe the röntgen examination of the abdominal organs following oxygen inflation of the peritoneal cavity. The method was first used by Killing in 1902, and was revived in 1910 by Jacobaeus of Stockholm. Röntgenograms showed that the following viscera and areas may be made visible by gas inflation of the abdomen: 1, The liver and spleen as a whole, including the region of the gallbladder; 2, pyloric portion of the stomach; 3, coils of the large and small intestine without bismuth filling; 4, the walls of the stomach and large intestine with gas contents; 5, the bladder filled with urine; 6, parts of the mesentery; 7, the subphrenic space, not readily accessible to diagnosis; 8, many intraabdominal tumors. A new technic in order to bring out the distinct contour of the parenchymatous organs as well as their relation to each other is described as follows: After the patient is prepared in the usual way for röntgen examination he is put flat upon his back and the abdomen is inflated with from three to four litres

of oxygen. The skin at the area of the insertion of the needle is painted with iodine and anesthetized by novocaine-adrenalin solution. The spot of choice is two to three fingers to the left of the umbilicus and about an inch and a half below it. The needle is pushed through until it touches the fascia. After a halt of a few seconds it is pushed through fascia, muscle and peritoneum without any difficulty. The abdomen is then inflated in from four to five minutes, and from three litres to a gallon are introduced. The oxygen is usually absorbed in about twenty-four hours. The method has been used after the removal of large intraabdominal tumors in order to prevent adhesions. Oxygen in the abdominal cavity has a tendency to lessen post-operative shock, nausea, and vomiting. The gas is nonirritating. When caution is used and the needles are injected slowly there is little danger of perforation of the intestines, as, due to their elasticity, they recede. The patient should be x rayed from two to three hours after the inflation. The examination may be made in most varied positions and the solid organs are revealed with great clarity. In the erect position splendid contrasting pictures can be obtained of the diaphragm, liver and the attached gallbladder, normal spleen with its outstanding pedicle, and both kidneys. In the horizontal position, with the patient's back to the table, marked postoperative adhesions between the intestines and parietal peritoneum were demonstrated. A large carcinoma of the ascending colon was also made out. In the exaggerated, lateral, Trendelenburg position the normal uterus, round ligaments, small cystic ovaries, and normal bladder, as well as myomatous tumors of the uterus which had previously not been found by the x ray, were revealed. Pathological conditions, such as carcinomatosis, cirrhosis, or marked hypertrophy of the liver, enlargement of the spleen and tumors of the stomach and intestines, as well as those of the genital organs, were easily demonstrated.

Different Strains of Pneumococcus.—M. Nicolle and E. Debains (*Bulletin de l'Académie de médecine*, June 24, 1919) state that agglutination is the criterion of different strains of a given organism, while the fixation reaction is that of different species. Antipneumococcic and antimeningococcic serums have relatively little agglutinating power, and the corresponding germs themselves relatively slight agglutinability. Studying the agglutinability of a large number of samples of pneumococci from different sources, all soluble in bile, the authors found forty-eight per cent. to be immediately agglutinable; forty-five per cent. apparently nonagglutinable, unless subjected to the modified Porges method, and seven per cent. hyperagglutinable, i.e., sensitive even to normal horse serum. Of the agglutinable pneumococci, seventy per cent. were of the pure and thirty per cent. of the mixed variety; among the former, fifty-nine per cent. belonged to Type I, and among the latter, sixty-four per cent. showed dominance of Type I. Of the nonagglutinable pneumococci, ninety-one per cent. were of the pure and nine per cent. of the mixed variety; among the former, eighty-two per cent. belonged to Type II, and among the latter sixty-seven per cent.

showed dominance of Type II. Of the hyperagglutinable pneumococci, sixty per cent. showed dominance of Type II. Of Type II antigen is thus met with in a majority of all pneumococci. Study of the action of the serums on the pneumococci by the Bordet-Gengou method or fixation reaction showed that all pneumococci contain the four antigens characteristic of the species. Antigens, however, are not specific substances. Thus, of eighty-three samples of streptococci studied by the agglutination method, eighty-two were found to contain the pneumococcic antigen Type II, and one, the pneumococcic antigen Type I. The antigen Type II also occurs in meningococci, gonococci, staphylococci, typhoid and paratyphoid bacilli, and the Shiga and Flexner organisms. Traces of antigen Type III were found in several samples of streptococci. These findings account for the repeatedly observed beneficial effect of antipneumococcic serum Type II in streptococcic infections.

Distribution of Nitrogenous Compounds in Cancerous Tissue.—Albert Robin (*Bulletin de l'Académie de médecine*, June 17, 1919) refers to experiments showing that the total nitrogen in fresh cancerous liver tissue is less than that in normal liver tissue. This is due to a relative increase of water in cancerous tissue, and demonstrates that the cancerous process is able to build up a larger mass of tissue from a given amount of nitrogen than the normal tissues. Dried cancerous liver, however, contains from 16.3 to 18.0 per cent. more nitrogen than dried normal liver, which shows that the true solid portion of cancerous liver tissue requires more nitrogen in its construction than normal liver. This unusual content of nitrogen in dried cancer tissue is probably due to an increase in the soluble nitrogen compounds. In both fresh and dried cancer tissue, however, the insoluble nitrogen increases in the most seriously diseased portions of the liver, while the soluble nitrogen diminishes. The most logical explanation of these findings is that the cancer proteins are built up at the expense of the products of autolysis of the organ in which the growth develops, and not with proteins intended normally for the healthy tissues. In tuberculosis, the soluble nitrogen in the portions of lung tissue that are still sound do not increase. The tubercle is thus not constructed at the expense of the nitrogen set free through disintegration of lung tissue that is still normal, the process being in this respect the opposite of that apparently obtaining in cancer. This view is supported by the researches of R. A. Kocher, who found in cancer a marked increase of the hexone bases among the main factors in tissue growth. These bases result from disintegration by a ferment of the proteins in the organ in which cancer is about to develop. They are thought to be utilized in the building up of special cancer proteins, the wealth of which in the amino acids of growth endows the cells absorbing them with the power of growing and multiplying indefinitely. These investigations favor the existence of a special soil favorable to cancer development and establish a marked contrast between the cancerous process, a ferment disease, and the bacterial disorders such as tuberculosis.

End Results of Transfusion.—W. Grant Waugh (*British Medical Journal*, July 12, 1919) reports on the end results in a series of 124 patients transfused with unaltered whole blood by means of Vincent's paraffin coated tube. The chief indications in the base hospital were severe secondary hemorrhage, as a preliminary to high amputation of thigh or arm, and in certain cases of pyemia. Usually about 600 mils of blood were given, but amounts up to 1,200 mils were occasionally used. Incompatibility was encountered in three cases, in two of which it was probably due to faulty comparison of the bloods before transfusion. No harm resulted in either of these. In a third patient, one suffering from pyemia, acute collapse with symptoms of hemolysis developed and resulted in death after about 200 mils of blood had been given from the same donor as had supplied the blood for a previous transfusion without harm. It is believed by the author that the incompatibility developed in the recipient as the result of the previous transfusion, though specific tests to determine this could not be made. The general end results obtained are given in the form of the percentage of deaths, and it should be borne in mind that transfusion was often performed in many desperate cases. In patients with secondary hemorrhage and ligation of the main artery there were thirty-three per cent. of deaths among those transfused as compared with forty-six per cent. among those not transfused. In secondary hemorrhage with amputation of the limb the deaths were, respectively, 28.5 per cent. and fifty per cent. for the two classes. In cases of sepsis or gangrene with amputation of the limb the deaths among the patients transfused were ten per cent., contrasting with thirty-one per cent. among the patients not transfused. Finally transfusion was tried in nineteen cases of pyemia and the deaths were only about thirty-seven per cent. In this latter group the blood used was obtained from men who had recovered from slight septic lesions.

Streptococcal Infections of Septic Wounds.—Alexander Fleming and A. B. Porteous (*Lancet*, July 12, 1919) investigated the streptococcal infections as seen at a base hospital and found there was but one type of streptococcus predominant, and that that type was responsible for almost all of the severe septic complications. It was found in pure culture in nearly all of the infected joint cavities and fresh pockets of the wounds, and was responsible for all the streptococcal septicemia encountered following wounds. The bacteriological characters of the organism are described and it is pointed out that certain of them are not constant, such as some of the fermentation reactions. All of the strains isolated showed some hemolytic power, but there were marked differences in this respect in strains isolated from the blood of septicemic patients. This streptococcus was found in almost every one of a series of over 100 cases of septic wounds in men who had remained at the base hospital for more than seven days, and the organism was invariably of this type in the forty-seven cases in which a streptococcus was isolated from the blood. Investigation showed that this hemolytic,

pyogenic streptococcus was present in only about fifteen per cent. of wounds examined early in casualty clearing stations, as contrasted with over ninety per cent. of the wounds in men who had been at the base hospital for a week or more. On the other hand, it was present in most of the patients in the casualty clearing station who had been retained for more than four days. From these observations it was evident that the infection was acquired in the hospital, and probably was carried from one patient to another in the course of dressings. The administration of doses of 1,000,000 to 5,000,000 streptococci in vaccine in cases of pyemia, and especially in the less severe cases, was repeatedly followed by a fall in the temperature and a feeling of well being. The authors are strongly of the opinion that where the surgeon can secure good drainage, no harm and much good will result from the routine administration of similar doses of a stock streptococcus vaccine once weekly. An autogenous vaccine is not practical in most cases, and is unnecessary, since the injection of one strain of *Streptococcus pyogenes* gives rise to antibodies to the same degree to all strains. Observations showed, further, that the organisms found in the circulating blood were almost certainly being derived from some focus of infection which was deficient in respect of its protective barrier formation, and that the organisms were not growing and multiplying within the blood stream. From that observation it followed that the utmost care should be observed in the first few days of the wound to keep out the streptococci and to avoid all treatment which would inhibit the development of the defensive processes.

A Case of Epicanthus and Congenital Ptosis.—F. Antill Pockley (*Medical Press*, August 13, 1919) says that epicanthus is a fairly common congenital condition, especially in slight degrees, while more marked cases, which are frequently associated with ptosis, are not uncommon. The results of the operation are generally disappointing to both surgeons and patients, and the number of different operations devised for its cure shows that we have not yet succeeded in getting a satisfactory one. In this case both the epicanthus and the ptosis were of extreme degree, the epicanthal fold partly covered the cornea of each eye, and the ptosis, also bilateral, was so great that the lids were quite closed, and the child had to raise them with his finger to be able to see. The operation Pockley adopted was a modification of Rogman's, slightly altering the shape of the incisions and excising the V shaped portions of the skin, instead of transposing them. The upper flap of skin is undermined, and both it and the lower portion drawn across the two V shaped denuded areas and sutured. A few weeks after the operation for epicanthus the ptosis was dealt with by Hess's well known operation of subcutaneous fixation of the lid to the occipitofrontalis which acts as a levator. This is the operation Pockley has done for many years for ptosis, and he prefers it to any other. It always gives satisfactory results. Both operations were done on one eye at a time, first the epicanthus and three weeks later the ptosis.

The Influence of Alcoholism in the Production of Hallucinations in General Paralysis of the Insane.

—S. L. Immermann (*Journal of Nervous and Mental Disease*, April, 1919) speculates on the etiology of hallucinations in paresis. Supposing it to be essentially a physical disease, why should we have frequent and vivid hallucinations, often resembling closely those of precox, or other so-called functional psychoses? He reviews the most prominent theories hitherto advanced, as follows: 1. The anatomical theory, supposing the occurrence of hallucinations to depend upon the location and nature of the pathological process; 2, previous personality, or the predisposed individual; 3, the toxic theory, and 4, the psychogenic theory. Immermann investigated the rôle of alcohol in producing hallucinations in this disease. He found a group of patients showing no hallucinations, but being depressed, grandiose, maniacal, or fabricatory. Another group of patients had visual hallucinations only, and these he subdivided into a delusional depressive group, a manic depressive group, and an alcoholic hallucinatory group. A third group with auditory hallucinations he divided into a subgroup of depressive delusional cases, another subgroup of manic depressive types, and a nonclassified subgroup. Immermann's conclusions were that while excessive alcoholism was found in certain groups it seemed to be an indirect factor only in the production of hallucinosis, that florid patients showed a conspicuous absence of hallucinations, and that there was a certain fairly well defined type of patient with a manic make up, absent knee jerk, excessive alcoholism, and hallucinations. Incidental observations of interest noted by the writer were: Knee jerks were diminished or absent, least frequently in the depressed groups, about twenty-two per cent. Visual hallucinations occurred in fifteen per cent. and auditory hallucinations in thirteen and six tenths per cent.

Recent Researches in the Etiology of Cholera.

—E. D. W. Greig (*Edinburgh Medical Journal*, July, 1919) points out that in reaching a diagnosis of cholera, especially in sporadic cases, evidence of three kinds must be considered, namely: 1, Epidemiological; 2, clinical; 3, bacteriological. It is not safe to label a case cholera on clinical grounds only, however typical the signs may be. Clinically cholera is a syndrome, that is, a collection of signs, none of which has specific value, and even the combination has not. As regards the bacteriological diagnosis, we have seen the difficulties in certain cases due mainly to the intermittent discharge and the presence of pseudovibrios resembling the cholera vibrio. Having discussed the distribution of the organism in the human host it is of importance to determine the duration of the life of the vibrio after it leaves man, because this has an important bearing on the question of reinfection. In the older observations on this question a fallacy occurs in the experiments because in most instances old stock cultures of the cholera vibrio which has been grown on artificial media for long periods were used. Such cultures give erroneous results as regards longevity of the organism. It is necessary to employ "uncultured" strains of the vibrio for such

experiments; that is, those which have never been grown on artificial media. The experiments of Greig show that from the moment the cholera vibrio leaves the host the organisms begin to die with great rapidity; hence it becomes evident that the duration of the life of the organism outside the human body is much shorter than its life inside the host (man or experimental animal). The observation is of great epidemiological significance. Next it was noted that temperature had a most important bearing on the extracorporeal life of the cholera vibrio. It was observed that during the colder months in Calcutta the life of the cholera vibrio was longer than during the hot months, consequently the critical months in Calcutta as regards cholera infection are the colder months, because the chances of infection are increased considerably by the prolongation of the extracorporeal existence of the cholera vibrio. It is noteworthy that these critical months immediately precede the annual recrudescence of cholera in Calcutta, which takes place in the months of February, March and April. The facts that have been considered lead to the conclusion that an essential measure in an intensive anticholera campaign is the detection of the infected person, especially the carrier. This is not an easy matter; but although the difficulties are great, every effort should be made to overcome them by perfecting and rendering more precise the machinery for dealing with this question. Further, it is essential that all measures should be based on the results of scientific research.

A New Sign of Nerve Regeneration.

—Isador H. Coriat (*Boston Medical and Surgical Journal*, August 7, 1919) refers to Tinel's sign of tingling or formication produced by pressure on the injured nerve. Although not a sign to be relied upon alone, he considers it very valuable when taken in connection with others. He says that the test is very easily applied, but should be carefully done in each case, as the tingling produced by neuroma formation may lead to error. In neuroma formation or in the early stages of regeneration without neuroma formation, the formication is limited to the level of the lesion. In the neuroma formation also, where the regeneration axis cylinders are blocked and may consequently lose themselves in the surrounding tissues, the formication remains fixed at the level of the lesion. In actual regeneration of the nerve the formication progresses over the zone of the growth of the axis cylinders and can finally be detected along the partial or entire cutaneous distribution of the nerve. For a time it may involve the entire cutaneous distribution, but as regeneration becomes complete, it finally can be detected only in the extreme periphery.

The exact cause of this formication it is difficult to state, but since it can be produced by a far lighter pressure than formication in an uninjured nerve, it probably is due to an increased sensitiveness of the young axis cylinders. It is best, however, not to rely upon the formication sign alone. The test should be carefully correlated with the other investigations of the nerve lesion, such as protopathic and epicritic sensibility, regenerating pain points, and electrical reactions.

Certain Organisms Isolated from Cases of Influenza.—H. J. B. Fry (*Lancet*, July 12, 1919) isolated an organism from two German prisoners during the third wave of the influenza epidemic. In blood culture in glucose broth the organism appeared as round or oval, gram negative, yeastlike bodies, and subculture produced gram negative bacilli, varying in size from coccoid, or coccobacillary, to short filamentous forms. When these minute forms were grown on six per cent. salt agar the yeastlike forms were again obtained. The organism was highly pathogenic to the rat and guinea-pig, producing ecchymotic and hemorrhagic lesions in the lungs, and appearing in the various tissues and fluids after death, as well as in the tracheal mucus. Another type of organism was frequently isolated from material from widely different sources in cases of influenza, appearing in the form of round or oval spores which stained deeply with gram when young, but which showed many gram negative forms in older cultures. This organism also produced a wide variety of forms in culture, including large hyphal threads, lanceolate diplococci, diplostreptococci, and streptococci, varying greatly in their reactions to the gram stain. The various forms are described in detail, including a very minute coccoid form obtained by prolonged growth. Such findings suggest that influenza may be of mycotic origin, but further work is needed to determine the validity of the suggestion.

Concussional Effects of Heavy Explosions.—Chavigny (*Bulletin de l'Académie de médecine*, June 17, 1919) refers to earlier experiments in which he found that animals placed in the immediate vicinity of violent detonations, when they escaped direct injury by material fragments, showed no injury from atmospheric vibrations or waves, whether of the compressive or decompressive type. These observations were in harmony with a number of occurrences at the fighting front, where certain men, remaining standing, without direct injury, at the very margin of a crater just produced by a shell, subsequently showed no nervous or mental disturbance. Recently the matter was put to a more careful test by an army chemist who placed himself on the ground, covered merely with a box lid to ward off falling stones, at a distance from where 350 kilogram charges of explosive were set off. The resulting detonations were sufficient to break windows 1,000 metres away and open doors 3,000 metres away. Yet the subject of the experiment did not experience any ill results in repeated trials. At the distance of eighty metres the disturbance did not seem like a heavy explosion. The man merely felt some disturbance going on, but the wave was poorly appreciated by the ear, as though it had been beyond the field of noises normally perceptible to this organ. Persons stationed farther off heard, instead, a terrific explosion. The relative harmlessness of violent detonations thus indicated stands in direct opposition to the views of a number of neurologists during the war. The disturbances produced in the nervous system would, according to this, belong rather to the domain of psychiatry than that of neurology, and better results from treatment would be expected.

Clinical Significance of the Lymphoidocyte.—A. Knyvett Gordon (*Lancet*, July 19, 1919) recalls the fact that the lymphoidocyte is now regarded as the original ancestor of both the red and white corpuscles, and after birth it is never found in the peripheral circulation in health. Its definite recognition is difficult and requires close examination and the use of the panoptic stain. It has been found in the peripheral circulation in the leucemias, especially of the lymphatic type, but has not been recorded in other diseases. By the use of the panoptic stain, however, the author has found this cell in the blood in ten out of eleven cases of subacute bacterial endocarditis of the Libman type, it having been present in the proportions of from two to ten per cent. of the white cells. It is to be recalled that this type of endocarditis is invariably fatal. In none of the cases was there pernicious anemia, leucemia, or marked leucocytosis. This cell was also found in the blood of two patients moribund from old age; in one moribund from gangrene of both legs; in one case of diabetes, and in a case of carcinoma of the liver. So far the cell has not been found in any patient who was not suffering from an obviously fatal disease.

Anesthesia by Insufflation of Ether or Ethyl Chloride Through a Catheter in the Nasopharynx.—A. Malherbe and M. Boureau (*Bulletin médical*, April 19, 1919) agree with A. H. Miller that ethyl chloride is a safer anesthetic agent than either chloroform or ether. For many years Malherbe has been using it for operations occupying three quarters or even one hour. In operations on the face his customary "compress method" of using the anesthetic is inconvenient for the operator, and in such cases the authors have been using the following procedure, which is applicable to either ethyl chloride or ether: The patient is first placed under anesthesia by the compress method, a compress of cloth folded to four thicknesses and held in the shape of a cone being placed over the nose and mouth and two or three mils of kylene poured over it twice, at an interval of fifteen or twenty seconds. In a minute and a half or two minutes the patient is in complete resolution, with abolition of the corneal reflex and dilated pupil. A soft rubber Nélaton catheter, No. 20, with two openings at its tip, is then promptly inserted through the right nostril and pushed in to the pharynx. The catheter is connected by a short glass tube with a rubber tube of the same diameter, sixty to seventy-five centimetres long, which in turn is connected with the outlet of a thermocautery apparatus provided with the usual rubber bulb. Anesthetic vapor is driven into the pharynx by pressure on the bulb every three or four seconds. A mark is made on the catheter fifteen to sixteen centimetres from its tip, indicating the proper depth at which it should be introduced. The procedure has the advantages of simplicity and of introducing the anesthetic by the normal nasal route. Where the anesthetic tends to congeal in the cautery flask, a compress moistened with warm water may be wrapped around the latter. No vomiting occurs during the anesthesia, which the authors have already applied in a variety of cases.

Proceedings of National and Local Societies

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-sixth Annual Meeting, Held at Atlantic City,
June 14, 16, 17, 1910.*

The President, Dr. GUY HINSDALE, of Hot Springs, Va.,
in the Chair.

(Continued from page 395.)

Dilatation of the Bronchi.—JABEZ H. ELLIOTT, Lieutenant-Colonel, C. A. M. C., Toronto, Canada, presented a review of forty cases observed from June, 1918, to June, 1919. The disease was frequently confounded with tubercle of the lung and chronic bronchitis. It was not a rare disease and its presence was frequently overlooked. The cases reported represented most but not all of those seen during the past year. Most of the cases were in returned soldiers paraded for recommendation as to disposal. The remainder were those seen at the special chest clinics at St. Michael's Hospital and the Hospital for Sick Children, with five from other sources. The disease was usually secondary to disease of the bronchial wall, lung, or pleura. In gas poisoning, bronchiectasis occasionally resulted, doubtless from the damage done to the bronchi and aided by a degree of pulmonary fibrosis which followed the purulent bronchopneumonia or bronchiolitis which was not infrequent after the inhalation of chlorine and mustard gas. Diagnosis was summarized thus:

For the diagnosis of bronchiectasis there were required, first, evidence of the existence of a cavity, and second, reasons for believing that the cavity was a dilated bronchus. The first might be a matter of fact, the second of opinion, and thus the diagnosis of bronchiectasis must in the nature of things be nearly always uncertain and often impossible. The bronchiectatic origin of the cavity was a matter of opinion only, and if difficult to decide the question after death, as it so often was, even with the help of the microscope, it must be frequently impossible during life. When the signs of cavity had existed long without change, and without the development of phthisis, especially if the cavity was in the base of the lung, the diagnosis of bronchiectasis was justified. It was upon these data that the diagnosis was usually made, but as no account was taken of the fact that similar cavities might develop as the result of suppuration or gangrene after pneumonia or in the course of chronic tuberculosis, the data were obviously insufficient. It was always misleading and often incorrect to speak of such cavities as bronchiectatic, and it would be more accurate to describe them by the term chronic excavation of the lung, which in fact involved no theory. The diagnosis of bronchiectasis when such marked clinical signs were present could usually be made, though it was difficult when the lesions were apical.

A generation ago the diagnosis of tubercle of the lung was rarely attempted except in the presence of cavity signs or of grave constitutional symptoms associated with change in percussion note

and on auscultation. Yet with practically no addition to the armamentarium other than the demonstration of the tubercle bacillus, earlier diagnosis was made and today even before the appearance of positive bacteriological findings and in the presence of only slight physical findings there was no hesitation in making an early diagnosis. The diagnosis of dilatation of the bronchi might frequently be made in the absence of definite cavity signs. Only within the past three years was there anything to be found in the literature of the subject to help one in diagnosing the condition early.

When the presence of dilatation of the bronchi was suspected, the diagnosis, in the majority of cases, could be confirmed by the x ray examination. röntgenograms of the chest, properly made, usually showed the dilatations very clearly, and after seeing what could be done by an expert operator, one could not fail to recognize what an enormous waste was going on in the production of inferior work, which failed to demonstrate this bronchial lesion which occurred not infrequently. Stereoröntgenograms were as important in the diagnosis of early or deep seated bronchiectasis as was the finding of the tubercle bacillus in the absolute diagnosis of tuberculosis of the lungs.

The conclusions based on a study of the forty cases were: Bronchiectasis was not a rare condition and would be frequently met with in a special chest clinic. It was to be differentiated in its early stages from bronchitis and tubercle of the lung and in its advanced stages from pulmonary abscess and tuberculous cavity. Hemorrhage was frequent and might be slight or severe. Repeated examinations of the sputum for tubercle bacilli should be undertaken. Given purulent sputum, which on a series of examinations showed no acid fast bacilli, the diagnosis of tuberculosis of the lungs was not justifiable until other chronic respiratory diseases had been excluded. Clubbing of the fingers and toes was a very suggestive symptom. In differential diagnosis a careful clinical history and a study of the symptoms and physical signs would usually determine opinion but the stereoröntgenogram was invaluable. Nutrition had been good in most of the patients and this was of some assistance in differentiating from tuberculosis. The x ray findings showed that the single plate was of value only in the diagnosis of dilatations of the main bronchi or their primary divisions, and not always satisfactory even here. For dilatation of the smaller divisions or in the presence of much peribronchial infiltration and pulmonary fibrosis the stereoröntgenogram was necessary. It was an invaluable aid in diagnosis.

The Diagnosis of Emphyema.—Dr. J. N. HALL, of Colorado, read a paper on this subject in which he explained some of the reasons why so many effusions in the chest were found by the pathologist rather than the clinician during the past two years. In the first place, the concentration in camps of many men, more especially of young men from the rural districts, gave opportunity for the wide diffusion of acute respiratory infections and at the same

time for an increase in virulence of the causative organisms. The resultant pneumonias and bronchopneumonias departed very widely from the usual types seen in times of peace. The unparalleled epidemic of 1918 added still further to the confusion, and during this period many purulent effusions occurred as accompaniments rather than as sequelae of the pulmonary consolidation. The solidified lung, often held by pleural adhesions, could neither collapse nor retreat before the effusion and it spread as a thin layer around the periphery of the lung instead of accumulating in a pool within the pleural cavity. Unless the absence of vocal fremitus was noted the effusion frequently remained unsuspected. Even if suspected, aspiration frequently failed to establish the presence of fluid, for the layer was so thin that the needle easily passed through it and suction filled the needle with the pneumonia exudate or with blood and the needle was withdrawn from a "dry tap." The only sure method was to insert the needle slowly and the few drops picked up established the diagnosis microscopically.

Another source of error lay in the presence of loculated, multiple effusions. There were frequently as many as four pockets of different fluids within the chest. There was no safety without the use of the needle in every suspicious area. On finding an infected exudate one should be prepared for secondary exudates either simple or infected either in the same serous cavity or some contiguous one.

There was a curious type of empyema in which diagnosis often failed without the help of the röntgen rays, and sometimes with it. In these cases the effusion gathered above the arch of the diaphragm without coming in contact with the periphery of the chest at any point. The abscess finally broke through a bronchus, temporary recovery ensued, and the physical examination remained entirely negative. The shadow of the fistulous track might show in the röntgenogram.

During the winter of 1917-18, many bloody effusions occurred in connection with lobar pneumonia, not associated with any special type of pneumococcus but frequently with the hemolytic streptococcus. Sometimes the pericardium was involved as well as the pleura. These cases went rapidly on to supuration and sometimes purulent pericarditis as well as pleural empyema developed. Repeated use of the exploring needle sufficed to determine the time when the effusion became really purulent.

Doctor Hall described in detail a number of other conditions whose existence or development was unsuspected, the empyema remaining undiagnosed, and presented the results of his study of the different types of infection. He believed that many an empyema was missed by not going deep enough for it and considered that the technic of using the needle was of extreme importance. The needle should be used until one was satisfied that no collection of fluid had escaped detection. The fact that only impaired resonance was present in the effusions in the upper fissure of the right lung should not be a deterrent. Lung tissue should be penetrated to find the pus in many instances. If fluid was found in more than perhaps a third or a quarter of the taps made, the needle was not being

used often enough. After one of the speaker's patients had been repeatedly but unsuccessfully aspirated, the empyema was found on the thirteenth puncture and the patient was restored to health.

The End Results of Employment of Ex-Patients in Sanatoria for Tuberculosis.—Dr. HARRY E. BARNES, of Wallum Lake, R. I., showed the results of employing discharged patients in the sanatorium itself. The advantages of an employment bureau for tuberculosis patients fit to work, conducted by the National Tuberculosis Association or some other charitable organization, were demonstrated. There was no doubt that patients were benefited by work in sanatoria when possible, as it increased their chance of survival about twenty-five per cent. Sanatoria should employ patients whose disease had become arrested or quiescent in preference to healthy persons. There should be an employment bureau for finding positions for ex-patients in sanatoria.

The material upon which Doctor Barnes based his paper was obtained from the subsequent histories of 286 patients who had been employed during the years 1906 to 1919, inclusive, in the State Sanatorium at Wallum Lake, R. I. The plan was to put patients, whose disease was undergoing arrest, on graduated exercises and a gradually increasing maximum of four and one-half hours daily of work similar to that given them later as employees. When employed, the daily hours of work were eight for domestics, eight and one-half for nurses, and nine for outside laborers. The work was necessarily light, less than ten per cent. of these patients being considered fit to do heavy lifting. The chief disadvantage of employing patients from the standpoint of the institution was the possibility of relapse, the percentage of those who suffered relapse being twenty-one per cent. This, however, was more than counterbalanced by the advantages of knowing the character of the disability of these persons and the opportunity of quickly filling vacancies from the resident population. Ex-patients could be employed as waiters, nurses, outside workers, housework (mainly cleaning), orderlies, laundry, assistants, carpenters, and in miscellaneous positions. It was shown by a classified table that about sixty per cent. of the patients employed in any capacity were known to be living, while 521, or only fifty-five per cent. of similar groups who had not entered such employment, were known to be living. It was only just to give these people preference in employment in order that the money provided for fighting tuberculosis might go when possible to those who had actually suffered from the disease. Since it could be shown that it prolonged life it was even more incumbent on institutions for tuberculosis to employ expatients.

Discussion.—Dr. E. O. OTIS, of Boston, expressed his belief that although his experience had been limited regarding the employment of tuberculous patients, this course would always be difficult because when a man was able to work he preferred to return to his former occupation, which frequently he was able to do with advantage. Employment in the sanatorium might be beneficial in a certain number of cases in order to keep the patients there

under observation, but the atmosphere of these institutions, if sustained too long, was likely to be deleterious and the sooner the patient was able to get away from it the better, provided his physical conditions warranted it.

Dr. CHARLES H. MINOR, of Asheville, N.C., commented on the work of Colonel Hoagland and Colonel Bushnell in the army and its surprising as well as encouraging results. The first great difficulty in the army had been the impossibility of getting a permanent personnel in the hospitals, and there could be no standardization until this was accomplished. In addition the problem would not be satisfactorily solved until there was a more general cooperation of specialists in tuberculosis. Another difficulty lay in the difference in grade of army officers. Still another great difficulty was the lack of opportunity to carry on outdoor treatment. Pavilions for fifty men each should be provided where there were plenty of recreational advantages and an *esprit de corps* existed. In spite of all this, however, the tuberculosis work in the army was admirable and was an example of efficiency that might well be followed elsewhere.

COLONEL GEORGE E. BUSHNELL, of Washington, D. C., expressed his interest in Colonel Hoagland's work and belief that it would serve as an example of tuberculosis work in general throughout the army. The lack of a sufficient number of medical officers had been a serious handicap, but despite this Colonel Hoagland had certainly made a success of the work. Where there were so many patients it had been decided that it was better to divide the work into sections and to make each officer responsible for his section. One man could usually handle 250 or 300 patients but more than that would interfere with discipline. The work done at Otis was very important in that it demonstrated the possibilities of large institutions in caring for tuberculous patients, provided there was a properly selected corps of officers and assistants.

Captain JOHN D. THOMAS referred to two phases of Colonel Hoagland's presentation that he believed were very important: 1. The psychological aspect and, 2, the vocational reeducation or rehabilitation of these patients. He considered that Doctor Hoagland's work would act as an example and it was to be hoped that in future those discharged from tuberculosis hospitals would be doubly equipped by vocational training to take their place in life as efficient social units.

Dr. FRANCIS M. POTTENGER, of Los Angeles, said that in listening to Doctor Pratt's paper it had occurred to him that the important point was the training of assistants and attendants. That tuberculosis was difficult to handle was not sufficiently appreciated. Curing of tuberculosis required rest and this seemed so simple that it was too often taken as a matter of course and as a therapeutic measure was not sufficiently emphasized. The psychological factor was also extremely important. These patients were sent to institutions often against their will and they thought only of the time when they could go home again. Individual attention and well planned methods of approach taught them that the institution gave them the best

of all opportunities to get well. After discharge, it had proved an effective practice to tell these patients that they should follow their previous occupations, if not too difficult, but to be careful to follow carefully the rules of health they had been taught. So much strength and effort were required to bring about adaptation to a new field of work that if a former occupation was not entirely unsuitable it was better to revert to it. If a new line of work was undertaken and failure resulted, it was likely to have a bad effect on the patient's condition.

Dr. JAMES ALEXANDER MILLER, of New York, declared that the work done in the army in regard to tuberculosis, under the direction of Colonel Bushnell and Colonel Hoagland, was admirable. Fortunately there had not been a great war tuberculosis problem, but there was a tremendous peace problem and the work done as a result of the war would stimulate the peace program. Doctor Miller said that Colonel Elliott's paper had interested him particularly because in New York, where many were being examined in whom there was presumptive evidence of tuberculosis, twenty-five per cent. had been found to be nontuberculous. In a large proportion of these cases bronchiectasis existed and in many there was localized pus in different locations. The value of the x ray and the fluoroscope in the differentiation of these conditions could not be overemphasized.

Dr. JAMES M. ANDERS, of Philadelphia, in speaking of the physical diagnosis of encapsulated pus in the pleural sac said he had learned to look for certain rather definite physical signs. A systematic physical examination should include a search for areas of limited expansion, spots of defective resonance, and localized pleural signs. Another point was the advisability of making repeated exploratory punctures, if one felt convinced that a focus of infection might be present.

Dr. J. N. HALL, of Denver, called attention to the fact that following an epidemic of influenza one might expect to find a great many cases of bronchiectasis. Many physicians thought that if empyema was present they ought to get pus every time they punctured. As a matter of fact, even in the presence of an empyema, there were two negative punctures to every one that was positive. The needle should be used more often.

Major WILLIAM L. DUNN, of Asheville, N. C., considered that three or four things stood out particularly in the foregoing papers. First of all, the importance of rest in tuberculosis should be impressed not only upon the specialists but upon the general practitioners as well because of the fact that the period of rest was comparatively free from danger while the change from rest to exercise was the dangerous period. The hardening of the patient after the rest cure should be done with caution. Another point was the importance of establishing some standard for boards of health by which they could inevitably recognize clinical tuberculosis. Still another point, brought out particularly by the experiences of war, was the way in which men, in whom the disease had been arrested, withstood the rigors of army life. He had previously been of the opinion that no men, suspected of having tuber-

culosis, should be admitted to the army, but he had been forced to modify this opinion.

Colonel Hoagland, in closing the discussion, emphasized the fact that the training of the medical officers of the regular army for tuberculosis work was very important and it should not be forgotten that the personal relationship between the physician and the patient should be harmonious. There were very few instances in the service where a medical officer was called on to care for more than thirty-two patients, and if he could not keep in personal touch with this number of patients he could not hope for successful results. Doctor Minor's pavilion idea was a good one but it was not easy to get the pavilions. The reconstruction department had been a great boon to tuberculous patients in the army hospital, as it quieted their intense desire to get out of the service and go home, a desire never so strongly felt by the tuberculous man in civil life.

The Epidemic of Influenza Occurring in the United States Naval Hospital in Philadelphia in 1918.—Dr. JUDSON DALAND, Lieutenant Commander, Medical Corps, United States Naval Reserve Force, medical consultant to the Fourth Naval District, Philadelphia, read this paper which was based upon a study of the more serious of about three thousand cases of influenza occurring among the officers and men in the United States Naval Hospital in Philadelphia. Most of the patients were between the ages of twenty and twenty-six years and were in unusually good physical condition. The general conclusions based upon this study were as follows:

The epidemic was introduced into the United States by ships from abroad, differed markedly from preceding epidemics and was characterized by rapid and severe onset, extreme contagiousness, and high death rate. The period of incubation was from one to four days. The epidemic disappeared because most of the nonimmune had been infected. There was extreme susceptibility in the young adult and comparative insusceptibility of those past middle age. There was nonresistance to the disease even by those of unusual strength and vigor.

Toxemia was the dominant cause of symptoms, complications, and death, and it acted upon the tissues and organs of the body. Cyanosis occurred frequently and if extensive was prognostically serious. The chief and perhaps the sole underlying cause of the cyanosis was toxemia. Some of the secondary causes of cyanosis were disturbance of the vasomotor system, toxic myocarditis, bronchopneumonia, and congestion, overfull venous system, epinephritis and suboxidation of the blood. Hypoadrenalism was suggested because of the frequency of low systolic and diastolic and large pulse pressures with adynamia. In a series of thirty-seven autopsies many showed marked disease of the adrenals. The importance of an exhaustive study of the adrenals was emphasized in future epidemics of influenza. The adynamia was probably due to the effects of the toxemia upon the nervous and muscular systems and the adrenals.

Toxemia affecting the muscles and nerves connected with respiration probably caused the deficient pulmonary expansion. The most common

location of a beginning bronchopneumonia was in the apex of the spinal half of the lower lobe of the lung. The bronchopneumonia might exist in the absence of breath sounds due to nonentrance of air and percussion resonance might be normal due to an associated emphysema. The appearance of the *Streptococcus hemolyticus* in the sputum in influenzal bronchopneumonia was usually followed by death. Absence of compensatory overaction of the normal lung when massive bronchopneumonia existed was an indication of a disturbance of the neuromuscular mechanism due to toxemia. Pleural friction frequently closely simulated the crepitant and subcrepitant râles of bronchopneumonia. Empyema was frequent during this epidemic. Referred pleuritic pain was often mistaken for cholecystitis or appendicitis. Feeble or absent apex beat, weakened muscular element of the first sound and relatively slow pulse as compared with the temperature were evidences of myocardial change or toxic myocarditis. There was frequency of toxic myocarditis at autopsy as was also observed by the influenza committee of the advisory board, D. M. S., France. Meningismus was frequently mistaken for meningitis. The prognosis was usually favorable in post influenzal delirium and delusional insanity. The prognosis was unfavorable when vomiting was persistent.

In about three fourths of the cases of severe toxic influenza catarrhal nephritis developed. Leucopenia was diagnostic of uncomplicated influenza. Polymorphonuclear leucocytosis was diagnostic of bronchopneumonia and might antedate the clinical diagnosis by two or more days. The prognosis was unfavorable when influenza occurred in a pneumococcus, streptococcus, staphylococcus, meningococcus, tuberculosis, or typhoid carrier. It was probable that this epidemic had created a large number of influenza carriers. The sputum of thirty-six per cent., of patients convalescent for two or three weeks contained the *Bacillus influenzae*. The influenza bacillus alone, or combined with other organisms, occurred in the sputum of sixty-two per cent. of the patients examined. There was frequent occurrence of pure culture of the *Bacillus influenzae* from the diagnostic puncture of the bronchopneumonic areas of the lung. Type I pneumococcus was rare. There was a symbiotic relationship of the *Bacillus influenzae* to the streptococcus or pneumococcus and perhaps other microorganisms. Spirilla were frequently observed in influenzal bronchopneumonia, especially when the sputum was bloody. This epidemic of influenza seemed to have been primarily due to the *Bacillus influenzae* which might have been of the pandemic strain possessing unusual virulency. This influenza bacillus not only lessened remarkably the resistance but also greatly increased the susceptibility of patients with influenza to infection by other microorganisms. Many patients with influenza were quickly invaded by varying strains of the pneumococcus and streptococcus of high virulency. When an infection of two or more microorganisms occurred it seemed as though each stimulated the other to more rapid growth and greater virulency.

(To be continued.)

Letters to the Editors.

FACING THE SITUATION.

NEW YORK, August 15, 1919.

To the Editors:

The writer of the editorial Facing the Situation, which appeared in the August 16th issue of the NEW YORK MEDICAL JOURNAL, has taken advantage of the terrible toll of human life taken by the great war and the recent influenza epidemic to discuss an old but nevertheless interesting problem. A careful reading of the editorial in question indicates the writer's belief that both the war and the epidemic might have been averted if we physicians had used to the best advantage the knowledge we possess.

Is that really true? As to the war, one's imagination must be stretched to a serious degree to determine how physicians endowed even with superhuman knowledge could have averted it. It goes without saying that medical men have always appreciated to the fullest measure the toll in human lives and suffering that war exacts. It is inconceivable that even laymen were ignorant, for all wars have maimed and killed, but the toll in human life has never prevented wars and probably never will. Death, disease, and destruction are part and parcel of war—not even byproducts.

In war, human life is a commodity like ammunition, wagons, horses, ships. There is no sentiment in the business of war. If a "place in the sun" must be had and it is going to cost a million or more human lives, the place is worth the price and the price must be paid; no amount of reasoning or pleading by medical men can change or alter these conditions. If wars are to be stopped, they must be stopped by that universal brotherhood and good-will which we are all hoping and praying for—not by medical men alone.

In the matter of epidemics of disease, the problem is a much simpler one. It is possible, yes, even probable, that the recent influenza epidemic might have been averted if proper precautionary measures had been taken. But who should have taken these measures? Whether it was sheer incompetence or gross neglect of duty on the part of health officials in this and other countries, no one can say; but if there is any blame to be attached to the medical profession it must surely lie with these public health officials and not with the medical profession as a whole, as the editorial writer intimates.

In the ultimate analysis the question resolves itself into this: Is it the duty of the individual physician or of the state to prevent disease? The present writer believes it is the duty of the state to employ physicians of sufficient ability and in sufficient number to protect its citizens against disease by prophylactic, hygienic, and preventive measures. It is not the duty of the individual physician to do what the state ought to do. The physician studies medicine for the purpose of healing the sick and thereby earning his livelihood. In this respect his calling and his obligations to society are no different from those of any other skilled

worker. If through choice or accident his talents are directed to research work in the laboratory or to public health service, he is in duty bound to exert his talents in the direction for which he is being compensated or which he favors through choice.

But the general mass of the profession derive their living from treating and healing the sick. These practitioners have no training in state medicine and have no connection whatever with the state as a working machine. The state does not—cannot, in fact—give them their livelihood (unless it employs them directly); they are compensated by their patients for services rendered in healing. If then the state is remiss in its duty and an epidemic results it is manifestly unfair, to say the least, to place the burden for this occurrence on the shoulders of a body of men who have no connection with state functions and whose days and nights are spent in the petty yet important task of healing individual members of the state.

In the newspapers of today (August 15th) Health Commissioner Copeland is quoted as warning the public of the possibility of another outbreak of influenza in September, and he admonishes the people to keep in good condition and to "be careful" (whatever that means). Now that is his duty, not because he is a physician, but because he is health commissioner.

Now that the city has done its duty in warning the people, is the prevention of the epidemic the obligation of the medical practitioners in the city of New York? If it is, every doctor should at once give up his present tasks and go from one tenement house and apartment house and factory to another to see that Doctor Copeland's warning is carried out. Every doctor should visit the people—examining their pots and pans and garbage pails, and instructing the housekeeper as to how a clean kitchen and good, wholesome food, and plenty of good, fresh air will probably keep the epidemic away; and meanwhile, his patients who are sick will go without attention, and he will find his rent unpaid, his children hungry and cold, and his wife wondering what has suddenly come over him.

If, however, any physician feels inclined and able to devote his services to the state, as against the individual patient, either healing the sick or protecting the well, that is his golden privilege; but it is not his duty. We have become accustomed to the thought that the profession of medicine carries with it the obligation to treat the sick poor without compensation, and to give our services gratuitously to every movement looking toward the betterment of living conditions. But it is well to emphasize the fact that these services, which we render so readily and ungrudgingly, are purely voluntary on our part and that they carry with them no obligation or duty except such as is imposed by our own conscience. The public has no right to ask medical men to do that which they would not ask of lawyers, ministers, engineers, plumbers or paper-hangers—to say nothing of railroad workers, who are giving such a fine exhibition of their attitude toward the public.

Let us not forget there are men in the medical profession who are blessed with private means and are entirely independent of medical practice for their livelihood. It goes without saying that these men can devote themselves to altruistic work of any nature that suits their fancy, whether it be prophylaxis, healing of the poor, or laboratory research work; or, if they feel so inclined, they can accept public office, as for instance, deputy police commissioner in charge of traffic, or any other civic duties that may appeal to them. For this freedom of action, they are to be envied by the rest of us, who of necessity practice medicine as a means of livelihood.

The present writer is firmly of the opinion that medicine is an art to be practiced and paid for like any other art or craftsmanship; and if there is any public service to be performed, it should be done by the state, through its paid agents, or by volunteers who feel this call to public service. But it is going too far to say that it is incumbent on all of us to do this work at the great personal sacrifice which it necessarily involves.

It is well also to remember that we are considering this question as physicians and not as citizens of the state. Our duty to the state is that of every other citizen—no more and no less because we happen to be physicians. Medicine is perhaps the most honorable, certainly the most useful and ancient of all the professions, but it carries with it no duties to the state that are not incumbent on citizens in other professions.

It may be argued that our duty to humanity is transcendent and must dominate our lives. True, and this duty is expressed in the daily life of every practitioner, no less than by the thousands of physicians who are spending their lives in laboratory and hospital and dead-house, searching and digging, always seeking to solve the mysteries of life and disease and death, very often at great risk.

This altruistic business of preventing epidemics and teaching prophylaxis is a beautiful thing beyond any doubt. Every doctor would certainly be pleased to devote himself to it all his life—but how about his livelihood? And what about the sick who are clamoring for immediate attention? Ideals are glorious things to foster. They would be still more glorious if they could be translated into the actualities of life. There is nothing easier than to preach ideals, and that is true whether the preaching is done by an editor or by the chosen head of a great nation. But when the practical man applies the acid test and asks, Do your ideals fit in with the facts of human life? there is a sudden vision of light and the feet that trod the clouds so lightly suddenly find themselves stumped on the hard pavement of reality. The doctor must in the very nature of things do what he can do best—treat and heal the sick; for doing that he receives compensation which is his livelihood. If the state wishes to use his knowledge and skill it can employ him, and he will give it the same unstinted loyalty and devotion that have characterized him and his profession since the beginning of time.

ABR. L. WOLBARST.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

War Neuroses and Shell Shock. By FREDERICK W. MOTT, M.D., LL.D., F.R.S., F.R.C.P.; Brevet Lieutenant Colonel, R.A.M.C. (T.); Senior Neurologist to the Maudsley Neurological Clearing Hospital, etc. With Preface by the Right Honorable CHRISTOPHER ADDISON, M.P., Minister of Reconstruction. Illustrated. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1919. Pp. xx-348.

This is indeed a careful study and taken up in a systematic manner. The value of this work as transferred and applied to civil life is questionable. However, there are certain phases which have been brought up which tend to shed new light on the general field of neurosis. It may be that as society gathers momentum in its mad rush through life, with its high speeding machines of production and space destroying means of locomotion, that conditions closely simulating shell shock as experienced in warfare will become a more widespread syndrome. The analogy is made in referring to Crile's prewar classification of shock that the term shell shock could well have been added to his list which contained drug shock, traumatic shock, and other manifestations of the kinetic system when it was driven at an overwhelming rate of speed. Of course we still have many cases of shell shocked men to cure, many in this country and a great many more in Europe, and a cure has not been devised for all of these patients. The remedial measures proposed in this work are not startling and no new or radical measure is suggested. Hypnosis is decried and psychoanalysis is not mentioned though dream contents of some patients are superficially analyzed in order to show their fragmentary nature. The material in the chapter on rescue work in underground or mine warfare might furnish valuable data for use in mine accidents incident to civilian mining.

Births, Marriages, and Deaths.

Died.

HAGERTY.—In East St. Louis, Ill., on Friday, August 15th, Dr. Thomas B. Hagerty, aged fifty-four years.

JESSUP.—In Philadelphia, on Wednesday, September 3d, Dr. Halton I. Jessup.

LARSON.—In Stevenson, Cal., on Thursday, July 17th, Dr. Julia Pauline Larson, of San Francisco.

LESLIE.—In Newburyport, Mass., on Monday, September 1st, Dr. Herbert G. Leslie, of Amesbury, aged forty-eight years.

MUSSER.—In Oakland, Cal., on Wednesday, August 27th, Dr. Francis Reber Musser, aged fifty-nine years.

NEWMAN.—In Jellico, Tenn., on Monday, August 18th, Dr. A. T. Newman.

NORRIS.—In Brookline, Mass., on Friday, August 29th, Dr. Albert Lane Norris, aged eighty years.

SEVERANCE.—In New York, on Thursday, September 4th, Dr. Juliet H. Severance, aged eighty-six years.

SISSON.—In New Bedford, Mass., on Wednesday, August 27th, Dr. Edward R. Sisson, aged ninety-one years.

WILSON.—In Philadelphia, on Thursday, August 28th, Dr. Benjamin B. Wilson, aged ninety-one years.

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Original Communications

MODERN COMMENTARIES ON HIPPOCRATES.*

From the Darkness to the Light in the Evolution of Medicine.

By JONATHAN WRIGHT, M. D.,
Pleasantville, N. Y.

During an arduous study of Wellmann's (1) collection of the fragments of the ancient Greek physicians, rescued by him from incidental notices to be found in later Greco-Roman writers, I have been especially attracted to the light his labors have thrown upon the relation the early work of Empedocles bears to Hippocratic and post-Hippocratic medicine. I have come to regard this striking and interesting figure, all but lost and but dimly seen in the classical shades of the early Greek civilization, as especially important in the history of the evolution of medicine. Fully to appreciate his significance, it is necessary to have not only a knowledge of the essentials of the work of the Nature philosophers and of the epoch of the Hippocratic medicine which followed that of their activities, but an intimate acquaintance with the germs of medical thought to be found in the records of the mental activities of ancient and modern primitive men. Empedocles stands with one foot plunged in the mire of primitive magic and with the other planted on the firmer ground of that path of scientific medicine soon to open out in the glory of the early decades of the age of Pericles. I shall not attempt to give a summary of his life or his philosophy. They are easily found in various classical encyclopedias (2), in certain histories of medicine (3), in all histories of Greek philosophy (4), (5), in various special treatises (6), and in various collections from passages in later Greek writers (7), (8).

I shall content myself here with referring only briefly and in a general way to those facts related of him concerned with the magical side of his character and with some of the advances in medicine credited to him by tradition and in records accessible to the Greek and Roman authors whose works have been transmitted to us. Obscure and devious as are these avenues down which we catch a fit-

ting glimpse of this strange figure, they will serve to furnish us with a symbol of that momentous step, which has seemed so mysterious to all historians because of its apparent suddenness, taken between the darkness and the light in the history of medicine, so indissolubly bound to that of civilization in its broader aspects. The date given for the epoch when Empedocles may have been at the height of his career is about 450 B. C., when Hippocrates is supposed to have been but ten years of age. The Mediterranean world was emerging, in the evolution of thought, from superstitions and fundamental theories of philosophy so intertwined one with another it has been impossible even down to our own day to disentangle them completely. Even back of Empedocles, something had already been brought by the Nature philosophers into the world, even then far removed from that of primitive men, itself incalculably old, which differs radically from the conceptions we have been able to form from Homer and Hesiod, from the Rig Veda and the Zend Avesta, from the magic of the Atharva Veda and from that which we have culled from the records of modern primitive tribes. It is not necessary to define this new thing; there might be some difficulty in doing it satisfactorily, but we feel a different atmosphere when we enter the presence of Thales and Anaximander, of Anaximenes and Democritus, of Alcmaeon and even of Empedocles. We perceive, however, that what we know of Empedocles places him as the link between the old and the new in the history of thought. He is recorded as having taught in his archaic but highly praised verse more of physiology, in our modern sense of the term, than all who preceded him, though we realize that he often but echoed the thoughts of older men, more original thinkers and more honest characters. It was because of his charlatanry, perhaps, that we know so much of his physiology and so little of that of Anaximander and Alcmaeon. He was earth born and he clothed things he learned from other men in the garment of a language the less learned man could understand. We can picture him walking abroad in fantastic garb, if not swinging the bull roarer, at least scattering right and left amidst his gaping audience his oracular and pretentious sayings, many of them actually meaning something also to sensible, rational men.

How else could one ladle out truth to people

*The translations of Francis Adams's *Hippocrates, Genuine Works* (New York: William Wood & Co.), and E. Littré's *Hippocrates, Œuvres complètes* (Paris: J. B. Baillière, 1899-1861, ten volumes), have been chiefly used and compared with Littré's Greek text.

hardly yet above human sacrifice and not always waiting for Zeus on Olympus to strike dead the impious, but acting for him? Hang around the naked truth draperies to hide it from the dangerous fanatic and the stupid boor, yet grant to the tolerant reflection of sane men food for thought. Most modern charlatanism has no excuse as good. Pythagoras perhaps believed in his mysticism, but Empedocles did not. We may suspect Alcmaeon had no faith in it and no means of propagating the harvest of a mind stored with less of the tinsel and more of the solid facts of existence. We know he was a physician or one at least who busied himself with the phenomena of the normal, and perhaps with those of the abnormal, activities of the human system, but Empedocles, also a physician, made magic the shield which protected him from the dangerous indictment of impiety. Emotion is the mainspring of magic. People want not doubt and rationalizing thought, not criticism and indecision—all these things are pessimism. They must have pretence and bluffing, they want the doctor to *do* something and to believe in something even if it is not true. Empedocles filled this popular ideal yet we know he was something beside that. There was something real in him which appeals to modern science, but we cannot afford to be blind, in the study of history, to that side of medicine which is not science. Pythagoras was a theoretical social reformer and, like many such men, he came to grief at the hands of the actual world, the world of action. So did Plato afterward, the latter in Sicily, the former just across the narrow seas from it at Crotona, but Empedocles, the follower of Pythagoras, said to have been a rich man, was more adroit than either at Agrigentum. His physique was imposing, he raised people from the dead, he stopped up or he let blow, by some public works he carried out, the winds upon which he and Hippocrates after him laid such therapeutic and etiological emphasis. Opening up a passage way through the hills, he by this means banished an epidemic from his native town or he made the people believe he did, which could not have been difficult considering his success at resurrections. At an eclipse of the sun when there was another epidemic raging Pliny says (*Natural History*, XXXVI, 27, 69) that he was able greatly to ameliorate it by lighting fires. This author also attributed this device, usually assigned to Akron, to Hippocrates. Empedocles was a rainmaker, too, or made the rain stop and so again saved his native town. There is a similar engineering feat told of him by Diogenes Laertius. I give it as translated by Yonge: "XI When a pestilence attacked the people of Selinus, by reason of the bad smells arising from the adjacent river, so that the men died and the women bore dead children, Empedocles contrived a plan and brought into the same channel two other rivers at his own expense; and so, by mixing their waters with that of the other river, he sweetened the stream. And as the pestilence was removed in this way, when the people of Selinus were on one occasion holding a festival on the bank of the river, Empedocles appeared among them; and they rising up, offered him adoration,

and prayed to him as to a god; and he, wishing to confirm this idea which they had adopted of him, leaped into the fire." We see an account, entirely credible, of malarial infection and its cure, but the question arises how did Empedocles arrive, by theories open to him, at an accurate opinion as to etiology? Here in the acts of the charlatan and mountebank, this great philosopher and physiologist, we find a procedure described which could hardly have been better conceived by a modern sanitary engineer, familiar with the plasmodium malariae and the anopheles fasciata.

This was the man born of a princely line in Sicily. Inheriting wealth he did not choose to spend it on horse racing or chariots, as his ancestors had, but he shod "himself with golden sandals, set the laurel crown upon his head and, trailing robes of Tyrian purple through the streets of Agrigentum, went about attended by a crowd of servingmen and reverent admirers. He laid claim to being the favorite of Phoebus, and rose at length to the pretension of divinity. His own words show this, gravely spoken, with no vain assumption, but with a certainty of honor well deserved: "Friends who dwell in the great city hard by the yellow stream of Acragas, who live on the Acropolis, ignorant of what is vile, welcome; but I appear before you an immortal god, having overpassed the limits of mortality, and walk with honor among all, as is my due, crowned with long fillets and luxuriant garlands. No sooner do I enter their proud prosperous cities than men and women pay me reverence, who follow me in thousands, asking the way to profit, some desiring oracles, and others racked by long and cruel torments, hanging on my lips to hear the spells that pacify disease of every kind. When Empedocles proclaimed himself a god, he only stretched beyond the usual limit—a most common pretension of all men learned in arts and sciences. He had held communion with Phoebus the purifier, and received the special favor of that god, by being made a master in the arts of song, and magic, and healing, and priestcraft" (7).

A modern psychiatrist would call him a paranoiac. He could confer his power on others. "To his friend Pausanias the physician he makes these lofty promises, 'Thou shalt learn every kind of medicines that avert diseases and the evils of old age. Thou, too, shalt curb the fury of untiring winds, and when it pleases thee thou shalt reverse thy charms and loose avenging storms. Thou shalt replace black rain clouds with the timely drought that men desire, and when the summer's arid heat prevails, thou shalt refresh the trees with showers that rustle in the thirsty corn. And thou shalt bring again from Hades the life of a de-

¹Apocryph of the strange story of the winds, which I am sure most readers would consider apocryphal or mythical, I find the following notice in a current weekly magazine: "*Removing a Hill to Ventilate a City.* The location of the city of Rio de Janeiro, Brazil, is such that it is cut off from cool winds by an elevation known as Costello Hill. For a hundred years or more it has been proposed that this obstruction be removed, and now a syndicate has been formed which has applied to the Government for permission to level the hill, using the material removed to reclaim a large area of submerged land. The work will involve the removal of 47,000,000 cubic yards and it is estimated that the cost will be \$10,000,000." *Scientific American*, January 12, 1918, page 51. Thus modern thaumaturgy stretches its hand to ancient magic across the ages.

parted man.'” His sister, who must have been a woman of sense, destroyed another composition of Empedocles which was a *Proemium to Apollo*. His megalomania or paranoia may have led him to exploit his own death. At any rate tradition asserts that he jumped into the volcanic crater of Aetna and thus consistently ended his life in its proper theatrical setting. He had a bitter jibe for anyone who encroached on his own domain. He said he was a god, but he ridiculed Akron for having asked of the magistrates a particular place whereon to raise a statue to his father, intimating that he had no claim to divine honors.

What a picture of a man who first showed there was such a thing as air, by his experiments with a clepsydra, a water clock by which he could demonstrate the vacuum above the water in the flasklike vessel; who formulated the theory of the elements which we have been differentiating one from the other ever since; who had some inkling of evolutionary doctrine; who was familiar enough with the atomic theory to erect a workable hypothesis for the mind in the mystery of the apperception of the senses; who laid the foundation of the theory, actually demonstrated only in our own times, of insensible perspiration and respiration; who, as we have seen, was a sanitary engineer twenty-five hundred years before sanitation was a science. Surely this is the meeting of the new and the old. Here is the primitive medicine man, the rainmaker, the man of outrageous garb shaking the pebbles in his gourd, and here is the revered man of science who holds today such things in abhorrence. This is the flaring of the torch in the darkness; this is the seething iron which stamps on our memory a fact which sober history can elucidate for us if we take the time to listen to her.

How much there was original in the contributions of Empedocles to science we have no means of knowing. Before him men had conceived of the ultramicroscopic division of matter. They had conceived of atoms; they had formed conceptions of the elements; they knew many of the facts of the generation of animals. Theories resting upon these abounded, and probably Empedocles originated some of them, as he certainly demonstrated by experiment the material existence of air. This was only secondary in importance to the conception of the minute division of matter. Knowledge of the cosmogony cannot go very far without them. It is not important here to decide how much any of these old philosophers originated, since this is an attempt to demonstrate that two tendencies are strikingly exhibited in one historical figure. We easily perceive he had the stamp on him of a primitive world which had begun before his day to lose its characteristics in the lands around the Mediterranean, and he doubtless had also the inheritance of generations of rationalistic thinkers aside from his own scientific development, but we also perceive that the two things existed side by side, and from beneath the cloak of magic science was springing forth into independent life. Human thought was far from having ended the first part of its journey but the road had long since merged into that on which our feet are marching. There had been long periods in which science needed the

protection of magic and of religion, and its emergence, sudden as it seems in the phenomenon of ancient Greece, could not have been so sudden as it has appeared hitherto in the history of civilization.

I hope sometime to be able to show that Homer is not so devoid of magic as we who are familiar with its African and Indian forms are accustomed to note. There is little enough of this magic, however much there may be of charm, in the *Iliad*, but in the *Odyssey* (xix-457) we find the wound of the “godlike Odysseus bound up skillfully and the black blood stayed with a *song of healing*.” We find much more of this even in Plato than we do in Homer. In this greatest of artists, 600 years after Homer and fifty years after Empedocles and a generation after Hippocrates, the old orthodox magic of Asia and Africa may easily be seen reaching over into the era of Greece’s greatest glory. In Plato’s imagery we find the two kinds of magic, the magic and the charm unified. In the *Euthydemus*, Socrates, in his own charm of manner is speaking and he says (290 A), “Whereas the art of the enchanter is a mode of charming snakes and spiders and scorpions and other monsters and pests, the art acts upon dicasts and ecclesiasts and bodies of men for the charming and ‘consoling of them.’” Indeed it does, especially still on the “ecclesiasts.” But I must hasten to show that this belief of Plato in magic was not only the symbol appropriate to the flash of Socratic genius by which men were charmed, but the real thing from the Nile and the Euphrates, from the African jungles and the steppes of Asia, for in the *Theaetetus* (149 D) we find the midwives, “by the use of potions and incantations, are able to arouse the pangs and to soothe them as well,” which is quite orthodox primitive doctrine, and their power extends like that of the tribal wizards to making those “bear who have a difficulty in bearing and if they choose they can smother the babe in the womb.”

Now it is quite evident that when the notice of such midwifery practice finds its way into the lines of the most advanced thinker of his time and the most powerful thinker of all time and finds there an approval of a goodnatured tolerance, it almost amounts to the assurance that it was plentiful enough in the daily practice of midwifery after the time of Hippocrates, though perhaps that is not quite good evidence of its prevalence in medicine. I cannot pretend to pass an independent opinion on the authenticity of the Hippocratic books. Adams puts the tractate on *The Sacred Disease* among the genuine works of Hippocrates, but Wellmann (1) and Littré seem to ascribe it to a pupil of the Great Master; at least for our purposes it is enough that it is possibly contemporaneous with Plato and probably earlier than his dialogues. He indeed may have been tinctured a little with the Mediterranean tendencies toward the occultism of the Sicilian school. He took much doctrine in medicine from one of its shining lights—from Philistion whom he met in Sicily and who probably visited him in Athens (1). It was surely still well rooted when the author of *The Sacred Disease*, the disciple of Hippocrates, if not Hippocrates himself, attacked it.

Most medical readers are familiar with the well worn passage in this treatise, as with a similar one in the *Airs, Waters, and Places*, in which the writer refuses to consider epilepsy any more sacred than any other disease, but fewer doubtless are conversant with the manner in which Hippocratic doctrine thundered against the ancient powers of darkness, when to scoff was not yet the sport of Aristophanes and that brave class of iconoclasts who skulk in any shadow when the light first shines, but who are always ready, when it is popular, to kick a dead dog. Mediterranean magic was very much alive when Hippocrates declared that they "who first referred this disease to the gods appear to me to have been nothing but conjurors, purificators, mountebanks, and charlatans, who give themselves out to be excessively religious and as knowing it all. They use Divinity as a pretext and a screen for their own helplessness in treatment of the disease"; they confine it to taboos of certain foods and of certain usages, "they forbid them to wear a black robe because black is expressive of death, to sleep on a goat's skin or to wear it, to put one foot on another or one hand on another, . . . so that if the patient recovers theirs is the honor and credit and if he dies it is the gods and not they who are to blame." Here we see the strictures, laid by Pindar and Pliny and Petrarch and Molière and all their tribe since on the profession as a whole, transferred by the Father of Medicine himself to the shoulders of the ancient brood of darkness, almost in the identical terms.

Much that has endured in the Hippocratic writings we owe to the Sicilian school whose members, Pausanias, Philistion, Akron, inherited the theories of Empedocles. Diocles of Carystus at Athens, whose fellow citizens proudly called him the second Hippocrates, united much of this doctrine with that of the Coan school. The humoral and the pneumatic theories were ingeniously united by ideas springing up from that better knowledge of the vascular system which was a precursor of the still greater advances made by the Alexandrians. Against the charlatanny, as it seems to us, against the mysticism of Empedocles but using much of his doctrine, there arose the rationalistic tendency of Hippocrates and his congeners. We see the fight begun. We see science supported by the ancient ideas of Thales, Anaximander, and Xenophanes, by those of Heracitus and Alcmaeon, but we know even these rested on those of their predecessors, whom the mists of a more remote past still hide from us. We realize at least that liberty of thought was won from superstition by those who preceded Democritus and Hippocrates, themselves strong enough to turn at bay and rend their enemies. Empedocles had to run with the hare and hunt with the hounds and he is the figure which historically symbolizes that first step taken by a physician out of the darknes into the light.

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THE RELATIVE IMPORTANCE OF DIFFERENT SYMPTOMS AND SIGNS IN THE CLINICAL STUDY OF CARDIAC DISEASES.*

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One of the most difficult problems that medical students and physicians have to solve is the relative importance of different symptoms and signs in diseases of the heart when considered from the standpoint of prognosis and treatment. A large part of this difficulty arises from our former conception of disease, based almost entirely on anatomical changes, and our ignoring in the past, or considering unimportant, functional changes unaccompanied by gross pathological lesions. This conception is well shown from the fact that even our latest textbooks lay more stress on and devote more pages to the chronic valvular lesions than they do to myocardial changes and functional diseases combined, although these latter conditions embrace almost entirely the conditions where treatment is urgently called for and prognosis is gravest. Again in our teaching of students we devote almost all our time in teaching them to recognize different cardiac murmurs, which in themselves require no active treatment and give little help as to prognosis unless other symptoms and signs are considered.

On account of this faulty conception of disease, I have of late years in taking up the study of diseases of the heart called my students' attention to hyperthyroidism, where the severity of the disease is not shown by the size of the thyroid, but is shown by the symptoms and signs arising from the functional overactivity of the gland, and have cautioned them to remember that in diseases of the heart, as in hyperthyroidism, symptoms were far more important than physical signs when treatment was to be considered. Again when the lectures had been completed on the heart, I attempted to classify the relative value of different symptoms and signs from the viewpoint of treatment and prognosis, and this paper is simply my personal views broadly stated, and to which, of course, there are many exceptions.

The most important indication for active treatment in heart disease is the presence of symptoms noted by the patient, and in order of their importance are: 1, substernal or cardiac pain or distress

* Read by invitation at the semiannual meeting of the Shenandoah Valley Medical Society, held at Winchester, Va., July 15, 1910.

following exercise or emotional excitement; 2, symptoms arising from decompensation, such as dyspnea out of proportion to the amount of exercise taken, indigestion, and cough. Patients suffering from heart disease who exhibit these symptoms require absolute rest, and probably digitalis in some form, irrespective of what murmurs are heard, or what the character of the pulse may be.

Second in importance to symptoms come physical signs located elsewhere than in the cardiac area, such as edema of the ankles in the evening, and the signs of beginning edema of the lungs, the "sticky" râles heard at the bases of both lungs behind.

The study of the pulse gives us data that is invaluable in prognosis and treatment, and it is the character of the pulse that is more important than the rate. In studying the character we must first separate out intermittent pulse, due to extra systoles, and sinus arrhythmia, seen in young persons and synchronous with respirations, as these are unimportant both from the point of view of treatment and prognosis. These conditions as a rule can be readily recognized by the fact that, first, only rarely does the person have symptoms from them; second, they tend to disappear when the patient exercises or holds his breath, and, third, the blood pressure apparatus shows that there is no true irregularity in force of the pulse.

In a study of the other irregularities the blood pressure instrument is invaluable, as not infrequently irregularities in force can be detected with the sphygmomanometer which cannot be discovered with the palpating finger, and when such an irregularity exists in an older person, even though unaccompanied by other signs or symptoms of heart disease, a very guarded prognosis should be given. Another type of irregularity which can be detected readily with the sphygmomanometer is the pulsus alternans, where every other pulse wave registers a lower blood pressure than the wave preceding and following it. Here again our prognosis is grave even though the symptoms and signs are not such as to arouse our anxiety. From the clinical viewpoint a pulse which is proved to be markedly irregular both in force and in rhythm by the sphygmomanometer is in all probability due to auricular fibrillation, and if such is the case the condition will be almost surely a permanent one, constituting the one form of heart disease that requires the continued use of digitalis.

The pulse rate in cardiac disease might be said to be a temporary condition which can be influenced by treatment, except the slow pulse seen in older people accompanied or unaccompanied by syncopal attacks, due to heart block and recognized by the fact that the radial pulse has a different rate of pulsation than that seen in the jugular (venous) pulse.

The important forms of very rapid pulse, or tachycardia, to be differentiated are paroxysmal tachycardia and auricular flutter, and as a rule the former can be easily recognized from the history of previous attacks in which there had been an abrupt onset and an equally abrupt termination, the pulse dropping at once from a rate well above 120 to a rate well below 100. Again in paroxysmal

tachycardia the patient does not as a rule seem as profoundly ill as in auricular flutter, and the pulse rate in paroxysmal tachycardia can generally be influenced by change of posture, repeated swallowing, or holding the breath, while in auricular flutter the rate is not influenced by these means. In the treatment of auricular flutter digitalis must be pushed to bring about partial heart block, and as a rule must be continued over a very long period, in many cases having to be used continuously as in auricular fibrillation. In paroxysmal tachycardia, on the other hand, digitalis is very rarely of any service, and the treatment is essentially one of rest during the attack. Frequently these patients have found out for themselves what gives them relief, and frequently know that dietetic errors and emotional strain bring on an attack. The prognosis in paroxysmal tachycardia is relatively good though influenced adversely by the age of the patient, myocardial changes, and frequent attacks of long duration. In auricular flutter the prognosis is far graver.

High blood pressure is of course recognized as being a cause of heart disease and not the result of it, and the treatment of the condition is one of the most unsatisfactory things that the medical profession has to face. From the viewpoint of prognosis it is well to bear in mind that a single reading showing high diastolic pressure (above 110 mm.) means a graver prognosis than a single reading showing high systolic pressure (above 150 mm.). In considering prognosis with hypertension the size of the heart is most important, and also the presence or absence of polyuria with a fixation of the specific gravity, especially at a low point, which means a grave prognosis. We all have had too many experiences with marked variation in the blood pressure of an individual to lay too much stress on a single reading unless it is abnormally high.

In regard to the study of the heart itself, the most important thing from the viewpoint of prognosis is the size of the heart and not the murmur heard. The size of the heart tells us how much damage has been done, if we bear in mind how long the condition has existed, as shown by our history of a preceding attack of inflammatory rheumatism or chorea. I have at the present time a friend and patient whom I have looked after for some ten years. This lady is well over sixty years of age and has been an active worker for more than thirty years, acting as a matron of a boys' school and keeping a boarding house four stories in height and doing it well, which means frequent running up and down the stairs, in other words a large amount of exercise taken each day. When she was a small child, aged about three, she was diagnosed as having mitral stenosis, which diagnosis has been confirmed by every doctor who has seen her. She has a well marked systolic shock at the apex, a most characteristic presystolic thrill, and also a presystolic murmur at the apex with accentuation of the second pulmonic sound. Only within the past year has there been the slightest cardiac enlargement, and even now she has no symptoms referable to her heart, what symptoms she has being due to a

chronic fibroid tuberculosis of long standing, and even these symptoms are slight. This case exemplifies to my mind how unimportant cardiac murmurs are when unaccompanied by symptoms, or signs of cardiac enlargement, and illustrates why I put cardiac murmurs the last on my list when considering prognosis and treatment.

In this paper you will note I have not included acute endocarditis, as I consider it a systemic disease with local manifestation in the heart just as typhoid fever is a systemic disease with local manifestation in the intestines.

To summarize, we can say that in heart disease, from the viewpoint of prognosis and treatment, symptoms are first in importance, especially when combined with signs elsewhere than in the cardiac area; second, irregularities of the pulse, changes in rate and hypertension; third, the size of the heart, and, last of all, the murmur or murmurs heard.

4 EAST PRESTON STREET.

DEMENTIA PRAECOX.

Description and Diagnosis.

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INTRODUCTION.

The importance of dementia præcox is recognized not only by neuropsychiatrists, but by all members of the medical profession. Twenty-five to forty per cent. of all admissions to hospitals for mental conditions are patients showing this reaction type. The name, of course, is rather an unfortunate one; as all cases do not become demented, nor does the first psychotic episode always occur in youth. Numerous other designations have been given for this condition; the most popular one probably being schizophrenia, meaning a splitting of the psyche.

The great World War has been the occasion of bringing together neuropsychiatrists from all parts of the United States, and from every other civilized country. From this association, and the working side by side of the foremost medical men, in the examination of troops preparatory to going abroad, the examination and treatment of the soldiers in the hospitals of the American Expeditionary Forces, and in the hospitals of our Allies, and later in the general army hospitals in the United States, all have derived incalculable benefit in acquiring a knowledge of human character and temperament.

There were, of course, times when some differences of opinion arose as to the diagnosis in certain cases. This was especially true in trying to determine whether patients with certain conditions were to be classed as dementia præcox or whether they were not morons, constitutional psychopaths, or whether they belonged to one of the varieties of the psychoneuroses; or again in cases of drug addiction or alcoholism, as to whether these last mentioned conditions might not merely be the abnormal

expression of a fundamental præcox makeup; the inebriety being a psychotic equivalent.

It was thought that a review of the subject of dementia præcox would be of a great deal of interest, especially at this time, when so many of our soldiers have been returned, and are returning from France with various nervous disturbances. I thought that a review of the subject would be of more value than a mere description of a number of cases, with the reasons for making the particular diagnoses in those cases. Later on it will be interesting to read the Surgeon General's report on the number of soldiers in whom there developed a dementia præcox episode after being admitted to the service. Very likely full data will not be available for some time.

It might be of passing interest to note here the number of cases rejected under the term dementia præcox at two large army camps in the United States, and the relation of these rejections to the total number rejected, for the time we were conducting examinations there. These soldiers were all examined before going overseas. At Kelly Field, San Antonio, Texas, our neuropsychiatric board examined about twenty-four thousand troops, by the routine method. At Camp Travis, Texas, with about thirty thousand troops, another board conducted the examinations, but not by the routine method, but only passed on those cases referred to them by the regimental medical and line officers.

	Kelly Field.	Camp Travis.
Rejected for all causes.....	416	284
Percentage of rejections to all troops .....	.017	.01 (about)
Rejected because of dementia præcox	32	30
Ratio of præcox cases to all rejections	1:13	1:10 plus
Number of cases rejected for all psychoses	42	57
Percentage of dementia præcox cases to all other psychoses .....	.76	.53

At Kelly Field ninety-two, at Camp Travis forty-three, were rejected for psychoneuroses. At Kelly Field 107, at Camp Travis forty-seven, were rejected for mental deficiency. At Kelly Field sixty-six, at Camp Travis four (a marked difference in the two camps), were rejected for various constitutional psychopathic states. It is a question as to how many of these soldiers would have manifested dementia præcox had they gone overseas, under the stress and strain of modern war, and their absence from home.

Before reviewing the subject more fully, it might be well to explain in detail some psychiatric terms, which one constantly meets in the reading of this and allied subjects.

Stereotypy, a will disorder, where the voluntary impulse once set in motion, tends to repetition, in attitude, movements, or speech. Stereotypy of speech, especially of senseless phrases, is usually called verberation. Stereotypy of movements usually refers to meaningless movements. Where the peculiarities of movement are characteristic and part of the patients' usual conduct, they are called mannerisms. The persistent repetition of a motor impulse, either in action or speech, not necessarily senseless, and usually in an attempt to answer a

question, is called perseveration. We meet perseveration more frequently than verberigation.

Two other will disorders are impulsions and compulsions. An impulsion is an almost uncontrollable tendency to do an act as kleptomania, dipsomania. The doing of the act gives relief. Compulsions are closely allied to impulsions or impulses. The compulsions like obsessions are felt by the patient to be pathological and forced on him. The patient with dipsomania feels that the impulse is from within, and a part of him, part of his character; while compulsion is directed to the doing of an abhorrent act, like murder. Where the patient resists the compulsion, he has a neurotic attack; when he can yield he feels better.

Obsessions are disorders of the content of thought, and are ideas or impulses which persistently occupy consciousness, irrespective of the patient's desire. The patient may comprehend them at their full value, and yet cannot dismiss them. The best known are the phobias; you also have obsessions of doubts. Obsessions may make the patient keep up his foolish actions; they are then called imperative ideas.

A complex refers to a set of ideas with the accompanying affect, usually centered about a repressed subconscious event, which is most often disagreeable.

Ideas, usually disagreeable and often interpreted as being forced in from the outside, and not by the usual process of association, are called autochthonous ideas. These ideas may force the patient to act against his will.

Autistic means to be self centered, to indulge in phantasies, to shut out the outside world.

Following Wernicke's classification of concepts, where they relate to the outside world—as a delusion of persecution, we refer to them as *allopsychic* disturbances; where they relate to his own personality—as ideas of self accusation—these we call *autopsychic* disturbances; if they relate entirely to his own body—as ideas that his body has been turned to glass, etc.—then we say he has a *somatopsychosis*. These are all delusions, being disturbances of the content of thought. Inasmuch as *dementia præcox* is often spoken of as an emotional-volitional disturbance, it will make the description of this condition more readily understandable, if we preface our remarks by a few words on the psychology of the affects and the will. I am indebted to Colvin for them.

The affects are pleasant or unpleasant states of consciousness accompanying all mental processes, and result from the interaction of the individual to the environment. If the interaction is simple and direct, we call the affect a feeling; if it is more complex and indirect, we call it an emotion; if still more complex and indirect we refer to it as a sentiment. It is feeling, the affect, which gives warmth or color to an idea or experience. In an emotion the affect is not the sole factor. It has an object, as feeling fearful—of something. It is characteristic of an emotion that it arises where there is no definite opportunity for reaction (fear, hate, etc.); thus the pentup energy may discharge itself ineffectually in old channels, causing tachycardia, or

nausea; whereas if something definite is done the emotion passes away. An emotion running its course may pass into an attitude or disposition, and is then called a mood; the mood representing a permanent tendency to react in a characteristic way.

The value of feelings in determining behavior is more apparent than it is in the case of the emotions. The emotion, as such, is never desirable; it is only desirable in its consequences. But because of the turmoil which emotions cause they produce new attitudes and behavior, thus substituting new actions for old and harmful behavior. Thus fear, anger, jealousy, joy, and other emotions are valuable in their consequences, rather than in their immediate expression. Apathy and indifference in emotion, where the normal person would experience it, are more undesirable than excessive emotion.

Now a word about volition. The will is not a fundamental aspect of consciousness as is sensation or feeling, but is a complexity of intellectual and affective states. Preceding an action, we have kinesthetic sensations, active attention, and a period of deliberation; the latter being attended by an affective tone of some unpleasantness, and in fact very unpleasant if doubt is extreme. Relief is experienced when the act is done, no matter what the issue. There must be more than one end present for behavior to be volitional, so the question of attention is important. There must be some feeling. If there is extreme indifference, *aboulia*—paralysis of the will, which we often find in *præcox* patients may be present. With exaggerated affective states (*euphoria*), as in the manic, the reactions are quite the opposite: they are immediate, and lead to irrational acts.

Numerous factors interfere with proper volition, as excitement, undue caution and fear, suggestibility. In the latter there is no real willing. To train the will properly, we are well aware that good attention is necessary. To hold remote ends of action in consciousness is the foundation of will training. Fears and phobias interfere with the training of the will. Suggestibility must be eliminated too, as it is an evidence of youth and feeble-mindedness. Independence of action in directing the affairs of life is almost absolute evidence of a normal will. To educate the individual will it is necessary that he gives good attention, observes some caution, banishes useless fears, and shows a moderate amount of initiative and independence. This will develop his character too. For character has two essentials: first, set reliable habits, which work almost with automatic precision, so that you can count on the behavior of the individual; secondly, he exercises self direction in new situations, when old ones are no longer of value. Such an adjustment goes beyond the plane of habit. Thus we can distinguish defectives, who develop habits, but who are not capable of genuine volition.

We speak of reaction types, rather than disease entities; so we have the *neurasthenic*, the *psychasthenic*, the *hysteric*, and the *dilapidating* reaction-types. The term *dementia præcox* is reserved for essential deterioration—with it goes various reac-

tion types—as psychasthenic, hysteric, hebephrenic, katatonic, paranoid, and other forms. Many cases that are called hysteria, are really cases of dementia præcox.

Dementia præcox is spoken of as a disorder of the personality, a failure of the development of the personality, especially at the period of emancipation or stress. The personality sense does not develop, but disintegrates. The sense of personality is a specialized form of self consciousness, which latter is an outgrowth of that more general state called consciousness; which in turn originates from complex states of feeling, reducible finally to somatic and kinesthetic sensations. So the personality sense gives one self sufficiency, potency, self urge and makes for sound mentality. Self urge is expressed in normal life by initiative, industry, effort, ambition. In dementia præcox it weakens and gradually fails. Self consciousness may be lost, and you get depersonalization; seen in all schizophrenics, with resulting autistic thought processes.

Individuality and a sense of personality are shown in purposeful behavior and volition. Dementia præcox is a disorder of the personality sense, and directive consciousness. Yet it does not always produce a consciousness of unfitness, as their inconsistencies in action and thought are marked. They may adjust up to a certain point and become independent, and then break down again.

Bleuler regards all states of feeling of unreality and depersonalization as schizophrenia. Schizophrenia is a separation of the intellect, and the emotional reaction. He says that the fundamental symptoms are certain defects of logic, a shut in make-up, affective anomalies, and a lack of interest in things in which he ought to be interested. Bleuler says that we are dealing with a disorder of association processes—a loosening of the connection. Autism is another fundamental way of reacting. The delusions, hallucinations, and katatonic states he regards as accessory symptoms. The association disorder, of course, causes defects of logic.

Strunsky speaks of dementia præcox as being due to an intrapsychic ataxia. This is basic. There is a disturbance of coordination between the intellect and the affect. Rumination causes dilapidation of application and interest. The imaginations of these patients are especially in religious, sex, and phantastic realms.

FORMS.

Simple form.—Shows gradual enfeeblement; a lack of interest and effort; they break down under stress.

Hebephrenic form.—Onset usually more sudden, though it may take months to develop; they are confused and depressed, but show no retardation; hallucinations are often prominent; there is no pressure of activity, but at times there is marked incoherence; silly laughter.

Katatonic form.—Acute or chronic onset, with stupor or excitement. In stuporous cases, besides the stupor you get negativism (or the opposite suggestibility), and muscular tension. In excitement you get increased psychomotor activity, which is

more absurd than it is in the manic, is not to any end, and is more theatrical; patient exhibits verbigeration; incoherence is greater than in the manic, and there is no guiding thought nor goal idea; he shows constrained motor reactions and impulsive mannerisms. There are more physical signs in this form than there are in any of the others.

Paranoid forms.—In this form we have delusions of persecution, often of grandeur, and frequently auditory hallucinations. There are two types, mild and grave. It is well to remember that in true paranoia there is not only an intellectual defect, but some depression. In dementia præcox the delusions are loose and the hallucinations are fleeting.

Paraphrenia is midway between paranoia and dementia præcox. It shows an intellectual defect, rather than a defect of the affect and the will, and there is not the disorganization of the personality seen in the præcox. Abortive types, with defects only in the higher faculties, are seen in criminals, hoboes, feeble minded, vagabonds, and other similar types. You may get an abortive form, with the onset as early as five years; the condition may stop here, and may look later like a case of imbecility. In katatonia, differing from hebephrenia, there is a predominance of stuporous states, negativism, and automatism. The form is determined by the conflict and the reaction; and depends upon the severity of the former, and the efficiency of the latter.

PSYCHOLOGICAL MECHANISM.

Bleuler says that there is a primary defect of attention and interest, and an apparently bad memory. There is a disturbance in the emotional sphere, as there is in hysteria and paranoia. The whole is an outgrowth of a morbid constitution. The conflicts are determined by intimate personal circumstances and desires. The disease is the result of long continued errors of adjustment. Dementia præcox is the premature dissociation of an imperfectly endowed psychological organism, especially one overworked. Delusions are a compromise formation, and are essentially wishfulfilling; and are frequently sexually colored. So suspicion may be a wishfulfilling mechanism. The negativistic element is a mechanism to shun the main trend. Negativism is shown by shutting out the environment. There is an overgrowth of certain trends at the expense of the main well adapted interests of the personality. Negativism is founded on the fact that all ideas are ambivalent. Negativism is seen also in hysteria and in children.

Indifference is a prominent early symptom. Bing says that emotional indifference is the basic element of the dementia præcox syndrome; thus the præcox hypochondriasis has little accompanying affect; obstinacy alternates with childish docility, and he is often bombastic. There is a reduction of ordinary voluntary reactions, but automatic ones may be exaggerated, and you get suggestibility, silly laughter, verbigeration, and other actions. Peculiar conduct is due to a perseveration of reaction, and is not due to a disorder of ideation or perception. Katatonic stupor is not the result of intellectual disorder, but is a disorder of the will. Mutism and refusal of food are evidences of negativism. Such reactions are defensive acts. In these patients, hal-

lucinations of general and genital senses are common.

There are two streams of thought which do not mix (ambivalency and ambitendency). With each tendency there is a counter tendency; each idea has two feeling tones. With clear and perfect logic you get appropriate reactions. In the precox there is an outcropping of unconscious mental trends which are distorted.

Sexual complexes are ordinarily subconscious. They represent unfulfilled wishes. The normal person takes interest in others, and in the affairs of life, and compensates in various ways. Bad mental hygiene especially in sensitive and reticent people, those who are seclusive, is bad.

Fatigue is often absent in dementia præcox; they seem to suffer less from fatigue than normal people. Dementia præcox is not a metabolic disorder. It is more correct to speak of it as a habit disorder. We often see a mystic, allegoric trend of action; one of unreality and absurdity.

So the deterioration in dementia præcox represents the shutting out of the outside world, a living in a world apart—being autistic, in other words—with a deterioration of interest. Autistic thinking is the rule in dementia præcox; the patient's thoughts are occupied with himself; he is in a dream state and indulges in phantasies—where "things come true." His ideas are often grandiose; he wishes to be great, and his wish is gratified. His delusions, like dreams, are often grotesque. The dementia præcox's "I don't know" means "Leave me alone."

It is hard for many patients to get away from the infantile attachment to the family. In many of them there is a regression into the world of phantasy, and psychic death. The precox does not get away from his early family loves. Certain antagonisms to members of the household may be symbolized and distorted. Incest delusions may occur. Ideas of infidelity are due to antagonism to the partner.

In the hebephrenic there is an inadequate reaction; the patient is overwhelmed and confused. In katatonia the reaction is acute—recovery takes place by an encapsulation of the objectionable material; but in this condition there is less change of character. The paranoid reaction is greater than the hebephrenic, and less than the katatonic. The delusion is a compromise of opposing trends. If the splitting of the psyche is deep, the patient may become homicidal or suicidal. The psychosis represents a flight from an unbearable situation.

The psychology of dementia præcox cannot be understood unless we accept the importance of unconscious trains of thought, and the importance of the affects. Lack of space prevents our going into the numerous mechanisms found in this disorder. One of the most interesting is regularly found in the paranoid form of dementia præcox.

Bleuler's idea, the theory of ambivalency and ambitendency, that every desire or impulse is closely associated with its opposite, and that every thought has two contrasting feelings which are normally fused, according to their value—helps partly to explain negativism, suggestibility, and many bizarre

acts. In the precox the feelings which regulate the patient's relations with others are apt to suffer first, as shame, the ethical sense, etc. Depending on the makeup, the conflicts, and other features, we see no reason why manic and precox mechanisms may not be combined. Certainly dementia præcox is not a circumscribed disease process.

ETIOLOGY.

We will only discuss the factors which enter into the causation of this particular reaction type, and will not go into the essential causes of mental disease in general. The most important factors are the makeup, and the psychobiological adjustments. A toxic cause may act as the exciting factor. Kraepelin held a toxic view of dementia præcox, laying stress on the thyroid, sex glands, and other endocrine glands. But we are really dealing in dementia præcox with a replacing of efficient mental reactions, by acts of perplexity or substitution; hypochondriasis; ideas of reference; fault-findings; strange conduct; shirking. Strunsky says that we have an "intrapyschic ataxia," which is basic. There is a disturbance of coordination between the intellect and the affect. Jung claims a functional etiology, saving that the toxemia only accounts for the nonrecovery.

States of excitement in dementia præcox are endogenous, and not due to incidents of the environment. At the bottom of dementia præcox, you often find an erotic repressed complex. In these patients you find varied complexes. They are frequently prudish, overscrupulous, and show a sentimental religiosity. We feel out of touch with these constrained patients. They seem unnatural—unlike other mental cases. Masturbation, like alcohol, must be adjudged individually. So its importance varies with the individual; of no etiological moment in some, of paramount importance in others.

The katatonic form is the one least affected by the taint of insanity; the paranoid most. We often notice that these patients break down at puberty. Bleuler, like Kraepelin, assumes a definite disease process. Meyer, Hoch, and others assume that it is a disorder of instincts, but that there are also physical components—vasomotor, endocrinopathic, metabolic and other elements.

CONSTITUTIONAL MAKEUP.

These patients are evasive and temporizing before the outbreak. This undermines their character. Meyer and Hoch have frequently described the precox makeup. They often show extreme docility, a formal religiosity, and lack the sense of reality. They may be irritable, inefficient, hypochondriacal, especially about their heart; they indulge in inordinate day dreaming. They are indifferent to their emotional life and ambitions, and show a loss of initiative and energy. These are chronic, faulty mental habits. These patients do not apply themselves to the real facts of life. Following stress, they react in the characteristic precox manner. They are shut in, having but little contact with their environment; they are sensitive and stubborn; they keep their conflicts to themselves; they have no constructive plans and hopes.

These are all dangerous traits; especially their being out of contact with their environment, their satisfaction with their fancies, and the absence of constructive plans. A continuation of these traits favors the disorder.

And again we find that these patients, as children, are peculiar, rather than defective. They are often model children. They cover up, rather than correct. They have difficulty in translating thought into action. They react against certain social and ethical standards, and the environment. They are irritable, sensitive, and suspicious, and out of touch with the world. Their conflicts are deep; in paranoia and hysteria they are on the surface. The importance of the external factors are slight, compared to the internal conflicts. It is hard to understand their conflicts and real desires, because they are very personal. There may be a lack of sexual adaptation.

So in these patients the shut in type is common, i. e., one who is reticent, seclusive, cannot adapt himself, is sensitive and stubborn, and without interest, who does not confide his conflicts, who lives in a world of fancies. So also we might say that the precox deterioration is an expression of constant tendencies, in an extreme form. There is a shutting out of the outside world; a lack of interest in the world; a living in a world apart.

Precox patients show misinterpretations of sex sensations. There is loose judgment, their habits are unreal, and the loss of interest may be profound. Rarely there may be an acute collapse. The hysterical is more organized, shows a projection of the ego, and is not shut in. The precox often shows a superficial morality. In these cases it is most important to study the personality, that is, the makeup of the patient, before becoming ill. These patients are often unsettled, suspicious, moody, and shy. Eight per cent. show a normal makeup. Many of them show a retention in the infantile autoerotic stage.

The makeups in dementia præcox may be described as:

Backward.—There is a failure to develop interest and seriousness; they remain idle; frequently become hebephrenics.

Precocious.—Often an exceptional child; may be serious, bookish, prudish, and show aloofness; this more often indicates that they are asocial, rather than that they are superior.

Neurotic types.—Delicate and nervous; they have various ills; they are easily tired, and have crying spells; they are victims of early unchastity; they are often called neurasthenics or hysterics in the early days of their upset.

Asocial types.—Nearly all forms, of course, are somewhat asocial, but here the condition is marked —the shut in type. Like the others—the backward, the precocious, hysteric, or hypochondriac—their childhood is one of isolation and loneliness. They indulge in romantic musings; show deficient sentiment; there is deficient erotic development. They lean too much on their parents, preferably one. If they marry, they usually consider it an indifferent duty.

Juvenile types.—These patients retain their

youthful mentality. They are anerotic, and are not fitted for marriage. Following the first coitus nervous symptoms develop. We learn of these patients in terms of traits, trends, dysharmonies, deficiencies, and habit perversions of long standing.

SYMPTOMS.

The precox patient has no interest, and will tell you that he has nothing to write about, if you ask him to write. If he grasps your hand, he does so stiffly. A disturbance of volition may be shown by automatic obedience. There is a failure of every impulse requiring energy.

There is good comprehension with atrophy of the emotions, and weakness of the will. He performs restless and monotonous movements rather than acts which are silly and without deep emotion. He is reserved and inaccessible and shows a loss of moral and emotional feeling. He may show great ego and no shame. Unlike the manic he is inaccessible, and gives irrelevant answers. He may perform sudden, impulsive acts, grimace without cause, and be very affected. It is to be noted that even in katatonic excitement, there is usually good comprehension. In katatonic stupor stereotypy and negativism are common and characteristic, and may be shown by repetitions and obstinacies. His hallucinations, conduct, and attitudes are all strange. But it must be remembered that delusions and hallucinations are not essential to make a diagnosis. His train of thought is scattered. Blocking, an exaggeration of repression, is found in thought and motility, and almost only in dementia præcox. The patient complains that his thoughts are taken away. Ideas of bodily influence are frequently found.

The obvious symptoms are merely the expression of the attempt to escape from a difficult situation. It will be noticed that the chief psychic changes are all in the emotions, will, and association of ideas. The dementia is often more obvious than real. The patient shows little, if any, insight into his condition. Remember that behind the stupor there is clear mentality, and that the patient can register his impressions well. You have to distinguish between being resistive and being negativistic. The former is overcome by outside influences.

Dementia præcox is not an impairment of all mental functions. Formerly authors spoke of dementia as an intellectual defect. In dementia præcox the dementia is selective and enduring and conspicuous. Perception, orientation, attention, retention, memory, and knowledge, may be all right for years. Memories may be affected through the loss of the affect-interest quality; so new associations are not taken up. Thus we see that these intellectual defects are not primary. For this reason dementia præcox is spoken of as an emotional-volitional disturbance. With this there is a disturbance of systemic and general sensation. This helps to break up the personality. These patients are not always bizarre in their conduct; but are often only inadequate, fearful, timid without reason, familiar or erotic, stupid or dull. The poverty of affect is in great contrast to their clear intellect. They say they are not sick, yet they do not long for freedom. The great changes in moods and affects suggest hysteria. These patients are shallow in

their expression of joy and sorrow. So too, they are shallow in their intellect as a rule. Submerged complexes color the symptoms. The patients are not accessible usually to direct questioning. Always be on the lookout for fundamental symptoms—especially emotional indifference, and attention disorders.

Katatonias may be acute, and follow an emotional cause. In this condition there is a predominance of motility disturbances. The object of both increased suggestibility and katatonic rigidity is to shut out the world of reality. A complex may be shown by a blocking in speech. One must remember that a patient may show the precocious makeup, and yet not have a psychosis. Such a person may be able to engage in business, or to go into society. The precocious makeup refers to the constitutional mental abnormality before the onset of the psychosis. The lack of insight and motives show that katatonic stupor is due to a disturbance of the will, and is not brought about by hallucinations nor delusions. Paranoid cases end by preference in hallucinations or delusional dementia. The katatonic is usually younger than the paranoid patient. The hebephrenic constantly shows the defective makeup. The paranoid patient is more susceptible to psychological investigation. Vasomotor disturbances are frequently found in this disorder; however, there are no valuable diagnostic physical signs present. A narrow retreating forehead is common in precocious cases.

(To be concluded.)

OBSERVATIONS AND DEDUCTIONS MADE FROM ONE YEAR (1918) OF UROLOGY AT THE BROOKLYN HOSPITAL.

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A review of the urological work done by my associates and myself at the Brooklyn Hospital during the year 1918 has proved of great interest to me, and a brief summary of that review is presented here, with the idea that it may not be entirely void of interest to others. I am sure that a casual contemplation of work done and a critical analysis of that work are likely to present rather different pictures. We may find, for example, that we had treated a greater number of certain types of conditions than we had supposed and, on the other hand, fewer of other types. We are likely to find, also, that results in some instances have exceeded our expectations, while in others we have fallen far short of what we supposed we were accomplishing. Then again, even though our groups of cases may be relatively small, they are of some statistical value, and even humble opinions and conclusions, when based on a study of actual material honestly reported, are worthy of being placed upon record.

For convenience in summarizing and describing our work, the service may be said to consist of three distinct parts, all, however, very closely related; all under the direction of one chief, and manned by a staff of associates and assistants who

rotate in the various departments and their subdivisions. These three parts are:

1. The hospital work proper—urological operations and the care and treatment of patients requiring bed or indoor care.

2. A well equipped cystoscopic room immediately adjoining the x ray room. Here all hospital patients requiring any form of cystoscopic manipulation for diagnosis or treatment are cared for. In addition to this group all the outdoor patients in whom the diagnosis is obscure and who are likely to require some of the more advanced forms of cystoscopic examination, such as pyelography, wax tips, etc., are examined in this room, as are all cases in which fulguration and the various other forms of intravesical operative procedures are required. This clinic is operated two mornings each week and is manned by the chief and two or more of the senior associates.

3. The dispensary or outdoor department. Here all the patients suffering from venereal diseases, including syphilis, are cared for and the younger men are trained in endoscopy and cystoscopy, in addition to their other routine work, rotating through the various departments at monthly intervals.

Under the first heading there were 231 admissions. These cases I propose to group and discuss according to the location of the lesions.

SURGICAL LESIONS OF THE KIDNEY.

Thirty-five patients were treated, presenting various surgical conditions of the kidneys, divided as follows: Perinephritic abscess, two; pyelitis, three; pyonephrosis, four; tuberculous kidney, eight; pyelonephritis, two; renal calculus, six; unilateral nephritis, three; nephroptosis, four; renal fistula, two; congenital anomaly, one.

There was nothing of special interest in connection with one of the cases of perinephritic abscess. It was secondary to an influenzal infection and the patient made a prompt recovery following incision and drainage. The other case was unusual because of the long history, comprising two years of discomfort referred to the right hypochondrium, with a noticeable swelling gradually increasing in size for the past six months, with fever, sweats, and progressive loss of weight and strength. This man had a large collection of pus about the upper pole of the right kidney, extending up behind the liver. He made a prompt and complete recovery following operation. The kidney was intact and there was no evidence of tuberculous lesions anywhere in the body. Unfortunately, through some clerical error, the culture was not reported. The pathogenesis in this case is somewhat obscure.

The three cases of pyelitis were all in patients who were kept in the hospital for diagnosis with a provisional diagnosis of renal stone or tuberculosis. All of these patients showed the colon bacillus in the urine from one kidney with slight disturbance of function and presented the symptoms of pain in the corresponding loin with some frequency of urination. We see a large number of these cases in our clinic. The patients are all materially benefited by attention to the bowels and diet, plus argyrol instillations in the renal pelvis. I

am undecided whether it is the argyrol or the mere passing of the catheter with relief of some form of mild ureteric obstruction that accomplishes the result.

There were four cases of pyonephrosis. In one the etiology was somewhat obscure. At operation the kidney was found to be converted into a large pus sac; there was no evidence of stone, tuberculosis, or obstruction in the ureter; culture showed the colon bacillus. It is rather difficult to understand the pathogenesis in these cases. In my experience, the average uncomplicated renal infection involving the parenchyma is acute and terminates in death, operative relief, or, in exceptional instances, spontaneous and complete recovery. While we do from time to time see such cases as this one noted above, yet, as a rule, they are complications of calculi or some form of partial ureteric obstruction. This patient made a prompt recovery and is well to date. Two of our cases were of the calculus type. In one the calculus was found loose in a large perinephritic abscess containing pus of a urinous odor. There were indications of a more or less complete disorganization of the kidney. In this case we contented ourselves with simple drainage and removal of the calculus. The patient made a good operative recovery and was advised to return later for a nephrectomy. He failed to do so and has been lost sight of. The other patient was admitted to the hospital acutely ill and in the eighth month of her first pregnancy. At operation the exploring finger passed through an abscess cavity and directly into the renal pelvis through a soft, mushy cortex, accompanied by profuse and alarming hemorrhage. A large calculus was removed from the pelvis and the hemorrhage controlled by a firm iodoform gauze pack. This patient made a smooth recovery and went on to term and a normal labor. She reported for examination six months after operation. At this time there was still pus in the urine from the affected side, the functional capacity was reduced fifty per cent., and the x ray showed another small calculus in the cortex. Her general condition was below par and she was given tonics and general supportive measures and instructed to report later for a nephrectomy. While it may be good practice in these cases to do an immediate nephrectomy and save the patient another operation, I believe it is better judgment to save the patient's life at the time at the expense of a later operation. The other patient was admitted in a moribund condition and died before a diagnosis could be made. At autopsy we found an extensive carcinoma of the bladder, both ureters distended, and the kidneys converted into sacs of pus. We all see similar cases from time to time and marvel at the small amount of renal substance which seems capable of sustaining life.

There were eight cases of renal tuberculosis. Of these two were considered inoperable, one because of extensive pulmonary involvement, the other because of marked involvement of both kidneys. While it is good surgery to operate in bilateral renal tuberculosis when one kidney is only slightly involved and the other destroyed, there is obviously no good reason for operating where the involve-

ment is equal on both sides. This particular patient was discharged unimproved and died four months later in another hospital of a fulminating miliary tuberculosis. The patient with pulmonary involvement was sent to the country and lost track of. One other patient was considered a good operative risk, but declined operation. He, too, was lost track of. The five other patients were nephrectomized and all made good operative recoveries. In all cases the ureter stump was cauterized with carbolic acid and the wound closed around a small cigarette drain. In four of these cases the patients are living and well at the present writing. One patient died ten months after operation of tuberculous meningitis. In this case the bladder symptoms persisted and tubercle bacilli were demonstrated in the urine up to the time of death. This patient before operation had one of the worst bladders I have ever seen. He was cystoscoped on several occasions with and without general anesthesia. At no one of these examinations were we able to catheterize either ureter on account of the limited bladder capacity, from bleeding and cloudy fluid. The patient was in great distress, suffering from constant tenemus and pain, and we finally decided upon a suprapubic cystotomy for two reasons—first, to give the patient some temporary relief, and, secondly, for the purpose of completing our diagnosis. At operation we found a contracted bladder lined with tuberculous ulcerations. Catheters were passed into each ureter and we were able to demonstrate a sound right kidney with its mate extensively involved. While this procedure has been severely criticised, I believe it has a place. Two weeks later, with the patient much improved from his previous cystotomy, the left kidney was removed. While the bladder symptoms persisted, they were progressively improving, the patient had gained forty pounds in weight, and we were anticipating an eventual cure up to the time his meningeal symptoms developed. The operative wounds healed per primam in all cases. In three they remained solid. In two others, including the case noted above, the wounds broke down after the patient left the hospital and each required a period of three months for their second closure. In four cases the bladder symptoms were promptly relieved after operation.

There were two cases of acute pyelonephritis in my series. Both patients presented a history of a preceding throat infection. Both presented a picture somewhat similar, but slightly less acute than the clinical syndrome described by Brewer. They were subjected to nephrectomy, with prompt recovery, and have remained well to date. The kidney in each instance was found large and studded throughout the cortex with miliary infarcts. The staphylococcus was the offending organism. These cases are not uncommon and it is of vital importance that they be promptly diagnosed since early nephrectomy offers practically the only hope of recovery. They are most likely to be confused with a simple pyelitis. From this they can be differentiated by the fact that the urine is less grossly purulent, cultures are likely to show one of the coccus group, whereas the colon bacillus is usually

noted in cases of pyelitis, the pulse rate is higher, and the patients are more profoundly ill.

There were six cases of renal calculus, all unilateral and equally divided between the two sides. In three cases the calculi were removed by pyelotomy, in one by nephrotomy, and in two by nephrectomy. All patients made good operative recoveries. One has passed from under observation. One (nephrotomy) still has a small amount of pus from the affected kidney, although presenting no subjective symptoms. The other four are well to date. Pyelotomy is the operation of choice. In two of our cases the wound in the pelvis was carefully sutured with plain gut. In the other case, because of a short renal pedicle and difficulty in placing sutures, it was not attempted and the patient made an uneventful recovery. The nephrotomy was done for a calculus in the tip of a calyx. Pyelography has been of great aid to us in accurately locating calculi.

I believe that very large calculi and calculi complicated by a gross infection are best treated by nephrectomy. These were the indications in our two nephrectomized cases. One of these patients presented a history dating back one year, during which time she had had four operations by four different operators. At the first sitting her appendix was removed. The second operation removed her right tube and ovary. The third attempt was said to have been an exploratory laparotomy and, strangest of all, two years before coming under my care she had a nephropexy upon the affected side. An x ray taken the day after her admission to the hospital showed a branching calculus completely filling the renal pelvis. Although she was in the fourth month of pregnancy, a nephrectomy was performed and she went on to a forceps delivery at term with no renal complications. Pregnancy, either in the early or late months, apparently furnishes no contraindication to renal surgery.

There were three cases in which we made the somewhat unsatisfactory diagnosis of unilateral nephritis. One patient applied for relief because of repeated attacks of unilateral renal hemorrhage. In the intervals between bleeding our findings were all negative, except a pyelogram which suggested renal tumor, and the patient was operated upon with this as a preoperative diagnosis. At operation a suspicious area was noted on section and the kidney was removed. Careful pathological study showed this area to be a localized infarct with extensive small round cell infiltration. The patient made a good operative recovery and has remained well. The other two presented pain and tenderness over the affected kidney as the only symptoms. I might say, in passing, that we see not a few such cases in our clinic. All objective findings are negative and yet there is undoubtedly a renal lesion. I believe that this type of case presents a real definite clinical entity. Three years ago the writer published a report of a case of this character (1). This particular case eventually came to nephrectomy and a study of the kidney showed a definite chronic infarct, caused, no doubt, by some remote infection. The two patients in this group

were both treated by nephrotomy; they made good recoveries and have remained free from pain for periods of seven and nine months, respectively.

There were four cases of nephroptosis in which we considered that operation was indicated. One patient declined operation; the other three patients were much benefited by nephropexy. I am sure that this operation is often done inadvisedly. We certainly cannot hope that hanging up a kidney in a case of general visceroptosis is going to do any good; yet there is quite a large group of cases in which nephroptosis exists alone. Not infrequently such cases are complicated by kinks in the ureter and intermittent hydronephrosis and cause a great deal of suffering. In such cases the patients may be, and often are, cured by a well performed nephropexy.

There was one very interesting case of renal fistula. This occurred in a woman of fifty-six, who, seven years before, had her left kidney removed for calculi. Five years later she had a nephrolithotomy performed upon the remaining kidney. A sinus persisted for about a year, when it closed, only, however, to break down again at frequent intervals. When she came first under our care all the urine was being discharged through the sinus. A No. 8 French catheter was passed through the ureter to the kidney pelvis and left in situ for forty-eight hours. During this time the kidney pelvis was irrigated frequently with warm boric acid solution. The sinus remained closed for one month, when it opened again. The same procedure was repeated and the patient has remained well for one year. There is evidently no return of calculi.

We had one case of congenital renal anomaly. In this case the ureter divided about two inches from the kidney into four distinct branches, with four small, distinct and separate pelves. The symptoms presented were renal pain and frequency of urination. The kidney showed a functional capacity nearly equal to its fellow, yet, right or wrong, we removed it. The pain was relieved, but the frequency of urination persisted. It is an open question whether we were justified in performing a nephrectomy upon this patient, yet if the anomaly caused the pain, there seemed to be no other way of relieving it.

DISEASE OF THE URETER.

There were only three admissions to the hospital with a diagnosis of disease of the ureter. They were: Pyoureter, one; calculus of the ureter, one; congenital anomaly, one.

The first case was that of a woman who had had a nephrectomy performed for pyonephrosis one year before admission. Her bladder symptoms persisted and the urine remained very purulent. We were able to demonstrate, by means of cystoscopy and a ureterogram, a very large ureter stump evidently distended with pus. At operation the ureter was removed entire down to the bladder. This was readily accomplished through a long incision in the groin parallel to Poupart's ligament. The specimen was ten inches long and one inch plus in diameter. She was much improved by operation, although a moderate cystitis persists, for which

she is still under treatment. The moral of this case would seem to be that in doing a nephrectomy for any cause we should remove the ureter down to a point where it is healthy, if necessary all the way to its entrance into the bladder. If much of the ureter has to be removed, it is, no doubt, better done through a separate incision, as suggested years ago by Kelly.

We had only one case of ureteral calculus in this series, which seems out of proportion to the number of our other cases and leads one to suspect that we have missed the diagnosis on some other cases. The one case was near the bladder and was easily removed by ureteral meatotomy through a cystoscope.

The congenital anomaly was a very unusual one, and has been reported in detail (2). This patient had a solitary kidney (right) with three ureters, one of which followed a normal course to the bladder; the other two passed over to the opposite side, where they united at the brim of the pelvis to form a single ureter, which entered the bladder at the normal site.

DISEASES OF THE BLADDER.

Of diseases of the bladder there were twenty-one admissions, as follows: Papilloma, one; carcinoma, nine; Hunner ulcer, one; calculus, four; diverticulum, four; tuberculosis, one; reaction following cystoscopy, one.

The one case of papilloma did not respond to fulguration. It was excised with a cautery through a suprapubic cystotomy, with an apparent cure to date (fourteen months). I am sure that fulguration is the method of choice in treating papilloma. In fact, like other observers, I am disposed to suspect malignancy when they do not respond. However, we do occasionally see benign papillomas which, for some reason or other, do not respond. In such cases we must resort to cautery excision. If this is performed with careful avoidance of contact or tumor with healthy tissue, I believe it is curative.

Of the carcinomas I am hopeful of having effected one cure. This was a case of papillary carcinoma involving the summit of the bladder, in which we were able to do a wide resection, including about three-fifths of the entire bladder. This patient has been cystoscoped at monthly intervals since the operation, fifteen months ago, and shows no sign of recurrence. While, of course, it is too early to give an entirely good prognosis yet, considering the fact that we were able to make a wide excision through healthy tissue, and considering also that carcinoma in this location has very little tendency to metastasize, I am hopeful of a cure.

Two of the patients were admitted in a very advanced stage of the disease, suffering great pain with urination. A suprapubic cystotomy was done for the relief of symptoms, which, in a measure, it seemed to do. Both of these patients died in the hospital. In one other very advanced case fulguration was performed with no expectation of influencing the course of the disease, but rather to control hemorrhage. This it did very successfully. I believe this is all we can hope for from the high frequency spark in bladder cancer. This patient

died three months later. Five patients were subjected to cauterization through a suprapubic opening. In three of these we thought there was some improvement; the other two we are sure were not benefited. They all recovered sufficiently from the operation to leave the hospital and were referred to another institution for radium treatment. It seemed to me that in all of the cases radium had some effect in relieving symptoms and staying the progress of the disease. One patient, a man of forty, is alive and fairly comfortable one year after operation. Three of this group have since died and one has been lost sight of.

On the whole, cancer of the bladder, with the exception of those cases seen early and which do not involve the trigone and ureteric region, is a most deplorable condition to treat. I believe, however, that the large majority of these growths are originally benign papilloma and readily amenable to treatment. It behooves us, therefore, to diagnose bladder cancer before it is cancer, which, of course, can only be done by cystoscopy, performed by a competent cystoscopist, upon the first symptoms which might suggest such a lesion.

We had one admission for bladder ulcer of the type recently described by Hunner. This patient was a male of forty, who had been knocked about our clinic for two years, insisting that he had pain over his bladder. Repeated examinations had been negative and the poor fellow was turned over to the younger members of the clinic as a dummy upon whom to practise and learn cystoscopy. After reading Hunner's article I examined him again with a direct observation cystoscope, paying particular attention to the summit of the bladder, and had no difficulty in recognizing the lesion. I would submit that this lesion is not infrequently overlooked for the reason that most of us content ourselves with an inspection of the bladder through an indirect cystoscope, which does not give a good view of the area usually occupied by this lesion. In this case operation revealed an ulcer no larger than a pin head, but surrounded by a large area of intense edema and extensive round cell infiltration, the bladder wall being increased in thickness to several times its normal proportions. About one third of the bladder was resected and the patient was immediately and permanently relieved of all symptoms. I have since been one other similar case, also in a male. This patient declined operation.

There were four cases of bladder calculi removed by suprapubic cystotomy. Three patients made good recoveries with apparently permanent cures. One died on the fifth day from renal insufficiency. This latter case emphasizes the point that, while in prostatic surgery we have learned the importance of estimating the functional capacity of the kidneys as a necessary preliminary to operation, we are prone to perform other urological operations without exercising the same degree of care. A simple cystotomy in the presence of bad kidneys may be a serious operation.

There were four cases of bladder diverticula in this series. One, a small diverticulum, was treated by excision of the mucous membrane, after drawing it into the bladder with a suction pump accord-

ing to a method recently devised by Young. This evidently effected a cure, but the pyuria persisted. This was later found to be due to a colon bacillus infection of both kidney pelvis and the patient is still under treatment. The other three cases were very large and badly infected diverticula, which were radically excised by a method which has been described by the writer (3).

We had one case of tuberculous ulceration of the bladder, which persisted after nephrectomy. The patient was admitted to the hospital for examination under anesthesia. We are all familiar with the fact that many of these patients who eventually go on to complete recovery continue with symptoms over a long period of time. I have found installations of carbolic acid, 1-100, combined with tonics and creosote internally, to be the best form of treatment.

DISEASES OF THE PROSTATE.

Under the heading of diseases of the prostate and vesicles, our admissions were as follows: Benign prostatic obstruction, twenty-one; carcinoma of prostate, two; acute prostatitis, five; chronic posterior urethritis, one; tuberculosis of seminal vesicles, one.

Of the benign prostatic obstructions one patient died from renal insufficiency a few days after admission. No operation was performed in this case. Twenty patients were subjected to suprapubic prostatectomy, with eighteen recoveries and two deaths. One patient died suddenly on the ninth day from embolus while apparently making a perfectly smooth recovery. The other died on the seventeenth day, also suddenly, of acute cardiac dilatation. This man had a double mitral lesion which was apparently compensating well up to the moment of his death. Both of these deaths seemed unavoidable: one seemed hardly attributable to the operation. Of the remainder, two have since died from intercurrent diseases. The other sixteen are alive and apparently relieved of symptoms at the present writing. In two cases of this group section of the prostate showed malignancy. Both of these patients are alive and apparently well to date. There were two other cases of prostatic cancer in which the diagnosis was obvious. The patients were refused operation and referred elsewhere for radium treatment. In twelve of our patients the whole operation was done at one sitting, while in eight the two step method was employed. We prefer the one step operation where preliminary bladder drainage can be accomplished by an indwelling catheter. However, the two step procedure has a large and important field of usefulness. It would appear that, with our present day methods of careful preparation and selection of cases, with due regard to the functioning capacity of the kidneys, prostatic surgery is eminently safe.

Six patients were admitted with a diagnosis of stricture urethrae, all complicated by acute retention of urine. In three of these patient effort was rewarded by the passage of a filiform and later tunnel sounds, gradual dilatation being continued in the dispensary. In two cases in which it was impossible to pass a filiform, the bladder was drained for several days by means of a soft rubber

catheter through a trocar and cannula passed into the bladder above the pubis. In one of these cases it was an easy matter to pass a filiform and tunnel sounds after the edema of the urethra had subsided. In the other case, while we could pass a filiform, the stricture was evidently too dense to admit any other instrument, and an external urethrotomy was performed. In the last case of this group a filiform had been lost in the bladder. It was recovered through an external urethrotomy, but the patient died from uremia on the fourth day—another case of bad kidneys not recognized before operation. My attitude toward the treatment of stricture of the urethra is very conservative. I believe they can practically all be cured by gradual dilatation and that external urethrotomy is rarely indicated, except in the presence of complications.

Seventeen varicoceles were treated by excision through a short incision in the groin. There was a little reactionary swelling in all cases in direct proportion to the amount of handling to which the cord was subjected.

Six hydroceles were treated by inversion of the sac, with excellent results.

One carcinoma of the testicle was removed for no good reason since a few days after operation we noticed a small carcinomatous nodule in the neck, which had been overlooked before operation.

One case of testicle in the inguinal canal was brought down and anchored in the scrotum, with an apparently excellent immediate result. Six months later, however, the organ had wasted down to a very tiny nodule evidently of no functional value.

Five cases of tuberculous epididymitis were treated by epididymectomy, with excellent results. When operation is performed for this disease, and I think it is not often indicated, I am strongly in favor of not removing the testicle. Why remove an organ which is rarely involved and leave nodules in the prostate and vesicles? I have had no personal experience with the extremely radical operation of removing the whole seminal tract.

We operated in three cases of hypospadias. One patient was much improved and we are planning subsequent operations which we trust will in time effect a cure. In the other two our wounds broke down and we accomplished nothing. One needs but a little experience with these conditions to realize the difficulties attendant upon securing a satisfactory result.

We had one death from general carcinosis. This patient came under our care inasmuch as it occurred in a man upon whom we had performed a total cystectomy the year before. I have performed this operation twice and the results have not encouraged me to do it again.

During the year we administered ninety-four intraspinal salvarsan serum treatments for various types of cerebrospinal syphilis. While we had a number of cases in which we could see no improvement, we have had a few brilliant results in a few cases and definite improvements in a considerable number. With one exception, we have had no disagreeable complications of the treatment. In this

case the patient became delirious a few hours after the treatment and there was a transient paralysis of both lower extremities which cleared up entirely in one week. I believe when properly done, this method of treatment is practically free from danger and is indicated as a routine in all cases where clinical symptoms and examination of the spinal fluid indicate involvement of the central nervous system.

CYSTOSCOPES PERFORMED.

In the cystoscopic room 437 cystoscopies were performed for the purpose of diagnosis and treatment. This is exclusive of cystoscopies performed in the outdoor department. The following conditions were diagnosed and treated in this department:

Kidney.—Perinephritic abscess, one; renal calculus, four; pyelonephritis, two; chronic nephritis, one; nephroptosis, six; unilateral nephritis, four; pyonephrosis, three; tuberculous kidney, twenty; pyelitis, eighteen.

Ureter.—Pyoureter, one; ureter calculus, four; ureter kink, six; ureter stricture, four; anomalous ureters, five.

Bladder.—Trigonitis, six; postoperative tuberculous cystitis, one; Hunner ulcer of bladder, two; foreign body (gauze) in bladder, one; bladder polyp, three; bladder papilloma, two; bladder carcinoma, six; adenoma of bladder neck, one; tabetic bladder, one; diverticula of bladder, two.

Prostate and urethra.—Benign prostatic obstruction, four; carcinoma of prostate, one; urethral polyp, one; chronic posterior urethritis, fifteen; stricture of urethra, two; extravasical conditions causing urinary difficulty, ten.

This list is presented merely for the purpose of showing the relative proportion of the various lesions included in this group and is submitted without further comment upon individual cases.

We have developed a routine in this department which aims at making a diagnosis, where possible, at one sitting. While not always successful, nevertheless we often are, and it seems like a step in the right direction. Our routine is as follows:

The patient is admitted to the hospital the night before; he is given one ounce of castor oil upon retiring and a soapuds enema in the morning; he eats a light breakfast and is urged to drink large quantities of water up to the time of being sent to the examining room. The cystoscope, with an observation telescope, is passed into the bladder and a specimen of bladder urine obtained in a sterile tube. This is sent to the laboratory for complete examination, including culture. The bladder is now irrigated with a warm solution of oxycyanide of mercury, 1-5000, and then gradually distended under observation. The bladder is now carefully inspected. The observation telescope is now removed and the catheterizing instrument introduced, armed with x ray catheters. The catheters are now passed into the ureters all the way to the kidney pelves, noting any obstruction on the way. They are then partially withdrawn and the cystoscope is removed, leaving the catheters in situ. Specimens of urine are obtained from each kidney and are sent to the laboratory for examination, in-

cluding culture and animal inoculation. One c. c. of phenolsulphonaphthalein is now injected intramuscularly and the time of first appearance noted on each side. When this test is completed, the patient is wheeled into the x ray room with the catheters still in situ. Plain radiographs are made of the whole urinary tract and if either kidney is under suspicion, a pyelogram is made. We use for this purpose a twenty-five per cent. solution of sodium bromide, which is allowed to run in by gravity until the patient complains of slight distress in the corresponding loin. The amount varied in our cases from three to sixty c. c., with an average of seven c. c. One c. c. of a twenty-five per cent. solution of argyrol is instilled in the other kidney pelvis, the catheters removed and the patient returned to his room. Depending upon the amount of reaction, he may go home the same afternoon or the following morning and await the report of the pathologist and radiographer; or he may remain in the hospital for operation, if indicated. In any case, he is given urotropin for a few days following the examination.

By this means we have, at one sitting, made a comprehensive examination of the whole urinary tract. We have secured sufficient data upon which to base a diagnosis in many cases, and we have saved the patient a vast amount of time and inconvenience.

In our outdoor department we administered 23,583 treatments to 1,293 patients. Our clinic operates daily from 1:00 p. m. to 3:00 p. m. for all genitourinary diseases, excepting syphilis. There is a syphilis clinic, for men only, one morning a week, from 9:00 a. m. to 12:00 m., and a similar clinic for women and children on another day, at the same hour. In addition to the above, there is a pay clinic from 5:00 p. m. to 6:30 p. m. corresponding to our 1:00 p. m. free clinic, and also pay clinics for syphilis one day a week each for men and for women and children at 8:00 p. m. The revenue derived from this source is divided between the hospital and the doctors. The amount accruing to the hospital from this arrangement makes the clinic self-sustaining. The money paid to the doctors makes a small incentive for regularity and attendance. The men who work in the pay clinic must also work in the free clinic. For further details of this plan of organization, the reader is referred to numerous articles in *Social Hygiene*, *Modern Hospital*, and various other magazines which have been contributed during the past three or four years by my former associate, Major A. N. Thomson, now in the M. O. R. C., to whom much credit is due for his efforts in promoting the efficiency of our clinic.

I shall not in this paper attempt any detailed discussion of our work in this department. I hope in the near future to present some tabulated results in a separate communication. For the present, suffice it to say that we have cured a few patients of syphilis and a much larger number of gonorrhea. We have carried a large number past the flagrantly infectious stage and in so doing have rendered a distinct service to the community.

In conclusion, I wish to express my thanks to

my associates, Dr. William F. McKenna and Dr. Philip Goldfader for the valuable aid which they have rendered in securing the necessary data for this paper.

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67 HANSON PLACE.

PNEUMOPERITONEUM.

Röntgenological Findings, and a Few Observations on Intraabdominal Pressure.

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The object of this paper is to report a case of pneumoperitoneum that occurred accidentally while attempting to induce artificial pneumothorax. This case has been studied clinically and radiographically and it seems to be of sufficient interest from the clinical as well as from the röntgenological viewpoint to deserve recording.

Clinically, pneumoperitoneum is known to occur either in the course of a general peritonitis which is the result of intestinal perforation and the entrance of gas producing organisms into the peritoneal cavity, or in a subphrenic abscess, what is also known as a subphrenic pyopneumothorax. While these conditions very frequently present considerable difficulty in diagnosis, they have not been sufficiently studied röntgenologically. The only definite report of the radiographic findings in pneumoperitoneum that could be found in literature is a single case report of subphrenic pyopneumothorax by Moore (1) that was published recently. Peschman and Corper (2) made use of the x ray in an experimental study of induced pneumoperitoneum in rats, in order to determine the effect of air in tuberculous peritonitis, but their work has no bearing on the röntgenologic appearance of pneumoperitoneum in man.

The scarcity of literature on the subject seems to be due to the fact that hitherto the value of air as a contrast medium for röntgenological study has not been properly appreciated. Indeed, it is only since the advent of artificial pneumothorax as a therapeutic agent in pulmonary tuberculosis that the attention of clinicians and röntgenologists has been focused upon the radiographic appearance of free air in a body cavity. But, in spite of the fact that a considerable amount of radiographic work has been done on therapeutic pneumothorax, we do not find that air has ever been suggested as an artificial contrast medium for röntgenological studies till very recently when Dandy (3) successfully used injections of air into the ventricles of the brain for the purpose of ventriculography.

The following case, besides being of considerable interest from the clinical point of view, is also rather instructive as regards the röntgenological appearance of pneumoperitoneum and at the same

time it suggests the possibility of using air as a contrast medium in certain cases of intraabdominal radiography.

CASE.—S. G. Hospital No. 2989, a surface car conductor, thirty-two years of age, was admitted to the Sanatorium of The Jewish Consumptives' Relief Society on November 8, 1917, with a negative family history and previous personal history. His present illness dates back vaguely to childhood. The patient had a chronic cough as far back as he can remember. He has been below par all the time, but he had no constitutional symptoms and he was working most of the time. About October, 1917, the patient's condition became worse, his cough and expectoration increased in severity and he began to lose weight and strength rapidly. Since that time his temperature rose to 101° daily and occasionally to 102° or 103° for a few days.

Physical examination.—Examination of the lungs revealed evidence of infiltration with consolidation involving the entire left lung, with evidence of cavity in the left infraclavicular region, and a moderate amount of infiltration in the right upper lobe. Fluoroscopic and radiographic examinations practically confirmed the physical findings. His sputum was positive for tubercle bacilli.

Course and treatment.—Due to the fact that the patient's condition was assuming a rather active course and the physical examination revealed the greatest amount of activity on the left side, it was decided to induce artificial pneumothorax on that side. Numerous attempts have been made in the various intercostal spaces but no free pleural space could be found. The failure was evidently due to the protracted course and the chronicity of the disease, which undoubtedly resulted in extensive pleuritic adhesions, obliterating the pleural cavity.

On March 26, 1918, a puncture was made in the eighth interspace in the posterior axillary line on the left side. Manometric oscillations were obtained that appeared to be quite satisfactory, the readings being minus three to minus two cm. of water. Assuming that the point of the needle was in the pleural cavity, we introduced 500 c.c. of filtered air. The pressure, as indicated by the manometer, rose gradually, the final pressure being minus one cm. of water to zero.

On March 29, 1918, a second puncture was made in the same interspace. The initial manometric readings then were minus two to minus one cm. of water. 1,000 c.c. of air was introduced. The pressure rose slowly but steadily, the final manometric readings being plus one to plus two cm. of water. The patient felt comfortable during and after both operations.

Röntgenological findings.—Fluoroscopy soon after the 1,000 c.c. of air was introduced showed a large dome shaped area of free air in the region of the left diaphragm. This air containing area was much lower in the region of the costophrenic angle where it was reaching practically down to the pelvis. Röntgenograms were taken the same day in standing position (Fig. 1) and in prone position (Fig. 2). The plates confirmed the fluoroscopic findings and there was practically no difference in the appearance of the two plates taken in different pos-

tures. The röntgenograms showed also a small amount of air in the region of the right diaphragm.

The question then arose whether the air in the region of the left diaphragm was located between the parietal and visceral layers of the diaphragmatic pleura, forming a localized pneumothorax, or the air was just below the diaphragm. This question was soon settled by a further röntgenological study of the case, made by Dr. W. W. Wasson of Denver. After giving the patient a bismuth meal, he was fluoroscoped in various positions, and after certain manipulations of the abdomen, the air was distributed around the upper part of the stomach and around the spleen, thus giving a clear and definite view of these organs. The cardiac end of the stomach appeared somewhat constricted, apparently due to the pressure of the surrounding air.

This, of course, proved definitely that the air was below the diaphragm, and at the same time we were surprised to notice with what ease a well defined outline of the spleen and cardiac end of the stomach was obtained when those organs were enveloped by a layer of free air. Unfortunately, however, we have been unable to obtain röntgenograms that would show such a clear outline of the above mentioned abdominal organs as was seen under the fluoroscope, because before a plate could be taken, the air returned to its former position, just below the dome of the diaphragm. Fig. 3, however, shows a fairly definite outline of the spleen, especially its inner part.

Having concluded that the air was below the diaphragm, we realized that the manometric readings we obtained during the supposed pneumothorax operations were really a record of intraabdominal pressure instead of intrapleural pressure, but unfortunately, during the previous operations, we failed to observe during which phase of respiration the pressure was higher and this made our record rather incomplete. A needle was therefore again introduced into the same interspace where the previous punctures have been made and connecting the needle to the manometer, the readings were taken. The manometer then registered minus two cm. of water on expiration and minus one cm. on inspiration. No more air was introduced.

Further radiographic examinations showed that the air under the left diaphragm gradually diminished while there was a corresponding increase of air under the right diaphragm as seen in Fig. 4. Later, the air gradually disappeared, and the patient did not suffer any ill effects whatsoever, his condition remaining practically the same.

COMMENT.

From the clinical viewpoint, the most important observation made in the above described case is the measurement of the intraabdominal pressure in an apparently healthy peritoneal cavity.

Though a good deal has been written on the subject of intraabdominal pressure, the conclusions arrived at by various observers are quite divergent. Indeed, the intragabdominal pressure is undoubtedly a variable quantity, depending upon the tonus of the abdominal muscles, the contents of the various abdominal viscera and the action of the diaphragm in respiration. For a thorough review of the litera-

ture on intraabdominal pressure, the reader is referred to an article by Haven Emerson (4), who, besides giving an exhaustive and critical review of the subject, also reports the results of his own experiments on animals. But Emerson's observations, as well as those of many other observers, were made mainly on anesthetized animals and cadavers and the results obtained can hardly be considered a criterion of the intraabdominal pressure in man under normal conditions. The only observations that have ever been made directly on living human beings that I could find a record of in literature, were made on cases of ascites, but it is selfevident that the intraabdominal pressure in ascites is likely to deviate considerably from the normal.

Although it may not be justifiable to draw any broad conclusions from a single case, yet it is worthy of note that in the case on which this article is based, accurate measurements of the pressure in an apparently normal peritoneal cavity have been obtained, and without going into theoretical considerations, I think that the following statement of the data obtained will prove to be of value to any one who is interested in the subject:

1. With the patient in the right lateral posture and the needle introduced just below the left diaphragm, the initial manometric readings, before any air was introduced, were minus three cm. of water on expiration and minus two cm. on inspiration, and after 500 c.c. of air was introduced, the readings were minus two on expiration and zero on inspiration.

2. Three days later, with the patient in the same position and the needle introduced in the same area, the initial manometric readings were minus two on expiration and minus one on inspiration, and after 1,000 c.c. of air was introduced, the pressure rose to plus one on expiration and plus two on inspiration.

3. With the same procedure repeated about one week later, the initial readings were again minus two on expiration and minus one on inspiration.

It is interesting to note that pressure was always negative and it took as much as 1,000 c.c. of air to raise it to positive; that it was higher on inspiration and lower on expiration; and that the difference between the pressure during inspiration and that during expiration was uniformly one cm. of water.

From the röntgenological point of view, this case presents a few interesting points. The radiographic appearance of pneumoperitoneum is well illustrated in Figs. 1 and 2, taken in standing and prone positions, respectively. These röntgenograms show that the air accumulated on the side where it has been introduced, and very slowly it found its way to the under surface of the diaphragm on the opposite side. Figs. 1, 2 and 3, taken the first few days after the air has been introduced, show the greatest amount of air under the left diaphragm and a small amount under the right diaphragm, while Fig. 4, taken about two weeks after the introduction of the air, shows it almost equally distributed under both leaflets of the diaphragm.

It is easy to understand why the air should accumulate under the diaphragm, as this is what we

would expect according to the laws of gravity, but why the air remained on the left side and did not at once distribute itself throughout the upper part of the abdomen, requires an explanation. It is possible that the liver is more or less firmly fixed in place by its ligaments and it required a certain amount of continuous pressure to dislodge it from its position under the diaphragm. The most important röntgenologic observation that was made in the study of this case, however, is the fact that, after certain manipulations we have been able to obtain a definite outline of the spleen and cardiac end of the stomach, under the fluoroscope, and as seen in Fig. 3, we even obtained a röntgenogram showing a fair outline of the spleen. While it may be unfair to make any positive deductions from the study of a single case, yet it is reasonable to suppose that in certain affections of the spleen, liver or stomach, we could obtain valuable information by introducing a measured amount of air into the peritoneal cavity and observing the outlines of the various organs by fluoroscopy and radiography.

Though the fact that our patient did not experience any ill effect may not be sufficient to warrant the safety of this procedure, there is hardly any reason to consider such an operation dangerous when it is carefully done. Indeed, induced pneumoperitoneum has been repeatedly used in the treatment of tuberculous peritonitis without any ill effects. Furthermore, it is well known that the pleural cavity is more susceptible to infection than the peritoneal cavity, and we undoubtedly have sufficient experience with induced pneumothorax to be certain of its comparative safety.

As to the technic to be followed, I am hardly in position to make any definite statement, but I think that the safest way would be to use the pneumothorax apparatus and follow the same technic as in inducing artificial pneumothorax, using the manometer to indicate when the point of the needle is in the peritoneal cavity and, at the same time, to register the intraabdominal pressure. I wish to express my appreciation to Dr. Taussig, Dr. Beggs, and Dr. Friedman, of Denver, for valuable aid in working up the report of this case.

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Treatment of Recurrent Vomiting in Young Children.—Ellsworth Moody (*Journal of the Missouri State Medical Association*, August, 1919) outlines his treatment as follows: sodium bicarbonate .6 with brandy .18 in a tablespoon of water was given three times a day as a routine. When the child showed the slightest evidence of a possible impending attack, sodium bicarbonate .9 with brandy .3 was given every hour for seven doses and followed by a phenolphthalein cathartic.

HEPATIC SPASM AND HYPERSECRETION

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Buffalo, N. Y.

There is a condition manifested by temporary hypersecretion of the liver which does not seem to be associated with pathological conditions of the gallbladder, ducts, or liver cells, and it is doubtful whether it is of nervous origin. The hypersecretion of the liver is periodical and stasis of bile in the gallbladder exists, enlarging this organ far beyond the normal. Associated with this condition there is some occlusion of the gall duct, which in a sense is not pathological, as the occlusion is temporary. This occlusion is undoubtedly due to a spasm of the secretory duct of the liver in and about that part of it which enters the duodenum.

This spasm appears to be correlated with hypersecretion of the liver and a vicious circle is established, indicated by the presence of too much bile to be excreted into the duodenum, regurgitation of it into the gallbladder, a distention and dilatation of the gallbladder and occasionally the ducts, a release of the spasm, a temporary opening of the ducts with the flowing out of the accumulated bile, and a cessation of the hypersecretion. The whole phenomenon gradually disappears, only to reappear periodically.

SYMPTOMS.

The clinical symptoms manifested are sudden pain, of a mild character, beginning in the right hypochondrium, becoming more intense, finally reaching an intensity so great as to incapacitate the patient, and radiating toward the appendix; a feeling of fullness or heaviness over the epigastrium, a feeling of heaviness or a girdle sensation over the upper abdomen; nausea, only occasionally; more or less marked gas formation, with eructations and flatus; occasional attacks of vomiting when pure bile with gastric secretion and contents are evacuated. Jaundice occurs in the more severe attacks. The blood may be normal or may show a slight anemia; secondary leucocytes are normal. The urine is practically normal, except for traces of bile.

OCCURRENCE.

The condition which I have described occurred in persons over forty years of age. I have seen it in a few patients, but I have never seen it described in textbooks, and it seems to me that it presents a fertile field for investigation. The condition may be called hepatic hypersecretion and spasm. The etiological factors are similar to those of cardiospasm and pylorospasm and are likely to be of nervous origin. Although I have observed the condition in persons over forty years of age, in all probability it also occurs in younger persons. The condition may perhaps be confused with cholecystitis, cholelithiasis, cholangitis, duodenal ulcer, duodenal tumor, duodenitis, or "pressure" tumor, affecting the excretory apparatus of the liver. A differential diagnosis is possible if the transitory nature of the attacks is taken into consideration and the x ray findings are negative.

901 ELMWOOD AVENUE.

MULTIPLE VISCERAL SARCOMA.

*(Report of a Case.)*BY Z. I. SABSHIN, M. D.,
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Marine Hospital.

A superficial review of the subject of multiple visceral sarcoma shows that the occurrence of multiple malignant growths, involving several organs, frequently located some distance from each other, is not a rare phenomenon. However, I could not draw any definite conclusions regarding the primary seat of the neoplastic process. More or less clear ideas exist as to the channels of metastatic migration of the various growths, but apparently it is not a simple matter to follow a tumor from the beginning, as is demonstrated by the case herewith reported.

CASE.—Dr. J. B., aged forty-five, dentist, entered the U. S. Marine Hospital on May 6, 1919, with the chief complaint of blood in the urine and general weakness. The family history was negative, except that his father died from so-called heart failure at the age of sixty. His previous personal history revealed that he had the usual diseases of childhood, and that he was well until a few years ago, when he began to suffer from a mild form of rheumatism, affecting various joints, but which had never disabled him. He had noticed blood in his urine about fourteen months previously which lasted only a few days, and disappeared without other disturbances. He denied venereal diseases by name and symptom.

The present illness began twenty-five days prior to his admission to the hospital, when by an accident he fell down twelve steps while walking upstairs, and at this time was injured in the left lumbar region. He did not faint, but got up himself and continued his duties during that day. However, he felt weak, and during the evening of the same day of the accident he noticed his urine to be a reddish color. His micturition became more frequent and more bloody during the following two days, and occasionally the blood would be clotted. He entered St. Luke's Hospital, where a cystoscopic examination was made, but on account of the rather profuse bleeding nothing definite could be determined. Following the cystoscopy, the patient began to have difficulty during urination which was associated with burning, and he had to be catheterized. As a government employee he was admitted to the U. S. Marine Hospital. On admission he micturated freely. This was accompanied by some burning, the urine being the color of strong tea. His bowels were constipated, the appetite poor, and he had lost about fifteen pounds lately. He had a slight cough for the last few days, and pain in the left lower abdominal quadrant, radiating to the lumbosacral region and to the thigh of the same side.

The physical examination on admission elicited the following: He appeared about ten to fifteen years older than his actual age. His hair was all gray, face pallid, and a pasty complexion, but no signs of emaciation whatever. His general condi-

tion was of one rather acutely ill. The cardiac sounds were distal, but no other abnormalities could be made out. The lungs showed a general diminution of the respiratory intensity and a few moist râles over both bases. The abdominal findings gave no suggestion of the actual condition. There were no masses palpable, and no distension. Slight tenderness was present over the lumbar portion of the spine, and there were signs of a double inguinal hernia. The extremities, the reflexes, and the rectal examinations were all negative.

The temperature on admission was 38.4 C., pulse 100, respiration 24. The urine was acid in reaction, 1015 specific gravity, heavy sediment, abundance of albumin, with blood, pus and epithelial cells, but no casts. The systolic bloodpressure was 115, the diastolic 70. Red bloodcells 4,000,000, hemoglobin 60, white blood cells 14,000, with 79% polymorphonuclears. The Wassermann reaction was negative, and complement fixation test for tubercle bacilli and for gonococci were also negative. An x ray of the genitourinary tract was negative for calculi.

We had the patient put to bed and given symptomatic treatment. An icebag over the lower abdomen and sedatives internally diminished the hematuria. The temperature remained above normal. The patient complained of pain in his left thigh, and becoming restless. May 10th he showed distal breath sounds over the left lung, and the day following there developed bronchovesicular breathing over scattered areas in both upper lobes. He grew restless and more dyspneic. The physical signs of the chest suggested some form of pneumonia, but a pleural effusion could not be excluded. A slight cough was present, but no expectoration. Constipation was marked. He began to perspire profusely May 13th. The following day an x ray showed a dense shadow over the entire chest, but more marked on the left side of the thorax. Thoracentesis showed the presence of fluid in the left pleural cavity. This was aspirated and 2400 c.c. of bloody serum removed. Condition of the patient seemed improved, but the dyspnea continued and cyanosis of the lips and fingertips appeared. He complained of pains in the knees and ankles. The microscopic findings of the sanguinous pleural fluid were as follows: The predominating cells were erythrocytes; most of the white cells were the lymphocytes, and a considerable number of polymorphonuclears. There were a few large cells with fair sized regularly shaped nuclei, resembling rather normal endothelia, than to be suggestive of a neoplasm.

The patient grew progressively weaker; the color of his skin turned rather yellow, and cyanosis of the lips became more marked. Small subcutaneous nodules appeared over the eleventh left rib, at the midaxillary line, and also on the scalp. May 18th another nodule, about the size of a pigeon's egg, appeared in the right upper quadrant of the abdomen, just below the last rib. The subjective complaints of pain were referred mostly to the lower extremities and shortness of breath. The temperature became normal on May 16th. Objectively there were signs of fluid in the chest, and on May 19th, we again aspirated over two thousand c.c. of

bloody serum. The pulse became irregular, extremities cold and clammy and patient died early May 20th.

POSTMORTEM EXAMINATION.

The autopsy was performed half an hour after death. The skull was not opened. The thoracic cavity was exposed in the usual manner, and after draining off about two thousand c.c. sanguineous fluid on each side, the following remarkable picture was demonstrated. There was no trace of what we could call normal pleural tissue. The inner surface of the cavity, or the lining of the thoracic wall represented a uniform distribution of innumerable small nodules. In some areas, especially on the posterior portions, these nodules appeared like fleshy polypi. The pronounced homogeneous growth also involved the diaphragm, the upper surface of which, as seen in the thoracic cavity, showed the same grayish nodules imprinted upon a reddish base. No ulcerations were present. Both lungs were involved in the neoplastic process. They were of a grayish color, atelectatic, firm, and macroscopically there was not a spot of normal lung tissue to be seen. The outlines of the lobes on both sides were lost, and the rugæ gave to the surface an appearance of an undisturbed brain tissue. The mediastinal glands also appeared as the same firm grayish nodules. The pericardium was pale, thickened and presented many velvety, fleshy patches resembling the impetiginous skin lesion. The heart was not enlarged, but it showed a moderate degree of parenchymatous degeneration. The liver, gallbladder, spleen, and the gastrointestinal tract were all normal. Both kidneys were hypertrophied, weighing 475 grams, and the right one showed several peaisized nonnecrotic nodules on the antero-superior surface. The adrenal glands could not be made out. The urinary bladder was of a pale color, very much thickened, contracted, and studded with the same nodules as the thoracic cavity, but of a greater variety of size and consistency of the polypi. The microscopic examinations of the various pathological specimens showed them to be large round cell sarcoma.

COMMENT.

This case embodies in its manifestations some points of general and clinical interest. In the first place there is the question of the primary seat of the growth, although on the basis that he had hematuria about fourteen months prior to his last illness, we are inclined to believe that it originated in the genitourinary tract. Secondly, this patient died from a sarcomatous invasion in about six weeks after a fall. While this points the connection between trauma and sarcoma, it brings out the question as to the nature of the traumatic influence in this particular case, i. e., did it set up a new and independent centre of growth, or did it precipitate a preexisting malignancy? We have no history of respiratory symptoms prior to the date of the trauma. It is true that the short interval between the fall and the respiratory complications makes the connection dubious, though Lowenthal found the sarcoma to appear within the first month after the injury in forty-three per cent of his series of 316 cases. In this case the traumatic influence was ap-

parently of an explosive nature, resulting in rapid and extensive damage.

The clinical features of this case are instructive. First, the patient came in with a chief complaint of hematuria, and the chest findings were not considered seriously until the dyspnea became a pronounced symptom. Secondly, the patient showed no signs of a coechexia, in fact, he was well nourished. His red blood count did not suggest the presence of anemia, and only the pasty complexion would cast suspicion of some chronic disturbance. Thirdly, the diagnostic importance of the x ray of the chest from which I made a diagnosis of sarcoma of the pleura as soon as the plate was developed. The dull, dense shadow, with no outlines or detail, appeared at first sight as a defective plate, not properly developed, or showing some other faulty technic which is usually the characteristic sign of a pleuritic growth. Finally, the temperature chart is worth considering. The patient presented a low grade fever temperature, which lasted until three days prior to his death. We found no pathological evidence of inflammatory processes and regret that we failed to make cultures, in order to exclude some secondary infection. However, I am inclined to believe that the fever was the direct result of the malignant toxins, due to the widespread sarcomatous process.

LONDON LETTER.

(From Our Own Correspondent.)

Suspected Case of Plague.—Campaign Against Rats.—Dissemination of Tropical Diseases by Homecoming Troops.—Report of Interdepartmental Committee on Direct Prophylaxis of Venereal Disease.—Alcohol and Venereal Infection.—The High Cost of Milk.—Death of Eminent Medical Men.

LONDON, September 4, 1919.

The British Ministry of Health has announced that the Deputy Medical Officer of Health of the Port of London sanitary authority gave notice on August 19th that a member of the crew of the steamship *Clan Lamont* was suffering from plague. The clinical symptoms of the patient were those of plague, but the bacteriologist of the ministry has been unable to verify the diagnosis, and no plague infected rats have been found in the vessel. However, there is, of course, no doubt that plague is conveyed by rats to almost all parts of the world, and that rats are responsible for the transmission of other infective diseases. The campaign against rats in the country is based on sound premises. They destroy food and carry disease and therefore should be attacked with unremitting vigor and exterminated as much as possible. It is beginning to be recognized now that in order to render a crusade against rats ordinarily successful organized methods must be put into force, methods which will call for the earnest cooperation of all classes of the community and especially of the farming class.

* * *

One of the problems before the Ministry of Health is that concerted measures should be taken by the various departments concerned to mitigate

the dangers of the dissemination of tropical and other diseases among the civil population of Great Britain from the process of demobilization and the abnormal shifting of population in the country during the restoration of industry to peace conditions. British troops have been fighting in tropical and semitropical lands, some of which are rife with malaria and other insect borne diseases. Macedonia, for instance, is a hotbed of malaria and of malarial diseases caused by many different kinds of insects. Palestine and Egypt are almost in the same category, while in India the dreaded plague is prevalent.

* * *

The Ministry of Health has recently issued a report of the interdepartmental committee appointed in January last. At the outset of its work the committee considered a group of the infective diseases most apt to be affected by demobilization, including some acute infectious disease, malaria, tuberculosis, and venereal disease. The memorandum just published deals mainly with certain methods of prophylaxis against venereal diseases, generally referred to as the "packet" system, which methods have been publicly commended as having been successful among soldiers during the war. The memorandum discusses the advisability of making such methods available for the civil community.

It may be remembered by readers of the NEW YORK MEDICAL JOURNAL that in some of the armies, notably the Australian divisions fighting in Egypt, what was termed the direct prophylactic treatment was introduced in an effort to check the spread of venereal diseases, and of syphilis in particular, which were sweeping through the white forces campaigning in the Near East. A mercury preparation, on the lines recommended by Metchnikoff and known as the Metchnikoff method, was employed for early preventive treatment or for use before intercourse. The system is said to have been successful not only among the Australian fighters but among soldiers of other countries engaged in the war, and even among sections of the civil population.

As venereal disease is potently, owing to its great prevalence and its rapid dissemination, one of the greatest problems of the war, a movement was set afoot in Great Britain to recommend its adoption among the civil inhabitants. Much opposition was manifested against the movement, largely on moral grounds, and it was felt that before any decided steps were taken the question should be fully considered from the scientific and practical standpoints. Rightly, therefore, the new Ministry of Health made this question the subject of the first memorandum issued, and the findings published therein should be of the utmost importance and interest to other countries as well as to Great Britain.

On the whole, the conclusions of the committee are distinctly adverse to the employment of the "packet" system among civilians. The committee states that while satisfied certain drugs and medical preparations may be relied upon to remove or destroy the infection of venereal disease if applied by skilled attendants very shortly after exposure, such satisfactory results cannot be secured if those

drugs and preparations are used unskilfully or too long a time after exposure. A series of tables is given showing the returns of venereal disease in the Canadian forces and the British forces. The last table is divided into three sections, that for the United Kingdom, a second for Aldershot, and the third for London. There is an almost continuous fall in the rate in all three sets of figures. The fall, however, is most marked in the Aldershot command, where the rate in 1913 was less than one tenth of the rate in 1885. At the earlier date there was little in Aldershot to attract the soldier except the canteen and the street; at the latter date Aldershot was a model military station, where recreation offered in barracks compared advantageously with the attractions of the streets. On the other hand in London, where there has always been and still is more to attract the soldier out of barracks than within, the decrease in the venereal rate is least marked. The returns from individual units in certain London barracks appear to show that a reduction is effected only when the medical officer takes a special interest in the subject and neglects no opportunity of impressing the importance of prompt disinfection on the men under his charge. On two counts the memorandum bases its principal objections to the "packet" system: on the grounds that its use engenders a false sense of security, and on moral grounds. The committee, agreeing as to the efficaciousness of certain drugs in preventing venereal disease when properly and skillfully applied, has come to the conclusion that the issue of prophylactic "packets" tends to give rise to a false sense of security and thus to encourage the taking of risks which would not be otherwise incurred, and the neglect of facilities for early treatment when available. According to this point of view the grant or issue of "packets" results in many individuals using them for self treatment after infection. They are not intended for this purpose and are ineffective. Thus it is argued their use may be definitely harmful, since they delay diagnosis and the application of prompt treatment.

An interesting part of the report is that which refers to the use or rather abuse of alcohol. The memorandum points out that the excessive consumption of alcoholic liquors not only diminishes the sense of responsibility, but also tends to prevent the proper use of prophylactics and to delay the individual's application for skilled treatment.

Considered generally, the committee is of the opinion that there has not been sufficient evidence put before it of the beneficial results gained by the distribution of prophylactic "packets" in various forces to prove the value of the system or to justify the recommendation that it be officially encouraged among the civil population. The committee holds that unquestionably there have been many individual cases which appear to offer positive evidence in favor of a system of distribution of such prophylactics before exposure to infection, but the volume of evidence is too small and too exceptional, and the instances of its failure, even under favorable circumstances, are too numerous to allow of any other conclusion than that, in view of the considerations involved, the official application

of a "packet" system to the civil community is neither desirable nor practicable.

* * *

The price of milk will rise to such an altitude during the coming winter that it will be prohibitive to many. It is stated that the cost of milk will soon be 1s. (twenty-five cents) a quart and that it may be 1s. 3d. (thirty-one cents) a quart. Although milk may not be a necessary food for children after lactation, it is still believed by the majority of medical men that an adequate supply of milk, for children at any rate, is essential to the well being of a nation. If milk attains the high price of 1s. (twenty-five cents) a quart during the coming winter months, in the opinion of some pessimists the British baby crop of 1914-1919 is gravely threatened. It is consequently suggested that the government establish a subsidy for milk. The view taken by the Ministry of Health is that if the price of milk this winter should reach the figures threatened, the local authorities have ample powers to cope with any physical hardship which may result to mothers and babies. The question which may arise is whether the local authorities are using their powers sufficiently or whether they can and should be made to use them more.

* * *

Several very eminent medical men have died within the past month in Great Britain.

Dr. William Smith Greenfield, F. R. C. P., London and Edinburgh, LL. D., Edinburgh, emeritus professor of pathology and clinical medicine in the University of Edinburgh, passed away on August 12th. Professor Greenfield, an Englishman, was elected to the chair of pathology in Edinburgh in 1881 and resigned in 1912. During that time the whole aspect of pathology was changed. Professor Greenfield was a foremost member of that band of professors who in the early eighties of the past century greatly aided in making the medical faculty of Edinburgh University the powerful teaching school that it was.

In Dr. Charles Arthur Mercier, who died at Bournemouth, September 2nd, psychiatry has lost one of its most distinguished and eloquent advocates. He was of Huguenot extraction, and a follower of Spencer, the philosopher of evolution and a friend of his teacher, Dr. Hughlings Jackson. The bent of his mind was always towards introspection and analysis and he took to the study of neurology and mental diseases almost instinctively. Doctor Mercier was well known in America. Last January he was awarded the Swiney Prize for his work on *Crime and Criminals*, and ten years before he was given the same prize for his book on *Criminal Responsibility*.

Dr. Alexander Macalister, professor of anatomy at Cambridge University, died at Cambridge on September 2nd. Professor Macalister was born in Dublin in 1844 and educated at Trinity College, Dublin. In 1883 he succeeded the late Professor Sir George Humphrey in the professorship of anatomy, which had been founded by the university in 1707. Doctor Macalister was a man of wide culture and the author of numerous memoirs and textbooks for students in zoology and physiology.

Tendon Transplantation.—M. A. Bernstein (*Surgery, Gynecology, and Obstetrics*, July, 1919) describes a series of tendon transplant experiments. He found that the proliferative and infiltrative changes seen when an exposed tendon was transposed directly to a new insertion seemed to show that the changes were permanent, though not marked enough to destroy the vitality to a degree to interfere with the function of the tendon. The inflammatory reaction found was to be expected considering the synovial character of the tendon covering. When it was placed subcutaneously in traumatized area it responded to inflammatory changes. It was difficult to see how the specialized tissue of the peritendineum externum could remain uninvaded under operative traumatism. The poor blood supply of the transplanted tendon was responsible for this in a measure and it also caused adhesions because the tendon established new sources of blood supply. Even when a tendon was transplanted with the sheath the greatest infiltration took place within the tendon sheath. Transposing tendon to new insertions, therefore, seemed unphysiological because it deprived them of their nourishment and exposed a susceptible tissue to irritation and to the formation of new adhesions.

In the second series the sheath was opened and the tendon severed from the surrounding tissues. Sutures were inserted in the distal end. This formed more or less of a thick stump. The tendon was then forced through the sheath of the paralyzed tendon. The operation caused some injury to the tendon covering and the new sheath. The pathological effect of the trauma was shown in the inflammation which followed the procedure. The sheath became congested and there was an increase in the amount of blood brought to the surface. Then there was an exudate of serum into the sheath with an infiltration of the sheath wall and surrounding tissue. The sheath wall may have broken down, enabling the inflammatory products to find their way along the interfascicular connective tissue. A fibrinous exudate was found in the sheath cavity, the meshes of which contained synovial cells, blood cells, and leucocytes. When early motion was permitted, after the operation, the irritation caused the reaction to continue. Further progress occurred in two ways: an absorption of the products of the inflammatory reaction or by organization with tissue formation. The final results of transposing a tendon through the sheath of another tendon while an improvement on the older methods of tendon transplantation is not considered to be sound on a physiological basis.

In the third series there was an absence of all inflammatory processes between the tendon and sheath. The reaction which was observed had little effect on the functional activity of the transposed tendon. This method avoided the possibility of fibrosis, which was observed in other methods. The fibrosis was a nutritional disturbance brought on by the separation of the tendon from its blood supply and its surrounding connective tissue structures. The methods devised are given as the proper physiological methods for transplanting tendons and should prove to be extremely valuable.

Editorial Notes and Comments

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THE TEETH OF MANKIND.

We have been deservedly proud of our advance in hygiene and sanitation and the consequent reduction in morbidity and mortality. It is true that the mortality statistics have proved to be not quite so favorable as we were inclined to think, for, while we are prolonging human life, it is entirely because of the saving of infants, upon analysis the death rate above forty being higher than it was before. With regard to the morbidity rate, however, there is no doubt that sickness is much less common than it used to be and that the number of days lost because of illness in the year is on the average less than before. All of mankind's organs and tissues function better and with less interference from pathological conditions as the result of the preventive medicine which has enabled us to eliminate unfavorable factors of many kinds and preserve natural conditions, thus enabling the individual to resist disease.

In all this there is one ugly blot and that is with regard to the teeth. So far as we have been able to judge from medical history the teeth of mankind were never in such bad condition as they are at the present time. We need more dentists and we need better dentistry. It happens that dentistry was never so thoroughly developed as in our day, though so far, in spite of magnificent progress, the dentists have not been able to stop the ravages of various forms of serious tooth decay to which our generation is particularly subject.

There are some who think of dentistry as absolutely and entirely a new development of human

attention to bodily needs, but the history of dentistry is much older than used to be thought and is found to have been rather well developed in all civilizations that had reached a reasonably high plane of interest in cultivated human living. The old Etruscans evidently had good dentists for bridge work in gold has been found in their ancient tombs in Italy (from 800-600 B.C.) and they used gold caps for teeth, while as early as 450 B.C. the laws of the *twelve tablets* at Rome forbade the burying of gold with a corpse—they were conserving their gold reserve in Rome nearly 2,500 years ago—except such gold as was fastened to the teeth. This was the explicit exception which clearly indicated that the use of gold in the mouth must have been rather common.

Dentistry is then a very old art, but is of course entirely a new invention in the modern time, mainly due to American enterprise and ingenuity. It is therefore of all the more significance that we should face clearly the failure up to this point to make and keep the teeth of mankind in better condition than before. It was not an uncommon thing for men and women a generation or two ago—men particularly, more rarely women because of the destructive effect of childbearing on the teeth—to go to their graves with all their teeth. Some of the men of past generations lived to old age with all their teeth in good condition. They never had a toothache. Their teeth were worn down by the vigorous chewing of the rather tough and harder foods that the poor particularly were accustomed to eat in the older time—stale bread, raw turnips and cabbage, uncooked carrots and meat that had not been refrigerated but was eaten within a week of killing, and all the rest. The enamel had been worn away on the crowns, but the dentine had hardened, as it does in the animals, and so they had no decay and a perfect set of teeth.

I need scarcely say that they had never used a tooth brush; indeed I doubt whether they had ever seen one. It was a question of preservation entirely by natural cleansing processes and not at all by artificial auxiliaries. Curiously enough these experiences which I am sure could be duplicated in the memories of a great many physicians whose grandfathers came to this country after having lived the lives of hard working farmers in various parts of Europe, is exemplified from very early days in history. Altogether we have some hundreds of skulls from the New Stone Age—that is, of men who used polished and rather well finished stone implements and who lived at least some six

or seven thousand years ago. In all these hundreds of skulls there is not a carious tooth to be found. Numbers of these have the enamel worn manifestly by hard chewing, but their healthy dentine had responded well to the pressure exerted on it and had hardened into a resistive vitality that thoroughly protected them. A rather similar state of affairs is found among the Egyptian bodies. None of the children's skulls show any caries of the teeth, though that is to be found among the adults, and it goes without saying that the Egyptian children present much better teeth than the children of our time. It is extremely rare to have to look into the mouth of a child without finding that its first or milk teeth are carious in many places and sometimes most of them are sadly decayed.

Manifestly the trouble is with the habits of mankind in the matter of chewing. The teeth have now become a subject of serious solicitude for the physician and more teeth have been pulled from the mouths of well to do patients during the past five years than during a whole generation before that. What we look to in our time is preventive medicine and we would gladly welcome anything that will prevent this destruction and necessity for the removal of the teeth. Manifestly this is to be found in the putting back into the diet of things that are hard to chew and that require vigorous effort which adds to the vitality of the gums and thoroughly cleanses the teeth. An Italian peasant eats black bread a week old that would seem almost impossible to an American, but such a vigorous chewing obviates the necessity of the tooth brush and does more to keep the teeth clean than anything that could be done. The eating of raw foods and fruits which have been eliminated from the diet has a similar beneficial effect.

Here are the problems that are before this generation if we are to improve the condition of the teeth and have preventive medicine accomplish as much for these important organs as it has done for so many others. Tooth decay has reached such a climax of destructiveness and danger to other structures in the body that it is time to be ready to review the whole subject of the care of the teeth apart from prejudice and customs so as to initiate a movement that will serve to save the teeth of the next generation at least. To know that there is a problem, however, is of itself very often sufficient to bring minds to fruitful thoughts of its solution. Certainly the man or group of men who will start something that will make tooth conditions better will confer a great benefit on mankind and will reap no little and deserved prestige.

SOME THERAPEUTIC INDICATIONS IN CHRONIC CYSTITIS.

Given a case of chronic cystitis the first therapeutic indication is naturally to determine its origin and to discover the causative factor or factors, in order to avoid the rather common error of prescribing symptomatically. In this respect it should be recalled that, in the vast majority of cases, a chronic cystitis is the result of some perfectly definite cause. In one case it is kept up by a stricture of the urethra and a treatment with sounds will be sufficient to improve the cystitis and finally to cause it to disappear. In another instance the bladder disturbance will be due to a renal tuberculosis. A patient may complain for months of frequent urination and vesical pain. The urine will be found to be cloudy, sometimes bloody. The tuberculous lesion will be found in the kidney and when evidences of tuberculosis are found in the bladder, the lesions are secondary to those in the kidney. In urinary tuberculosis the kidney is dumb, the bladder talkative. Therefore, in subjects complaining of symptoms of chronic cystitis, the kidneys should be explored with care to ascertain if they are enlarged or painful. Search should be made for painful ureteral points and the urine examined for acid resistant bacilli and, if necessary, inoculated in the guineapig. Other cases of chronic cystitis are due to vesical lithiasis or the vesical catarrh results from prostatic hypertrophy with bladder retention which inevitably leads to infection of the urinary tract sooner or later. Therefore, it is clear that the treatment, prostatectomy or lithotripsy or suprapubic cystostomy as the case may be, must be directed against these causative factors.

As to renal tuberculosis, it is one of the triumphs of modern surgery, and it must be frankly and unconditionally admitted that medical treatment means disaster, including the much too vaunted immunizing bodies. That these may be of use once the diseased kidney has been removed—and the earlier this is done the better—is not to be questioned, but it is now high time that the medical profession should realize this truth and not keep their patients on drug or climatic treatment which will never control the renal process. It goes without saying that a careful examination of the functions of both kidneys must be made before undertaking nephrectomy on the diseased kidney and neglect of this precaution exposes the patient to the most dire results. But with this reserve, surgical intervention gives remarkable and lasting results which do not seem to be appreciated by the profession at large.

To sum up, in these circumstances as in all other medical matters, the physician should be first of all a clinician, and after careful examination and a correct diagnosis made, proper treatment can be ordered. We have referred to the treatment of the causal factors of chronic cystitis; there remain those of a symptomatic order. They are simple. Disinfect the urine by means of drugs which, when absorbed by the organism, are eliminated by the renal filter. Of these it is probable that the balsams are the best for this purpose. They have been known for centuries and have given proof of their efficiency. They are without danger when used in small doses and if the product employed is chemically pure. When given in too large doses the balsams produce the contrary effect on the symptoms of chronic cystitis, as they then increase the inflammatory process in the bladder.

WALKING AND WORKING.

Exercise is almost as important in the conservation of health as is diet. Sedentary workers or those who lead an indoor life from compulsion or choice should take a certain amount of outdoor exercise daily with the same regularity and care that they take their food. A great many of the gastrointestinal diseases, and especially constipation, which afflict sedentary workers and which frequently lead to serious disease, are due to lack of or insufficient exercise in the open air. According to Dr. Leonard Hill, the well known British authority, in a pamphlet on *Scientific Ventilation* issued by the British Medical Research Committee, sedentary workers should ration their outdoor exercise, which, in his opinion, should never be less than walking six miles daily or the equivalent in work in a garden or on the land.

Unfortunately, the average sedentary worker does not ration his outdoor exercise in accordance with his bodily needs, but, as a rule, takes only that amount of exercise as going to and from work requires of him. Generally speaking, the measure of his daily walk is the distance between his home and the railway depot at one end and his office and the railway depot at the other. Proximity to a depot is an allurements, often a fatal allurements, to the sedentary worker. It shortens the time needed to reach the office but it also reduces the amount of outdoor exercise taken and, as Doctor Hill points out, lessens mental vigor. The habit, indeed, of plunging, as it were, straight from the breakfast table into the subway and straight out of the subway into the office is a pernicious one and it would be of benefit physically and mentally to many who

live near a station if they eliminated that station from the day's program. In order to obtain the six mile ration of outdoor exercise a beginning might be made by starting earlier in the morning and walking to the next station; then, perhaps, starting yet earlier and walking to another station further on, and soon, if the office is not too far away, walking the entire distance. There is no doubt that sedentary workers do not have enough exercise. The remark is possibly more applicable to the sedentary workers of America than to those of any other nation, assuredly than to those of Great Britain. Americans are not great walkers and the distaste for walking has been more noticeable since the advent of the automobile. The business American is likely to think that walking is a waste of valuable time, and he does not pause to consider that by such means he keeps the human machine in good working order, a far more important matter than that of making money in a hurry. A daily walk is infinitely superior in its health giving effects than the daily aperient and is also more beneficial than working for some time at high tension and then playing for some time at high tension or than even taking a long rest. Working in spurts and playing or resting in spurts as the American usually does is not good practice. Business men and women should ration their outdoor exercise and the exercise could take the form of walking.

PHYSICAL DEBILITY RESULTING FROM DEPORTATION CONDITIONS.

A detailed report has been prepared on the medical condition of two hundred patients suffering from the effects of deportation and of forced labor just behind the German lines in the invaded provinces in the north of France in 1916. These formed the first series of such patients, who were received in great numbers at the hospitals at Brussels following this deportation (Dr. Paul Vandervelde et Dr. Gaston Cantineau: *La déportation des civils flamands en 1916.—Considérations médicales.*—Première série de deux cents cas soignés à l'Hôpital Saint Pierre. *Bulletin de l'Académie Royale de Médecine de Belgique*, 4th Series, Vol. XXIX, No. 1). The authors furnish first a brief history of the deportation, revealing in a simple and direct manner the factors which made for the forms of illness presented in their report. They call attention to the fact that the men were not exempted according to family conditions, dependence of wife or children, or other such consideration. Men of any age were taken, regardless of their physical condition. Moreover, they were subjected to most unfavorable surroundings in transportation and to cold, dampness, insufficient nourishment and most unwholesome conditions generally. They were put to various forms of hard labor at the end of the journey, agricultural.

building of trenches, and were set at the task of exhuming partly decayed bodies and reinterring them, without even protection for their hands. All this is given in detail concerning the individual patients, as well as the facts of their family situation, so that this report forms not only a documentary report of clinical value but a record of definite fact regarding the deportation. The health of these individuals was also depleted by the harsh treatment to which they were subjected in the form of blows of all kinds, a form of harshness which aroused protests even among the enemy.

The chief clinical manifestations which prevailed as to these reported conditions were a marked decrease in bodily weight, a marked muscular weakness, and a persistent hypothermia. Renal debility was also a distinct feature with intense chloruremia and imperfect elimination. The renal insufficiency in some cases reached a true nephritis with albuminuria and hematuria. Gastrointestinal troubles resulted also from the poor quality of the food received. The same renal insufficiency became a marked feature among the civil population of Belgium after its occupation. Not only is such debility due to insufficient nourishment, but, in the case of these two hundred patients at least, to lack of attention to bodily cleanliness, for which provision was sadly lacking, and to exposure which made the body nonresistant to outside infection. Tuberculosis, pleurisy, and acute articular rheumatism were the most frequent diseases which were added to the general syndromes described. Since the deportation had been made without medical control, such serious lesions were already present in a number of the patients, which of course the conditions tended to aggravate.

News Items.

Italian Medical Losses.—The Italian medical corps has suffered heavily in the war, 1,060 members of the profession having fallen.

Infantile Paralysis in Baltimore.—Four deaths from infantile paralysis and four new cases were reported to the Baltimore health authorities during the week past.

Gynecology and Obstetrics.—The *Association des gynécologues et obstétriciens de langue française* will have its first congress September 25th-27th at Brussels, Belgium.

Bequest to St. Mary's Hospital.—By the terms of the will of Arthur Pemberton Sturges, of New York, \$5,000 is bequeathed to St. Mary's Free Hospital for Children, New York.

Paris School Children Examined.—In order to prevent the spread of tuberculosis, Paris school children will be examined and their parents notified of necessary measures to be taken.

Congestion at Naval Hospital.—Congestion at the Naval Hospital at the Navy Yard, New York, continues to be a problem. Two hundred patients were recently removed to the Naval Hospital, at Quincy, Mass.

Irish Medical Association.—Dr. J. Marshall Day has been elected president and Dr. E. Magennis vice-president of the Irish Medical Association, the membership of which now exceeds seven hundred.

New Department for Women's Medical College.—A department of preventive medicine that will train candidates for public health service is soon to be established in the Women's Medical College of Pennsylvania.

Medical Officers Decorated.—The Distinguished Service Medal has been awarded to the following officers of the Medical Corps, U. S. A.: Colonel James D. Glennan, Colonel William L. Keller, Colonel John H. Hanner.

Graduate Instruction in St. Louis.—About one hundred members of the St. Louis Medical Society have established a clinical section and have organized the clinical material available for graduate instruction. The clinics will be ready on October 1st.

War Section of Royal Society.—A war section of the Royal Society of Medicine has been formed for dealing with questions affecting medicine and surgery in the army, navy, and air force. Sir Robert Hill, K. C. M. G., C. B., Medical Director General R. N., is president.

Award to Doctor Powers.—Dr. and Mrs. H. W. Powers, of Amherst, Ohio, have received a Distinguished Service Cross, awarded in memory of their son, Dr. Ralph E. Powers, formerly of Akron, Ohio, who was killed in an uprising near Archangel, Russia, last January.

French Surgical Congress.—The twenty-eighth congress of the *Association française de Chirurgie* will be held on October 6th in Paris, under the presidency of M. Ch. Walther, member of the Académie de Médecine and honorary surgeon to l'hôpital de la Pitié, Paris.

Georgia Baptists to Erect Hospital.—Plans for the erection of a \$1,000,000 hospital in Atlanta are being completed by the Baptists of Georgia. The projected hospital will contain 1,000 rooms and a number of wards. Actual building operations are expected to begin about January 1st.

Medical Men Come to New York.—Large numbers of medical men who have seen service overseas are coming to New York State following demobilization. Most of them are men whose former practice has been scattered and who feel that this is an opportune time to make a change.

Southwestern Tuberculosis Conference.—The Southwestern Tuberculosis Conference, including the States of Arizona, California, Colorado, Kansas, New Mexico, Oklahoma, and Texas, will be held October 1st-3d at Long Beach, Cal., under the auspices of the National Tuberculosis Association.

Doctor Adami to Go to Liverpool.—Dr. J. G. Adami, formerly director of the Department of Pathology at McGill University, has been appointed vice-chancellor and principal of Liverpool University. His successor will be Dr. H. Oertel, who received his degree in medicine from Yale University.

Cholera in China.—Cholera is reported to be raging in many parts of China. Shanghai, Dairen, and Tientsin have become infected and the epidemic has appeared at the encampment at Lang-Fang, near Peking, resulting in almost a thousand deaths.

Public Health Course in Ohio.—In order to meet the emergency confronting the State of Ohio in the selection of 102 full time health commissioners and their assistants under the Hughes Public Health Act, an extension course of three months will be held from September 17th to December 16th under the direction of the State Department of Health and the College of Medicine, Ohio State University.

New Disease in Peru.—A number of cases of what is thought to be a new disease have appeared in the jail at Piura, Peru. There have been five deaths. Local physicians differ in their opinions, some believing it is yellow fever while others think it is a new disease. All the patients have been isolated and the American physician who is in charge of the sanitary campaign at Lima has been requested to assume control of the epidemic.

Dr. Bayne Again Decorated.—Dr. J. Breckenridge Bayne, of Washington, D. C., who fought typhus in Southern Rumania during the German occupation of 1917-18, and who received the highest decoration from King Ferdinand, has again been decorated by the Rumanian Government, receiving the Order of the Regina Maria, First Class. Doctor Bayne now has charge of three American Red Cross hospitals, at Cojascu, Titu, and Voinesti at which only typhus cases are cared for.

Itinerant Sanitariums.—Four medical knight errants undertook an expedition through Spain, traveling from town to town wherever there was urgent need for hygienic reform, and enlisting the people in the fight for sanitary betterment. The four, who are leading Spanish physicians, are Doctor Cortezo, former minister, president of the Royal Academy of Medicine, and editor of *El Siglo Medico*; Dr. F. Rodriguez, former minister and journalist; Doctor Recasens, one of the leading gynecologists of Spain, and obstetrician to the queen, and Doctor Juarros, a distinguished specialist in mental disease. Their example has since been followed by a number of other volunteers.

Personal.—Dr. C. A. Reischneider, formerly superintendent of University Hospital, Baltimore, has returned from overseas service.

Dr. T. Blake Armstrong, who has been overseas for the past eight months, has resumed practice in Atlanta, Ga.

Lieutenant Colonel Edgar E. Hume, Medical Corps, U. S. A., who directed medical work of the American Red Cross in Serbia, has received the Serbian order of the Order of the White Eagle from that government.

Dr. Borden S. Veeder, of St. Louis, has received from Great Britain the decoration of Companion of the Order of Saint Michael and Saint George.

Major Charles E. MacDonald, Medical Corps, U. S. A., who has been on duty in the evacuation office at Hoboken, N. J., has been ordered to duty as surgeon on the U. S. S. Agamemnon.

Naval Officers Decorated.—Great Britain has awarded the decoration of commander of the Order of the British Empire, Military Division, to Captain Charles M. De Valin, Medical Corps, United States Navy, who commanded Base Hospital No. 3 at Leith, Scotland, and Captain Edward S. Bogert, Medical Corps, United States Navy, who commanded Base Hospital No. 2 at Strathpeffer, Scotland.

London Vital Statistics.—The annual report of the County Medical Officer of Health of London shows a decline in the birth rate of thirty-five per cent. since 1914. In 1918 the death rate exceeded the birth rate, for the first time in many decades. Diphtheria and scarlet fever were far below the average, but there was an increase in the case rate of tuberculosis. In a medical examination of 206,938 elementary school children, 91,074 were found to be defective and requiring treatment.

American Public Health Association.—The tentative program of the annual meeting of the American Public Health Association, which takes place October 27th-30th at New Orleans, contains many interesting announcements. Sir Arthur Newsholme, the noted English medical man who has been spending some time in the United States and Canada, will give an address at one of the general sessions on Historical Development of Public Health Work in England. Major General W. C. Gorgas will discuss Methods, Costs, Results in a symposium on malaria. There will also be a symposium on influenza. Among those who will read papers at the various sectional meetings are Dr. Richard H. Cabot, of Boston; Dr. W. H. Frost, United States Public Health Service; Dr. E. V. McCollum, School of Hygiene and Public Health, Johns Hopkins University; Dr. Milton J. Rosenau, professor of preventive medicine and hygiene, Harvard Medical School, and Dr. Thomas W. Salmon, medical director, National Committee for Mental Hygiene, New York.

American Association of Electrotherapeutics and Radiology.—The twenty-ninth annual meeting of this society was held September 16th-19th, in Philadelphia, under the presidency of Dr. William L. Clark, of Philadelphia. A most interesting program was given, including addresses by Dr. Jay Schamberg, professor of dermatology, Jefferson Medical College; Dr. B. A. Thomas, professor of genitourinary surgery at the Philadelphia Polyclinic; Dr. Barton Cooke Hirst, professor of obstetrics, University of Pennsylvania; Dr. Ross V. Patterson, dean of Jefferson Medical College; Dr. Joseph Sailor, Philadelphia; Dr. J. Torrance Rugh, professor of orthopedic surgery, Jefferson Medical College; Lieutenant Chris M. Sampson, Staten Island, N. Y. Papers were also read by several foreign guests, among them Dr. Joseph Rivière, of Paris, France; Major J. D. Morgan, Montreal, Canada; Colonel Robert W. Wilson, Military School of Orthopedic Surgery and Physiotherapy, Toronto, and Captain J. M. E. Prevost, Montreal. Various sessions were devoted to symposia on induced catabolism, metabolism, the cardiovascular system, x ray in orthopedics, reconstruction following war injuries, and physiotherapy.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

ARSENIC IN TUBERCULOSIS AND IN ANEMIA.

By A. R. CARON, Ph.G., A. M., M. D.,
Chicago.

The rôle that arsenic has played in the treatment of tuberculosis in late years has been well known and described by many eminent men, but not thoroughly appreciated by the medical profession at large. At present it is known to be of therapeutic efficiency in combating the disease. As for the future, it seems as if it were a star to which we could hitch our hopes. Vaccine and tuberculin therapy have, after an extended trial, given rather doubtful results. That fact is an illustration of the valuable, yet much neglected action of the alteratives, which restore physiological action by destroying the products of morbid metabolic action.

Fever in tuberculosis as elsewhere is of demonstrable toxic origin, affecting the temperature regulatory system which is composed of three mechanisms—thermoexcitatory, thermoinhibitory and thermostatic. That a toxic factor can by itself so alter this mechanism as at one time to produce thermic inhibition with lowered temperature, and at another, thermic excitement with raised temperature is shown by the phenomena of fatigue fever.

A toxin of germ or other origin may affect any or all organs other than the one in which it originates. As the liver is concerned in the destruction of poisons a strain on it leads to an influence on all the organs connected with assimilation and elimination; in the latter group the female genitalia during menstruation must be included. Another striking illustration of the toxic nature of tuberculosis is the mimicry of opium poisoning which it causes and has at times caused medicolegal investigations.

There are in anemic states as a rule autotoxic products of various types. The blood making apparatus is often disordered by an undue accumulation of waste which interferes with the workings of the blood generating machine. The liver has two great functions—a poison destroying and a sanguifactive or blood making. Concerned in the blood making is the manufacture of glycogen inchoate or muscle sugar, which plays a chief part in muscular energy. When the glycogen is imperfectly prepared, toxic products result, which are behind acetouria states, like vomiting, coma, and at times convulsions. If these are long continued, the uric acid changes into urea and the process is interfered with by the strain upon the blood making and poison destroying function of the liver.

The strain upon the liver produces a strain on the kidney, spleen, pancreas, bone marrow and the endocrine organs. In anemia all of these organs are affected and work in a vicious circle. The problem, therefore, in anemia is not merely to replace materials which are deficient, but also to destroy toxic elements which interfere with their proper supply. The fact that one of the great en-

docrine organs, the thyroid, normally contains arsenic indicates why, in developmental states, arsenic has such a marked and decided effect on general nutrition. Certain nervous diseases due to a mixture of exhaustional and toxic causes, such as the typical choreas with their confusional mental states and their speech disturbances, yield to arsenic when other treatment is of no avail.

Mountain fever, not uncommon in Colorado and other mountainous states, used to prevail in Styria, Austria. It is due to a toxic suboxidation with resultant imperfect elimination and air hunger. The employment of arsenic by the Styrian mountaineers was found to be a prophylactic, albeit disregarded as a therapeutic, but an anaphylaxis which resulted from excessive doses led, at times, to the arsenic habit. From these points it is evident that there is needed an agent with sufficient alterative value that it can restore metabolism in the same way that it can pathologically destroy by its action, and this agent is arsenic.

The form to be selected is one that is most soluble, most easily assimilated and least cumulative. Chemistry offers us sodium cacodylate as the salt of choice. Doses of sodium cacodylate are governed by the age of the patient and the frequency of administration, and in known cases of idiosyncrasy. It should be given very cautiously to individuals under fifteen years of age. To patients in the twenties it is best given one to two grains a day if practicable, while if daily administration is not advisable or practicable, two to three grains can be given every second or third day. Patients between thirty-five and forty generally do well on doses of from three to five grains semiweekly. Intramuscular injections at intervals of a week or more produce doubtful results and those are chiefly psychic and only transitory.

The volume of the liquid should not be more than ten minims in any case as bulky solutions have often been known to produce mechanical disturbances of the nervous equilibrium. Sometimes, particularly on delicate arms of women, a painful sensation is felt for several days after the rotary rubbing necessary to insure proper distribution and to prevent the formation of lumps so often felt and complained of.

The mode of administration is of the utmost importance to the physician who is really concerned as to the results his treatment will produce. The method described here has always made the patients conscious of its benefits in a comparatively short time. Arsenic, while one of the most valuable chemicals, is one of the most unstable and has almost unlimited combining powers. It is cumulative. It is likely to choose as a laboratory the entire gastrointestinal system with undesirable attendant consequences, such as distress, nausea, vomiting, vertigo, anorexia, and often nervous and mental manifestations. The ever present reminder that the patient has of his subnormal status by hav-

ing to take his tonic at each meal over a period of three months and sometimes longer plays a part in this, especially when friends and relatives have been induced or advised to take similar treatment.

The method of choice is hypodermic injection; the intramuscular injections are preferred, since the subcutaneous injections do not allow for sufficient distribution and absorption, and the intravenous is attended by many dangers such as a more or less pronounced reaction, infection, embolism, and other complications and cannot be safely used in conditions not requiring more than the effect of a plain and effected alternative.

The most convenient region is the arm and usually the biceps; because of the freer motion of its fibres than those of any other muscle, absorption will take place more rapidly and with less motor disturbance. Also the bloodvessels are less frequently abnormally located in the biceps, so that if the physician is obliged to locate the bloodvessels and large nerve trunks only by regional anatomy, on an obese individual, the danger of damage is greatly removed. The deltoid is the second choice but is not devoid of undesirable effects on account of its numerous tendinous intersections from which the mixture of oblique and parallel fibres arise. Rarely is a hypodermic injection ever given in any part of the thigh that is not accompanied by the most unpleasant effects to the patient. This is readily explained by the minute anatomy of that region. It is especially undesirable in subjects who have stood, walked, danced or otherwise used their lower extremities more than ordinarily.

These principles are well illustrated in the following:

CASE I.—Mrs. L. Aged forty-two years. Widow. Family history negative, good health up to two years previously. When first seen, March, 1916, had been in hospital for eight weeks and sent home with intestinal tuberculosis at hemorrhagic stage. Pulse feeble, 130; temperature, morning of first two days, ninety-eight; evening of same day, 101 and 102; extreme weakness; weight 128 pounds as compared with 180 at onset of disease. Upon consultation patient was left in bed, full diet given and injections of ten grains sodium cacodylate, which were repeated every second day for three doses; then three grains for three doses; then semiweekly injections of from two to seven grains over a period of three months with careful attention to elimination. Continued improvement with cessation of hemorrhages, increasing weight, restoration of normal temperature and pulse, until now she is keeping a rooming house and doing all her own work since September, 1917.

CASE II.—Miss B., aged twenty-three years, stenographer. October 12, 1917, complained of chronic constipation, loss of appetite, general lassitude and dysmenorrhea, loss of weight, Appearance, emaciated. Pronounced jaundice. The blood count showed: Hemoglobin seventy; red cells 1,792,000; white cells 9,500; red cells seventy-five per cent. She was given injections of sodium arsenite one thirty-second gram and iron citrate three quarters grain at semiweekly intervals for two months. No treatment instituted for the dys-

menorrhea. December 17, 1917, patient has a voracious appetite as compared to a few months previously, generally increased muscular and mental activity with comparatively little pain at each menstruation; increasing weight; complete absence of jaundice. Blood count showed: Hemoglobin ninety; red cells 4,474,000; white cells 6,000; red cells eighty-nine per cent. At a subsequent blood count made one year after treatment the following was found. Blood count showed: Hemoglobin ninety; red cells 4,500,000; white cells 6,400; red cells eighty-nine per cent. with no complaint of the symptoms originally present.

From all of which the author draws the conclusions that

1. Arsenic has almost unlimited alternative value.
2. Arsenic is indicated in tuberculosis and in anemia.
3. Sodium cacodylate is the most suitable salt for hypodermic medication.
4. Sodium cacodylate should be given in concentrated, nonvoluminous solution.
5. Sodium cacodylate should be given at frequent intervals.
6. The dose of sodium cacodylate may vary from one grain to ten grains or more, depending on the case.
7. The solution of arsenic should always be warmed to body temperature before being used hypodermically.

31 NORTH STATE STREET.

Thoracic Fistula and Chronic Empyema.—Howard Lilienthal (*Annals of Surgery*, July, 1919) describes his nondeforming operation for the cure of these conditions. Chest collapsing operations for the care of sinuses following empyema are described as unjustifiable. The method described is credited with restoring pulmonary function and closing thoracic fistulae. The dangers are far less than the former well known methods. The intrapharyngeal method of anesthesia is advised, the preliminary anesthesia being given in the usual way. In recent empyemas where no adhesions have formed it is advisable to give intrapharyngeal anesthesia throughout the operation. The patient is placed upon a pillow on his sound side in a scoliotic posture with the hips and knees flexed and a pillow placed between his knees; a strap from under the table maintains this attitude. The incision is made in the sixth or seventh interspace and should not enter the old drainage wound. It begins behind the costal angle and extends to the cartilage. Part of the latissimus dorsi is divided and the vessels which traverse it are cut between ligatures. A part of the serratus magnus is treated in the same way. The vessels are tied before they are cut.

An incision about two inches long divides the intercostal structures at the middle of the wound. Care being taken not to injure the adherent lung. The incision is lengthened by scissors and the opening is enlarged until it is the length of the cutaneous wound. The ribs are held apart by a rib retractor for a distance of about three inches. It

may be necessary to divide from one to three ribs upward or downward at the posterior or anterior angle of the wound. The blades of the retractor may now be separated six inches or more. The ribs are then divided by Liston's forceps, cutting slowly through the periosteum and soft tissues at one stroke. The blades of the forceps should be closed upon the edges of the rib, not upon its surface. When the ribs are cut at the posterior angle of the wound it is well to cut away from a half to three-quarters of an inch of the anterior portion of each rib before closing the chest to prevent post-operative pain and trauma by the grinding of the cut ends.

The entire cavity is now revealed. The lung may not appear to be in the chest as it may be compressed in the angle between the ribs and the bodies of the vertebrae. The landmarks are obliterated. An incision is made into the visceral portion of the membrane from the apex to the base of the cavity, care being taken not to wound the lung. The incision widens spontaneously and a line of cleavage is sought between the membrane and pulmonary tissue by blunt dissection. Right angle incisions will permit further expansion and loose tags of membrane may be cut away. The lung is now insufflated by the anesthetist by the nostrils, the lips of the patient being closed and the air or ether forced in through the intranasal portion of the tube. If the tube is not over three and a half inches long air will not enter the esophagus. Fine bubbling on the surface is not cause for alarm, but a hissing sound indicates that a bronchial branch has been entered. This may lengthen healing time. The lung, even though it has been confined for months, will usually yield to this treatment. If it is not possible to peel away the membrane on account of old adhesions cross hatching by multiple incisions should be made. It is not wise to peel the lung away from the chest wall on account of the danger from hemorrhage. When the maximum expansion has been secured the tract of the original thoracotomy wound is curetted and a tube is drawn through from within outward by a dressing forceps. This tube should have two perforations near its inner extremity and should extend but a short distance into the thorax. The large wound is then closed. Pericostal or percostal sutures are not desirable. The ribs on the old cases do not approximate fully at once, but in drawing the muscles together an interspace of an inch is left through which the outer wound drains into the thorax and through the tube, the cutaneous wound closing by a linear scar. The lung will then collapse partially and the patient may aid expansion by blowing exercises.

Treatment of Hypertension in Women.—David Riesman (*Medical Insurance and Health Conservation*, August, 1919) confesses that our powers of cure are limited and therefore the great desideratum is to find means of prevention. In the treatment of the established condition much harm may be done by too much interference. Just as we have gotten away from using digitalis on the mere discovery of a heart murmur when the valve defect is compensated, so we should not try to any

great degree to lower the blood pressure in patients in whom the hypertension is well compensated. Regulation of the diet is necessary more in the direction of the quantity than the quality. As a rule these patients are heavy eaters and do better on a restricted diet, one that is largely lactovegetarian. A lamb chop, a little chicken, and fresh fish are permissible. Rest—at times a semirest cure—is advisable in some instances; in the case of some persons, however, graduated exercises, walking, and moderate golf may be safely advised. Drugs are not to be used as a routine. The nitrites are not indicated in patients who do not suffer from their hypertension. Though high geared, their circulation may be well maintained, and vasodilators may only serve to upset the equilibrium. The iodides may be used in the essential type of hypertension in small doses over a long period. Corpus luteum extracts have given apparently striking results without any untoward effects, and the subjective symptoms were markedly relieved. Baths and electricity may at times be employed with benefit, and when the cases approach the danger line nothing does so much good as venesection, or, as a substitute, leeches to the mastoid processes. In the thyrotoxic cases rest is of the greatest importance; patients of this type should take their breakfast in bed and lie down for an hour and a half after the noon meal. Tea and coffee should be forbidden, while, medicinally, the bromides with small doses of tincture of veratrum seem to do good, especially in the dizziness of hypertension. Avoidance of worry and mental strain is of the greatest importance in the treatment.

Results of the Operative Treatment of Ulcer of the Stomach and Duodenum.—Otto Chr. Borchgrevink (*Acta Chirurgica Scandinavica*, May 1, 1919) devotes 123 pages to the review of work done from 1902 to 1915 by himself, Dr. P. Bull and others, a total of eighty-seven cases comprising seven different groups: ulcers distant from the pylorus with and without hourglass contractions, ulcers near the pylorus with and without dilatation of the stomach, duodenal ulcers with and without dilatation, the seventh group including ulcers operated upon for acute complications, perforation and hemorrhage causing grave anemia. Sixty-four pages are devoted to case reports. The operation done in most cases has been gastroenterostomy. For ulcers near the pylorus and duodenal ulcers the results have been very satisfactory, comparing well with those obtained by the more radical method of resection of later years, as for instance the results obtained by Troell. The greater number of the collocated cases of ulcer near the pylorus have been associated with contraction and secondary dilatation of the stomach, a feature particularly adapted to gastroenterostomy; and in the duodenal ulcers, usually unaccompanied by contraction and secondary dilatation, the results of gastroenterostomy have even surpassed the former. Also gastroenterostomy, insofar as it has a lower mortality rate, is shown to have better end results in the above cases than resection. In the relatively smaller number of ulcers distant from the pylorus, the results of gastroenterostomy have been less favorable.

Prostatectomy.—J. Hunter Peak (*American Journal of Surgery*, May, 1919) asserts that the operation is indicated when the prostate becomes so enlarged that it interferes with micturition to such an extent that the health of the individual is in danger of serious impairment. Patients find that they secure relief from catheterization and thereafter acquire the habit. This habit may continue for years until the patient finds it useless. The surgeon may be called and find that severe trauma had been inflicted. Frequently it will be found that a false passage to the bladder has been created. The bladder and entire urinary tract may be infected, in which event the false passage increases the clinical dangers and makes the prognosis more uncertain. The condition, while usually found in older men, may be encountered in younger individuals. In the aged it is usually due to a benign enlargement of the gland, while in the young it is usually due to malignancy or infection. The simplified technique is given allowing two routes of approach, the suprapubic and the perineal. The suprapubic is given as the route of choice in the thin patients and the perineal for the fleshy individuals. In the event that a two stage operation is necessary the suprapubic method should be followed. The two stage operation should be reserved for cases where the patient has had repeated attacks of urinary retention, or where the residual urine has existed for some time and the kidneys and bladder are seriously affected. Under the circumstances of crippled kidneys, vesical infection, and urethral tortuosity which prevent catheterization, suprapubic cystostomy should be performed for drainage. When kidney function has returned the wound may be enlarged and the operation completed. When the catheter can be introduced into the urethral lumen and retained, as favorable results may be obtained as by the preliminary suprapubic drainage without danger to the patient. In following the suprapubic route the patient is prepared by local cleansing and thorough cleansing of the gastrointestinal tract. In emergency cases the bladder should be opened at once. A median incision is made through the skin, subcuticular fat, fascia, and muscles. The vesical wall must be incised as high as possible, for when the bladder is emptied the subsequent contraction will leave the opening in the most favorable plane for drainage and by making a high opening the plexus of veins about the vesical neck is avoided. Where catheterization has been possible the bladder is distended with normal saline solution prior to the operation. When possible it is preferable to complete the operation in one stage. The prostate is attached when the opened bladder is cleansed and the bleeding arrested. If a stricture exists it may be cut by an Otis urethrotome. The passage of a steel sound simplifies the operation. Long handled scissors curved on the flat are best for the enucleation of the gland. Guided by the left index finger the capsule is incised over each lateral lobe, the left and right lobes are separated in the same manner. Hemorrhage is best controlled by the insertion of a Nelaton catheter which is surrounded by a long strip of gauze in the capsular cavity, one end of which is allowed to protrude from the supra-

pubic wound so it may be removed later. In closing the abdominal wall it is well to use the tier suture method, leaving room for a rubber drainage tube. The tube is held in place by an adhesive strap which is a two inch strap divided half its length in the middle and then again divided, making four strips at one end. This is applied over the dressing so that the two outside strips pass beyond the tube over the dressing and the two middle ones over the wound and around the tube, one to the left and the other to the right side. This brings the pull on the dressing instead of the patient. Normal saline should be passed after the operation to show if the catheter and tube are patent. The bladder is irrigated frequently until the irrigation becomes clear for a week, when the catheter may be removed. The suprapubic wound closes from ten to forty days after the drainage tubes are removed.

The perineal approach is the same as for any other perineal operation except that the half moon flap is preferred. The incision is begun in the skin over the left ischial tuberosity, carried upward in a circular course until it reaches the posterior portion of the scrotal attachment, then downward over the ischial tuberosity on the right side. This skin flap is dissected backward almost to the anus; a central incision is then made through underlying tissues until the membranous urethra comes into view; this can be recognized by palpation over the urethral sound. After the central incision has been extended through the urethral tissues a guy suture is inserted on either side. As the sound is withdrawn Young's retractor is introduced through the opening in the membranous urethra. The prostate is then brought into the operative field by downward traction by the assistant. The lobes are enucleated by the finger or blunt scissors. A catheter is placed in the urethra and the capsule packed with gauze.

Dried Smallpox Vaccine.—R. Wurtz and L. Camus (*Bulletin de l'Académie de médecine*, July 1, 1919) point out that both the production and keeping qualities of smallpox vaccine are seriously interfered with by even moderate grades of heat, and that for this reason in warm countries smallpox prophylaxis has proved very difficult. Former attempts to secure an efficient dried vaccine, with greatly improved resisting qualities, failed, but the authors now announce that they have ascertained the reasons for these failures and have worked out a successful dried vaccine. The primary virus used in its production is required to be of such strength that 0.3 mil of a one in 20,000 dilution of it will yield numerous pustules. The pulp, after being ground up, triturated, and strained, is congealed and subjected instantaneously to a vacuum in the presence of phosphoric or sulphuric acid. The necessary rapidity of vacuum production is insured by means of an electric rotary suction pump. The pulp is thus dried as fast as its temperature rises again from the congealed state, and the dehydration is effected without loss of activity. Once desiccated, the product is manipulated only in a dry chamber. The scales obtained are introduced into thoroughly dried glass tubes; the product may previously have been compressed into tablets.

Treatment of Polypoid Tumors of the Bladder.

—F. Cathelin (*Paris médical*, June 14, 1919) states that in small bladder polyps Beer's cystoscopic high frequency treatment is the procedure of choice. In polyps of intermediate size, three methods are applicable—high frequency, the galvanic loop, and the biting forceps—all carried out with the cystoscope. The choice between these depends upon individual preference. In the large or "giant" polyps, removal by suprapubic cystostomy is indicated. In this operation, the bladder is filled with water or air to begin with. When the bladder has been incised, retractors should be passed directly into the organ and traction made to bring its interior into view. The author uses also a special instrument to hold down the margins of the abdominal walls and expose better the posterior portions of the bladder. Before transfixing the pedicle of the tumor the latter should be drawn up rather forcibly. Complete ligation is then effected below to stop the hemorrhage resulting from transfixion, and the pedicle severed one centimetre lower with the thermocautery. The main mass of the tumor having been sufficiently freed by the operator's hand, Farabeuf forceps are used to lay hold of the pedicle. Before the pedicle is cut, the bladder may be thoroughly wiped out with gauze sponges in order to remove any detached portions of tumor tissue. Catgut should always be used in preference to silk in ligating within the bladder. Finally, the bladder is closed in two layers, muscular and serous, with catgut, and the closure tested by filling the bladder with water. The abdominal wound is entirely closed with the exception of a small drain left in the space of Retzius. A No. 20 catheter with at least two terminal openings, already used in filling the bladder with water, is left in and may not have to be changed for ten days or two weeks. Uneventful recovery generally occurs, but after a few years recurrence of the growth is a possibility.

X Ray Treatment in Tuberculous Arthritis.—

A. Briton (*Presse médicale*, June 12, 1919) thinks the benefits obtainable from the x rays in tuberculous joint disease are not sufficiently appreciated, and reports three cases, involving, respectively, the ankle, elbow, and vertebrae, in which apparent recovery followed their use. In the spinal case, the fourth and fifth lumbar vertebrae had been curetted two months before the author was consulted, but the wound had not healed and the infection had extended to several different points in the lumbar region. The x rays were directed over the whole region every fortnight for three months, when treatment was interrupted by a severe attack of influenza. Three months after the interruption, when the patient returned, the wound and all the sinuses but one had closed, and the latter healed three months later. Treatment was kept up at longer intervals for several months, and no recurrence took place. In the elbow case, the area had been curetted three times in the course of five years, yet fungous tissue recurred. X ray exposures every twelve days resulted in recovery in two months, and the results have now been maintained six years.

Surgery of the Appendix.—J. H. Morford (*Southwestern Medicine*, July, 1919) advises operation as soon as the diagnosis is made. He divides the time for operation into four periods. The first is within the first forty-eight hours when the infection is usually confined within the appendix. The mortality of operations at this stage should be nil. The second stage is from the end of the second to the fifth day and is a dangerous time, and manipulations such as handling of the intestines and sponging, and breaking of adhesions must be carefully refrained from. The third stage from the fifth day on is comparatively safe, as by this time the patient has established an immunity by the blocking of lymphatics, and septic absorption does not take place. The fourth stage is that of the interval and would be the ideal time after the first forty-eight hours if we could order the kind of resolution we prefer; but so many hazardous steps intervene that no patient should be allowed to reach this stage without operation.

Magnesium Chloride in Rectosigmoid Polyposis.—P. Carnot, Friedel, and Froussard (*Paris médicale*, June 21, 1919) report a case of chronic, ulcerative rectosigmoiditis inducing intense polypoid proliferation of the mucous membrane. The patient was a soldier thirty-six years of age, who had had an acute rectocolitis nine years before. Polyposis and infiltration were so marked that the index finger could not enter the rectum. Ulceration and necrosis of the polyps resulted in discharge of mucus, blood, and pus, and the patient was becoming rapidly weaker and losing weight. Biopsy failed to reveal any malignant process. Rectal lavage twice daily with three per cent. Labarraque solution through a soft catheter brought out feces, blood, and mucus and gave much relief, the stools diminishing in frequency and the appetite returning. A thick, syrup-like agar mucilage was then prepared and ten grams of magnesium chloride added to every 250 grams of the excipient; 250 grams of the mucilage were then injected daily above the point of stenosis with a catheter and Guyon syringe. These injections were borne for increasing periods—from two to ten hours. Later the amount of magnesium chloride in each injection was reduced to five grams. Under this treatment the patient almost completely recovered, only a few small polyps remaining and stenosis wholly disappearing. These results encourage the authors to continue the systematic local treatment they employ in ulcerative ulcero vegetative colitis. X ray study showed that when a 250 gram or even a 50 gram bismuth enema is given it is rapidly carried by antiperistalsis through the sigmoid and even to the cecum. The entire colon is thus accessible to local treatment. Agar mucilage is useful as excipient because it is well borne and will incorporate a number of different medicaments, such as charcoal, chalk, or other bland powders, Labarraque's solution, chloramine, tannin, adrenin, emetine, and arsenobenzol. Oily emulsions or lanolin might be used instead. Even soluble substances are absorbed but slowly when incorporated in agar mucilage. The authors, with Bondouy, showed this conclusively with reference to chloramine.

Miscellany from Home and Foreign Journals

Coexistent Disease of the Appendix and Pelvic Organs in the Female.—C. G. Child, Jr., (*American Journal of Obstetrics*, July, 1919) reports a study of this subject in 746 cases. Pelvic disease in the female is an important exciting cause of appendicitis, and to a less extent the appendix may be a cause of right adnexal disease. In most cases of existent pelvic disease and appendicitis, the primary source of infection is in the pelvis. In 746 cases under study the appendix was removed 339 times. It was pathological in 244, or 32.57 per cent. of the whole series. In inflammatory conditions of the adnexa it was pathological in 46.70 per cent. Where such inflammatory conditions were limited to the right side, the appendix was involved in 66.66 per cent.; where limited to the left side, 18.42; where on both sides, 38.38 per cent. Including all cases of right inflammatory adnexal disease—whether the left was involved or not—the appendix was affected in 43.95 per cent., and it was actually adherent to the adnexa in 19.09 per cent. In ninety-nine cases there was no microscopic evidence of disease of the appendix, and its removal was at the request of the patient. Of the seventy-five cases of adhesion of the appendix to the right adnexa, twenty-five showed acute inflammatory changes, thirty-seven subacute or chronic changes, and seven no pathological evidence of disease. As the possibility of an involved appendix should always be borne in mind when operating in diseased adnexa, so also should the possibility of diseased adnexa be borne in mind when operating in the appendix. An appendix may be microscopically pathological, yet not microscopically so, or vice versa, and should always be removed, if possible, when the abdomen is opened. Appendicitis in the female is associated so frequently with pelvic disease that it should always be considered a gynecological condition and the treatment should be directed with this point in view.

Symptoms, Causes, and Prevention of Anoxemia.—J. S. Haldane (*British Medical Journal*, July 19, 1919) defines anoxemia as a condition in which the rate of supply of oxygen to the tissues by the blood in the systemic capillaries is insufficient for the normal carrying on of life. It is clinically a common condition and is frequently a very dangerous complication, especially in the pneumonias. The chief causes are defective saturation of the blood with oxygen; great slowing of the circulation; defective proportion of available hemoglobin, and alteration of the dissociation curve of oxyhemoglobin. Each of these causes is discussed more or less in detail and the symptoms of the condition are mentioned and discussed. It is pointed out that there is produced in the blood a state of alkalosis. When anoxemia is severe there is a progressive damage to the individual's tissues, so that the relief of the anoxemia may still leave grave symptoms. The importance of early treatment is obvious. The one all important sequel of severe anoxemia is a breakdown of the respiratory centre with resulting shallow breathing in which

but a small proportion of the pulmonary surface is exposed to gaseous exchange so that a vicious circle is established and the anoxemia becomes progressively worse. The one most satisfactory way of breaking this vicious circle is by the prompt and efficient administration of oxygen from an apparatus which is capable of being regulated so that any desired amount of the gas can be given a minute and is supplied without effort on the patient's part. The apparatus should also provide a very slight resistance to expiration. Of course in addition to the use of oxygen to break the vicious circle other appropriate measures should be taken to remove so far as possible the causes which led to the development of the anoxemia.

A New Dressing for Fractured Clavicle.—A. Legrand (*Journal de médecine de Paris*, May, 1919) places the forearm and hand of the affected side behind the back and supports it there with a posterior sling. After four or five days the hand and forearm are gently brought around to the front of the thorax, care being meanwhile taken to keep the elbow in a posterior position. This movement is carried out for three or four minutes every day. Massage is practised daily at the site of fracture. After twelve days, union having occurred, the forearm is carried forward for good and supported with an anterior sling for eight days. This treatment is in no way painful and readily keeps the head of the humerus back and away from the body—a result otherwise difficult to obtain.

Foreign Bodies in the Stomach.—Randolph Winslow (*Annals of Surgery*, July, 1919) states that foreign bodies are found not infrequently in three classes of people: First, those who swallow them accidentally; second, in insane individuals; and third, in people who swallow them to gain a livelihood. The ones that are swallowed by accident are usually smooth and if not too large to pass through the esophagus will go through the intestine and be expelled. Sharp and jagged objects are also swallowed accidentally. They may become lodged in the esophagus or perforate the stomach or intestines. Death may result. Many cases of pointed articles passing through the intestinal tract without causing damage are on record. Multiple objects are swallowed by the insane or mountebanks. Most of these individuals are operated upon eventually. A case is recorded where over fourteen hundred objects have been removed from the stomach of a patient. Von Quast removed nine ounces of broken glass, two pocket knives, sixteen tacks and many other sharp objects from the stomach of a woman (*NEW YORK MEDICAL JOURNAL*, July 18, 1903). Many single bodies pass through the intestinal canal and are safely passed, but multiple foreign bodies usually lodge in the stomach and must be removed by gastroenterostomy. A positive diagnosis is possible by radiography. The proportion of recoveries for the removal of these bodies is high as shown by the statistics gathered.

Diagnosis and Prognosis of Epithelioma of the Glans Penis.—L. M. Bétancès (*Presse médicale*, June 12, 1919) reports three patients who consulted him about two and a half years after noticing a small red patch on the glans penis. In each instance the growth was hardly elevated above the surrounding membrane and the surface was red, even, of velvety appearance, slightly moist and shining, without ulceration, bleeding, or pain. Treated as warts or vegetative syphilides, these lesions had nevertheless continued developing. Excision of a small bit of tissue for microscopic study was resorted to in each instance. In one, the tissue seemed like a benign papilloma, but the author doubts that it actually was, as even slight deviations from even cell layers at the surface of the glans are suspicious. This patient, however, was lost sight of. In the other two cases, in spite of their apparent benignity microscopically, the tissue showed definite evidences of malignancy. In one of these the disease had already reached the lymph nodes a few months later. In the other, half the glans was amputated, but one year later there was manifest glandular involvement. The author concludes that whenever a red patch or papule of papillomatous aspect appears on the glans, biopsy should be immediately resorted to. These are generally pre-cancerous lesions or actual instances of cancer of the glans. Whether the microscopic appearance is that of a leucoplasia, a papillary epithelioma, or a deep-seated pavement epithelioma, the prognosis is serious. All transition forms between these conditions are met with, and the time that will elapse between one stage and the next cannot be predicted. The proper treatment for all these excrescences on the glans is wide surgical excision.

Second Attack of Poliomyelitis, after an Interval of Fifteen Years.—Francis D. Francis and W. F. Moncreiff (*Journal of Nervous and Mental Disease*, April, 1919) report an interesting exception to the semi-incidence of acute anterior poliomyelitis. The patient was an eighteen year old girl who at the age of three had suffered from a typical attack of poliomyelitis with paralysis of the arms and legs. After several months function had been restored to the left arm completely, but to the right arm only partially, leaving a well marked residual paralysis of certain muscles. The present attack had begun insidiously and eight days after the onset a sudden paralysis of the legs appeared, complete in the left, partial in the right. Improvement was very slow, and six months later, after constant treatment, only fifteen to twenty per cent. of the lost function had been restored. The cases in the literature are quoted, twenty-three in all, and it is remarked that they seem to fall into two fairly well defined groups, one where the two attacks are separated by a short interval and the other by a long interval. The authors think that in the former case an autoinfection is the most probable explanation, and in the latter a reinfection from a new external source. As to the failure of immunity, theorizing only is possible. Perhaps there has been a complete lack of formation of immune bodies, or perhaps the immunity was quantitatively or qualitatively insufficient.

Glycosuria in Cerebrospinal Meningitis.—E. de Massary and L. Tockmann (*Bulletin de l'Académie de médecine*, June 10, 1919) met with three patients showing glycosuria in forty-five cases of cerebrospinal meningitis. All three died in spite of lumbar injections of mixed serums. Cazamian had had nine instances of glycosuria in 113 cases, with but one death. Autopsy in each of the authors' three cases showed predominating lesions in the ventricles of the brain; hence the lack of effect of the lumbar serum injections. These lesions account for the glycosuria, which was shown by Claude Bernard and more recent experimenters to result from injury in the region of the fourth and third ventricles and the infundibulum. Apparently glycosuria in cerebrospinal meningitis is a sign of predominant ventricular involvement, implies a grave prognosis.

Enteroneuritis in Intestinal Cancer.—M. Loeper (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 13, 1919) reports studies in minute pathology demonstrating conclusively that neoplastic processes may extend in the nerves of the mesentery and from these to the solar plexus. Propagation doubtless takes place through the perineural sheath, which behaves somewhat as a lymphatic channel toward the cancer cells, and from there in the adjoining nerve to a greater or less distance. Compression or even destruction of the nerve by the cancer may entail disturbances of function. These disturbances or pains, however, commonly pass unnoticed in the clinical picture of intestinal cancer. The condition may be suspected where there appear paroxysms of severe, diffuse, abdominal pain. This type of neoplastic celiacgia account for certain painful manifestations easily confused with the ordinary evidences of cancer of the intestine.

Lumbar Puncture as a Factor in the Causation of Meningitis.—Paul Wegeforth and Joseph R. Latham (*American Journal of the Medical Sciences*, August, 1919) report five cases in which meningitis followed the release of normal spinal fluid during a septicemia, and review the literature on the subject. Recently there has been a tendency on the part of clinicians to multiply the indications for performing lumbar puncture on patients suspected of having meningitis, but these cases show that the procedure is not always safe. To prevent the possible accidental production of a meningitis as a result of diagnostic lumbar puncture it is recommended: 1. That careful consideration be given the bacteriological study of the blood before such punctures are attempted; 2. that in acute diseases, in the absence of definite signs of irritation of the central nervous system, lumbar puncture should be avoided unless it is first conclusively shown that the blood stream is free from infection; 3. that when the clinical symptoms are such as to render a lumbar puncture advisable, minimal quantities of fluid should be withdrawn, sufficient only to permit necessary laboratory tests to be made; 4. that small bore needles should be utilized in performing the operation to prevent as much as possible subsequent leakage of spinal fluid into the surrounding tissues.

Migration of Parasites as the Cause of Anemia in Æstivo-Autumnal Malarial Infections.—Mary R. Lawson (*Journal of Experimental Medicine*, April, 1919) explains the anemia in malarial infections by the fact that each parasite destroys several red cells. The reduction of hemoglobin out of proportion to the loss of red corpuscles is accounted for by the fact that there is always a partial loss of hemoglobin in certain of the surviving corpuscles, due to parasitic action. Migration of parasites and free parasites are described.

Tinea Capitis Due to Trichophyton Currii.—Albert J. Chalmers and Alexander Marshall (*Journal of Tropical Medicine and Hygiene*, May 1, 1919) report a case of ringworm of the scalp in a boy aged seven, which they found to be due to the form of trichophyton described by them in 1914 as a new species, *trichophyton currii*. This fungus, which is easily seen in the hairs, belongs to the endothrix variety, being confined entirely to the hair shaft, in which the so-called spores are arranged in ladderlike rows. The mycelium is resistant to caustic potash. Culturally, the principal characteristics are, a rapid growth on Sabourand's maltose agar medium at 37° C., white color, and a central white knob surrounded by one or two slightly elevated rings and bordered by a slight fringe. Clinically, the ringworm was characterized by a breaking off of the infected hairs close to the scalp and by the absence of inflammatory lesions.

Mode of Formation and Significance of Diacetic Acid in the Body.—L. C. Maillard (*Bulletin de l'Académie de médecine*, June 10, 1919) points out that diacetic acid appears when the body is consuming only proteins and fats, to the exclusion of carbohydrates, e. g., in normal persons taking an exclusive meat diet or fasting and in diabetics unable to utilize sugar. Hitherto, according to a German theory, the formation of diacetic acid has been considered due to a process of oxidation. Recently, however, upon opening a flask in which cycloglycylglycine and glycerine had been kept in vacuo, the author noticed a strong odor of diacetic acid, and found that this compound had actually been produced by a form of yeast that had developed in the mixture under the anaerobic conditions resulting from the vacuum. The protein was represented in this reaction by the glycine compound; the fat, by glycerine, without fatty acids, and the human tissue cells, by yeast. The observation seemed to show that one may pass directly from a dipeptide to diacetic acid by a simple process of deaminization, which is commonly met with in the system, provided, however, this change takes place by reduction. It is thus not unlikely that in the human system diacetic acid is formed by reductive deaminization of the dipeptides produced through the breaking down of proteins, and not by any process of oxidation. This conception seems to accord better with the reduction in oxidizing power met with among diabetic patients. Betaoxybutyric acid, instead of being a precursor of diacetic acid in the successive stages of oxidation, would on the contrary represent a more advanced stage in a series of hydrogen imparting reductions.

An Epidemic of Scurvy.—A. Benoit (*Paris médical*, June 14, 1919) describes an epidemic of scorbutus which broke out among a detachment of laborers in the north of France in May, 1917. Out of 350 men working together, sixty-three were seized simultaneously with the disease. The condition quickly reached its maximum severity, being manifested in sudden, marked anemia, a petechial eruption and ecchymoses, arthralgia, and in some instances gingivitis. In every case the temperature rose to 38° or 39° C. on the second day. From then on, whatever treatment was used, or even if no treatment save rest in a hospital remote from the original focus was applied, the condition improved rapidly and recovery soon followed. It seems very difficult to consider this condition a nutritional disease. Its acute course would appear to classify it with the primary infectious purpuras, though its epidemic incidence is a distinguishing feature. Sporadic cases of scorbutus are very rare. The condition as observed was similar to the great epidemics met in earlier centuries, but fortunately it did not gain much of a foothold. Benoit points out that the quality of food received by his sixty-three patients after they reached the hospital was in no way different from what it had been before they contracted the disease.

Pityriasis Rubra Pilaris.—A. J. Chalmers and A. Innes (*Journal of Tropical Medicine and Hygiene*, June 2, 1919) describe a case of this condition seen by them in the Soudan and discuss at length the diagnosis of the disease from allied or similar disorders. Their conclusion is that the pityriasis rubra pilaris of Devergie is a disease quite distinct from the lichen planus of Erasmus Wilson and probably also from the lichen neuroticus of Unna, which may be the same as the lichen ruber of Hebra. It is probably caused by a toxin which may arise as an anaphylatoxin, of which the anaphylactin factors are amboceptors present in the skin cells and due to action, at some time or other, of the tuberculous toxin. It is a disease quite distinct from acnitis or lichen nitidus and from lichen scrofulosorum. Many points indicate a partial similarity of causation with ichthyosis. From the latter disease it is to be differentiated clinically by not dating back to within a short period after birth and by the presence somewhere of the associated erythrodermia. From the lichen spinulosus of Devergie it is distinguished by the eruption being general, by attacking the hands, and by the follicular slug being scaly and not shiny. From pityriasis rubra it is distinguished by the relatively slight amount of erythema, by the small scales, by the typical hard conical papules in the follicles on the dorsal aspects of the first phalanges of the fingers, by the absence of constitutional symptoms, and by its benign and chronic course. The authors also describe the differential diagnosis from the lichen convexus of Castellani, the keratosis suprafollicularis of Unna, the lichen planus of Erasmus Wilson, the lichen neuroticus of Unna, and a number of other skin conditions. The treatment must be long continued, and in a recent case must aim at neutralizing the exciting toxin.

Surgical Correction of Nasal Deformities without Scarring.—J. Bourguet (*Bulletin de l'Académie de médecine*, July 1, 1919) describes various types of nasal deformities and explains how they may be corrected from within the nose, without incising the skin. One type is that in which the tip of the nose curves up and away from the upper lip, so that the inferior margin of the septum is three or four centimetres long. In this condition a submucous operation is done both on the septum and the nasal cartilages, these being reduced so that the tip of the nose may be lowered to a normal position. Another equally common type is that presenting a hump or convexity on one side owing to deflection of the bony or cartilaginous framework. Where the cartilage is involved, an ugly depression on one side of the nose may result. In these cases the hump or convexity is removed by the endonasal route. Where the bone is deflected, a triangular bone segment is removed subcutaneously on the convex side, and a diagonal section made on the concave side. Frontonasal disarticulation is then carried out, and the nose straightened and held in this position for four or five weeks with a metallic splint fastened to a band passing over the forehead. Where there is cartilaginous deviation, one or two prism shaped pieces of cartilage are removed from the septum on the side opposite the deviation and the cartilage held straight by means of appropriate sutures. In a less common type of deformity, there is a lozenge shaped broadening of the bony crest of the nose, together with elongation of the nose as a whole. A shortening operation is here carried out and in addition, the lateral angular margins of the lozenge shaped area chipped away subperiosteally with a flat chisel, thus narrowing the nasal crest. Where a nose is broad and flattened both above and below, the ascending ramus of the superior maxillary bone is sawed loose from the body of the bone on each side and the two nasal bones pressed together, bringing them closer to the septum.

Pompholyx and Erythema Nodosum.—T. W. Murrell (*Virginia Medical Monthly*, July, 1919) reports an unusual frequency of these two affections in the early months of the present year and mentions the possibility that this may have been in some way related to the influenza epidemic. In pompholyx, variously sized patches of vesicles appear on the soles and palms. The vesicles begin deep down in the skin and are at first felt rather than seen. They then rise to the surface, and through their coalescence large areas of skin may be exfoliated, and the patient, owing to pustulation, be more or less disabled. Murrell uses three per cent. formalin alcohol as a lotion in these cases. Lycopodium is also employed as a dusting powder in the sock and shoe. Argyrol twenty per cent., is used over the pustules, which are intentionally opened and cleaned with saturated boric acid solution. In all the cases of erythema nodosum referred to the author, syphilis had been suspected, the lesions resembling gummas in process of formation. All the cases were in young women. The nodes feel boggy, but never suppurate. Salicylates are used in the treatment, but are of little value, the condition running a selflimited course.

Effect of Diet on the Alkaline Reserve of the Blood.—F. F. McClendon, L. von Meysenbug, O. J. Engstrand, and Frances King (*Journal of Biological Chemistry*, July, 1919) report observations on a human subject, on dogs, and on rabbits in which acid and base forming diets were given. The alkaline reserve in man and dogs was unaffected by these changes in diet; the rabbit, however, was susceptible to the effects of diet and fasting. A complete description and drawings of the apparatus employed in this work is included in the paper.

Tuberculin Treatment of Tuberculosis in Children.—Ernest Lackner (*Illinois Medical Journal*, August, 1919) arrives at the following conclusions: Tuberculin is of benefit in tuberculosis and can be given in many cases. It has been established that the dose of tuberculin should not cause a reaction, and it should be given in considerable dilution to avoid local reaction, and for the same reason the injections should always be given in different places. The injections must be given within a limited time, five days' interval. The dose will have to be elaborated and based on more experience.

Suppurative Arthritis Due to Paratyphoid B Infection.—Netter, Mozet, and Salanier (*Presse médicale*, May 29, 1919) report four cases of this description. In two children the disease was monarticular, involving in one instance the shoulder joint and in the other, the sternoclavicular articulation. The condition at first suggested infantile paralysis. In a third child, both the shoulder and knee joints were affected, and in the fourth case, that of an infant, various joints, especially the small articulations of the hand and toes, were involved. This last patient succumbed to bronchopneumonia. In each of the four cases, joint puncture yielded paratyphoid B bacilli. The joint involvements were easily overcome by simple paracentesis. Vaccine therapy was also applied in one instance, and seemed to exert a favorable effect. These cases are reported as demonstrating that suppurative arthritis due to the organism referred to may occur in children.

Foreign Bodies in the Bladder and Their Removal.—R. Hottinger (*Correspondenz-Blatt für Schweizer Aerzte*, June 14, 1919) reports the case of a boy sixteen years old who introduced a bougie made of beeswax into his urethra as a means of preventing him from wetting the bed. The bougie slipped into the bladder and set up an obstinate cystitis. Boric acid solution was injected into the bladder and then about twelve c. cm. of xylol, which which, being lighter than water, floated, together with the wax, on the solution and dissolved the latter. The patient was directed to massage the region of the bladder from time to time by pounding it, so as to hasten solution in the same way as by shaking a test tube. The patient complained of a moderate burning, but of nothing serious. After four hours he passed a milky fluid from his bladder, from which the wax was separated as it cooled. Immediate cystoscopy showed the bladder free from wax. The cystitis subsided rapidly.

Charcot-Leyden Crystals in the Feces an Indication of Amebic Colitis.—Hugh W. Acton (*China Medical Journal*, May, 1919) arrives at the following conclusions: 1. There is no association between Charcot-Leyden crystals and intestinal entozoa. 2. Charcot-Leyden crystals are more commonly present in the subacute and chronic types of amebiasis than in the acute type. 3. They are rarely found in the nonamebic dysenteries. 4. The association between Charcot-Leyden crystals and *Entameba histolytica* is very high. 5. The presence of Charcot-Leyden crystals in the absence of amebæ is indicative of amebic colitis. 6. These crystals persist for some time after the ameba have disappeared as the result of emetine treatment.

Amebic Dysentery in a Child.—Lesné and Ramond (*Bulletin médical*, June 7, 1919) report the case of a boy ten years old who, ever since the age of fifteen months, had been suffering at intervals from vomiting and diarrhea, each attack lasting five or six days. Eventually cysts of the *Amœba minuta* were found in the stools. The child had had an Egyptian wet nurse, and this ameba is a frequent cause of dysentery in Egypt. Marked improvement occurred under emetine subcutaneously, novarsenobenzol intramuscularly and by mouth, and ipecacuanha by mouth. The improvement began only when the novarsenobenzol was given by mouth, in keratin coated capsules. Amebic dysentery should be thought of as a possibility in inveterate chronic diarrhea in children.

Paralysis of the Glossopharyngeal, Pneumogastric, and Spinal Accessory Nerves.—William G. Spiller (*Journal of Nervous and Mental Disease*, June, 1919) reports the case of a fifty-five year old male who had been an alcoholic. Five years ago a tremor of the right hand developed; a year later he fell and was unconscious several minutes, and a few days later a lateral tremor of the head developed. For the past two years he has had spasms of choking with protrusion of the tongue. During the whole course of the illness he has been dull and sleepy. The spasms occur about every thirty seconds, lasting a few seconds. Other neurological symptoms noted were vertigo, speech defect, lateral nystagmus, intention tremor, impairment of diadochokinesis, loss of knee jerk, and slight Romberg. Wassermann reaction with the blood is medium positive, but negative with the fluid. Some of the symptoms shown suggest cerebellar disease; the additional symptoms of glossopharyngeal and pneumogastric paralysis might be explained by a syphilitic meningitis implicating those nerves at their exit from the medulla oblongata. Furthermore, such a paralysis with integrity of the vocal cords would seem to imply that the soft palate and the vocal cords have not exactly the same innervation, and probably different representation in central nervous system, although a distinct group of cells for each structure might be included within the nucleus of the same cranial nerve. The occurrence of paralysis of the glossopharyngeal and pneumogastric nerves without implication of other cranial nerves is very unusual, but is common in association with paralysis of the lips and tongue in bulbar palsy.

Centenarians in California.—O. Laurent (*Bulletin de l'Académie de médecine*, June 24, 1919) calls attention to the fact that in California, in a population of somewhat less than three millions, there are about three hundred centenarians. The great factor of longevity, as also of cancer, seems to be heredity. But in California there are three other factors in addition, viz., pure air, a relatively constant and generally moderate temperature, and such fertility of the soil as will insure a wholesome diet. Children develop rapidly, partly because much of their life is spent in the open air. The evenness of temperature and moderate warmth favor maintenance of health in the aged. Furthermore, social hygiene is at a high level; hospital accommodations are excellent, patients readily follow medical advice, and prophylactic operations such as tonsillectomy are freely availed of. Laurent compares the vitality of the centenarians to that of the giant sequoia trees, and thinks these trees themselves owe their great age to the even climate as well as the great fertility of the soil. The essence of human longevity seems to lie in a species of reserve vitality or infralife or infrabiosis similar to that witnessed in the excised tortoise heart which continues beating for a prolonged period when suspended merely in saline solution. Vital energy may be conceived of as a synergy or combination of energies, or, as expressed by Verhaeren, a tentacular energy, which utilizes the other forms of energy to its own advantage. The California centenarians bear witness to the fact that even at the age of 100, a large amount of reserve energy may remain. Longevity is the manifestation of vital equilibrium, while cancer is that of loss of vital equilibrium, or vital anarchy. In this sense, the factor of longevity is a cancer preventive.

Prevention of Influenza and Pneumonia by a Uniform Room Temperature.—Solomon L. Burton (*The Practitioner*, June, 1919) believes that influenza treated in well ventilated rooms at a uniform temperature of 70° F. will not develop into pneumonia. In a room kept at this temperature, the influenza bacillus is clinically destroyed, or influenced by the temperature to the extent that it will not infect the nurse or persons who may be exposed to the germs of the patient. This theory is substantiated by the fact that epidemics of influenza of the past have subsided in the United States when the temperature reached summer heat. Burton has treated three hundred cases of influenza along these lines, with no pneumonia and no deaths. He treated his patients from the beginning of the attack by giving every four hours a capsule containing ammonium carbonate, quinine and strychnine, alternating with syrup of hydriodic acid. To eliminate, he used calomel at the onset and salts every two or three days. He used influenza vaccine in all except children. Patients remained in bed until three days after the fever subsided and then remained in a room at a uniform temperature of 70° F. for one week longer. It is safer to attend school and church, if the buildings are well ventilated and heated at an even temperature of 70° F., than to walk the streets of the city.

Proceedings of National and Local Societies

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-sixth Annual Meeting, Held at National City,
June 14, 16, 17, 1919.*

The President, Dr. GUY HINSDALE, of Hot Springs, Va.,
in the Chair.

(Continued from page 182.)

Radiographic Changes Seen in Influenza Pneumonia.—Lieutenant Colonel ESTES NICHOLS, United States Army, of Portland, Me., demonstrated the changes which had been observed as the result of a study of influenza from a radiological standpoint at United States Army General Hospital No. 16. A bedside x ray apparatus made examination of the very sick patients possible with very little disturbance to them. The slides of the roentgenograms of all the influenza cases showed throughout the lungs a general increase of density which was best described as hazy or smoky in appearance, and it usually extended from apex to base, being most marked on the inner half, especially adjacent to the mediastinal border. In the bronchial structures themselves were seen the most marked changes. Peribronchial thickening was most marked around the hilus, and it extended outward in a "sunburst" type, rapidly diminishing in size from the hilus to about the outer one third of the lung. In a large number of cases marked bronchitis or bronchopneumonia occurred at the right base. When the influenza was progressing toward recovery, it was interesting to observe the general diminution first in the hazy density and then in the diffuse density of the bronchial structure. The density around the hilus, being partly due to peribronchial thickening, persisted considerably longer. The first changes seen were in the hilus.

Röntgenograms of the heart showed a dilatation of the right auricle and a slight dilatation of the pulmonic area, but the heart as a whole was not much enlarged in influenza. In a few patients who invariably recovered in a few days, unilateral congestion was seen. All the patients showed earlier and more marked affection of the lower bronchial structure and the bronchial of large diameters than of the smaller and terminal branches. The height and shape of the diaphragm showed in most of the cases evidence of diminished pulmonary functions becoming much more domeshaped than was commonly the case, and this was one of the diagnostic features of the disease. In massive types of pneumonia the diaphragm was often lower than usual. In bronchopneumonia the appearances to be looked for were first those described under influenza. If there were localized areas of thickening the next distinct stage was a spreading of these areas to a point of confluence of more or less localized areas. In these areas the congestion appeared light and hazy. There were a few instances in which resolution began in this stage, but in the majority of cases the process progressed, the density increased and the detailed structure became obscured and

pseudolobar pneumonia appearance might be seen. Consolidation occurred most frequently in the lower right lobe, just medial to the lower angle of the scapula; next most frequently in the lower left lobe, then in the right upper and middle lobes, and finally in the left upper lobe. In the cases of bilateral pneumonia the bases became so dense that a differential diagnosis between an extensive edema, pleural effusion and pneumonia could not be made. Two associated changes occurred very early in the onset of pneumonia. Leucopenia was found with bronchopneumonia and leucocytosis was generally found with lobar pneumonia. In a few cases a pleural reaction was demonstrated, shown by congestion and thickening of the pleura in the interlobar fissure. In many cases that recovered there was a persistence of the congestion of the hilus and mediastinum.

Personal Hygiene in the Prevention of Influenza and Other Infectious Diseases.—Major THOMAS DARLINGTON, United States Army, of New York, thought there was a need of more personal hygiene being taught as he was sure it would be a great factor in preventing epidemics such as the recent one of influenza. There were three viewpoints to be considered in the prevention of infection: 1, People could do much for themselves; 2, people could have many things done for them; and, 3, there should be a more rigid enforcing of national, State and municipal laws with reference to public health. Under the first of these were all those things which were matters of personal responsibility such as the regulation of ventilation, personal cleanliness, even the wearing of properly fitting shoes and the right kind and amount of clothing, the care of the eyes, nose, and teeth and the cultivation of right thinking. The proper amount of recreation was an important factor. Many persons were easily fatigued because they did not drink enough water. If there was an insufficient intake of water waste products were not excreted properly and phenol and indican accumulated causing fatigue. Fatigue in turn reduced resistance. It was possible to a great extent to create one's own immunity. This was not extensively known nor did people generally know how to take proper care of themselves. It might seem superfluous to devote time to impressing the importance of clean hands, but as a matter of fact the public were in need of education on this very ordinary matter of personal hygiene. Indeed it was not so many years since even the physician failed to understand the importance of keeping his hands clean, and many could remember the time when an accoucheur attended a confinement and delivered a woman without washing his hands. Then again, if more toothbrushes were used there would be fewer cases of pneumonia. A healthy mental outlook on life was a very important factor in the promotion of good health and physicians should teach the gospel of cheerfulness not forgetting that it was a well known fact that the mental condition depended upon the condition of the adrenals.

Some Historical Notes on Early Epidemics of Influenza in America.—Dr. GUY HINSDALE, of Hot Springs, Va., gave very interesting abstracts of some of the descriptions of influenza published many years ago. Among these was part of a description of the disease in 1647 by Hubbard, in which he commented on an epidemic sickness which passed through the whole country affecting the colonists, the English, French, and Dutch and natives. It began with a cold and in many was accompanied by a slight fever, with other typical symptoms. It extended throughout the known parts of America and in the West Indies. Ten or twelve thousand died in Barbadoes and St. Kitts. In 1799 Noah Webster, in his *Brief History of Epidemic and Pestilential Diseases*, gave in chronological order a list of forty-four epidemics of influenza or epidemic catarrh dating from A. D. 1174 in Europe, and from 1647 in America.

In this remarkable list references were made to volcanic eruptions, earthquakes, and the appearance of comets occurring simultaneously; for it was the custom of those days to associate the outbreak of a pestilence with the supernatural. An effort was even made by these observers to trace a connection between the occurrence of these epidemics and the season, it being noticed that most of them happened after or during severe cold or during moist weather, in the spring, winter, or autumn. Dr. Benjamin Rush's description of an epidemic of influenza in 1790 revealed a close parallel between it and the recent epidemic of 1918. The morbidity and mortality of the latter seemed, however, to have exceeded that of any previous one of which there was a record. The *London Times* had figured that the deaths in the entire world had numbered 6,000,000. In the United States it was estimated by the Bureau of Census that the deaths in this epidemic, including influenza and pneumonia, had numbered 700,000. An epidemic of influenza occurred in the United States twenty-seven years after the one Doctor Rush described, and was referred to by Daniel Drake in his *Systematic Treatise on the Principal Diseases of the Interior Valley of North America*. Drake was acting as an army surgeon to two regiments of militia in camp when the influenza swept from the East to the frontier post in the Ohio Valley where he was stationed. Doctor Drake made note of the occurrence among the sequelæ of this epidemic of the occurrence of purulent pleural effusions and the development of an unusual number of cases of pulmonary phthisis. Commenting on these records, Doctor Hinsdale called attention to the fact that the epidemic of influenza that ravaged the Atlantic seaboard shortly after the American Revolution had practically all the features of the recent epidemic.

Dr. J. N. HALL, of Denver, supplemented Dr. Daland's paper as to the pathology. In many of the cases in the hospitals of the South there occurred extensive nasal hemorrhages necessitating packing and in some instances there was blood in the feces, and there was a connection of these hemorrhages with the onset of the influenza. In several instances there was evidence of hemorrhage from

the adrenals, in that the patients showed a condition of shock and low blood pressure. Many patients who died from pneumonia showed at post-mortem hemorrhages scattered throughout the adrenals. Another point of more than ordinary interest was that about one hundred old gassed cases observed in a dozen camps showed the same picture as the influenza and pneumonia cases. In fifteen or twenty per cent. of the badly gassed cases there was a characteristic tenting of the diaphragm. In the chronic cases there were adhesions and calcified glands, and occasionally a collapsed bit of old bronchitic lung was present distinctly different from what was found in influenza and pneumonia.

Dr. JOHN B. HAWES, of Boston, spoke of the small percentage of influenza in tuberculous cases. He had found in Massachusetts among 1,000 tuberculous cases the incidence of influenza was six per cent. and in 5,000 other institutional cases the incidence of influenza was thirty per cent. It would be interesting to know whether it was a fact that in the tuberculous individual there had developed a certain amount of immunity against such infectious diseases as influenza, or whether their apparent immunity was in reality due to hygienic measures inculcated in these patients.

Dr. ROBERT CHILDS PATTERSON, of Saranac Lake, N. Y., found this matter of the relative immunity of the tuberculous to influenza extremely interesting. Personally he believed it due to several causes. Living as he did out of doors the tuberculous patient was less exposed and he came in contact with very few people. Prophylaxis of the mouth was known to be very important in limiting the effects of complicating infections and this was fundamental in the daily life of the tuberculous patient. It should be remembered also that if the tuberculous patient felt ill he usually went to bed and stayed there and under these circumstances he suffered less from a mild influenzal infection than did those who stayed up and about. There was as yet no proof that the patient with tuberculosis had any specific immunity against other infections.

Lieutenant Colonel J. H. ELLIOTT, of Toronto, said that he knew it to be a fact that in one hospital the entire staff had influenza and the patients escaped. He asked Doctor Daland to relate something of the after history of his cases that had suffered subsequently from deranged mentality. He had been informed that the prognosis was generally good, but he personally knew of a number still in the hospitals. He had observed extensive alopecia in connection with influenza in Toronto but the hair came in again. It seemed from what could be learned of the history of former epidemics that they were very similar to the recent one.

Dr. A. G. SHORTLE, of Albuquerque, N. Mex., reported that in two or three hundred of his tuberculous patients, while many had influenza and some had pneumonia, only three died, and these were patients who had collapsed lungs following artificial pneumothorax. He believed that the fact that the tuberculous patient was fighting a fixed infection gave him a certain amount of immunity against other infections.

Dr. ROBERT WILSON, JR., of Charleston, S. C., believed in the correctness of the opinion that the epidemic ceased because all the susceptible individuals had had the disease. For example, in a military school where there were about two hundred boarders and a number of day pupils, the day pupils were kept out of the school when the influenza broke out. They had about one hundred cases in the ten days or two weeks before the epidemic expended itself. In January there was a recrudescence and only the day pupils contracted the disease. There was an interesting and singular point in the history of epidemics of the nineteenth century in regard to the immunity supposed to be conferred by an attack of influenza. The epidemic of 1833 was followed by another similar epidemic in 1837, while no epidemic followed that of 1889 until the present one occurred. It would seem from this that immunity lasted only four years in the earlier epidemic while in the epidemic of 1889 immunity existed for a much longer period.

Dr. H. L. BARNES, of Wallum Lake, R. I., observed that as many as forty per cent. of his tuberculous patients had influenza in some of the wards and there was a death rate of thirty per cent. In the hospital for advanced cases of tuberculosis, however, there were only a few cases of influenza and this had led to the conclusion that advanced cases of tuberculosis had a certain immunity to influenza.

Major W. L. DUNN said that in his experience with influenza on the Italian front bronchopneumonia was almost the rule, so all cases were treated from the first as though they had pneumonia. A striking feature in these cases was a toxic myocarditis. There was no special method of treatment employed, but though they were without coal and for two months without heat, they kept the windows open so that the patients had plenty of fresh air. They were given plenty of water and were kept in bed from the beginning. The mortality from pneumonia among several hundred cases was 3.72 per cent. Although the infection in that area was of a rather mild type, still they had a lower mortality rate even than other hospitals in that locality.

Lieutenant Commander JUDSON DALAND, of Philadelphia, in closing the discussion said it should not be forgotten, in reference to tuberculous patients having a relative immunity to influenza, that a certain degree of immunity was gained from the presence of other organisms, such as the streptococcus, staphylococcus, pneumococcus, and other organisms, and vaccines should be used against these secondary invaders since they were usually responsible if fatal termination followed influenza. In his cases at Hog Island digitalis did not produce the good effect in influenza pneumonia that it did in other pneumonias. The effect of cardiac stimulants was very unsatisfactory. The occurrence of epistaxis was very common. In answer to a question regarding mental conditions, he had observed none at Hog Island as the workmen were all carefully picked and none had an unstable nervous system. Regarding the duration of postinfluenza immunity, experimental work with induced influenza seemed to show that the period was very short.

Myasthenia Gravis.—Major W. D. ALSEVER, of Syracuse, N. Y., said that myasthenia gravis was a rare disease, the clinical manifestations of which were paresis and great fatigability, and there were lymphocytic infiltrations in the muscles and other tissues. Its etiology was not definitely established. Disturbed endocrine balance had been suggested as a cause, but this had not yet been proved or disproved. It was very possible that toxemia originating outside the glands of internal secretion might be the cause; a focus of infection in dental abscesses might be the causative agent in bringing about the onset of myasthenia. The almost constant finding of widely distributed lymphocytic infiltrations proved the condition was not a purely neurotic one. This was borne out by McCarthy's report that among 182 cases, only twenty per cent. gave a family history of any sort of nervous disease. Botazzi made the interesting suggestion that there were two sorts of contractile substance in the muscle, a fibrillar, which contracted quickly, and a protoplasmic, which contracted slowly, and that a selective poison reducing the excitability of the protoplasmic substance would produce the symptoms of myasthenia gravis. He reported a case in which there was little doubt as to the diagnosis, for there was chronic paresis, rapid tiring of muscles, variation in intensity of symptoms and the myasthenic reaction were present, while fibrillation, muscular atrophy, reaction of degeneration, sensory symptoms and loss of sphincter control were absent. Myasthenia gravis was usually of short duration, but this case had existed for nearly five years with improvement at one time followed by a severe relapse. In 1917 he nearly choked to death many times and his feeble, emaciated condition and his inability to swallow solids made the prognosis very grave. At present he was able to work, quite strong, fairly well nourished, but tired easily. In this case there was a somewhat neurotic temperament and the unusual mental and physical strain at the onset of the paresis established the foundation for a neurosis. He had suffered from what he called a "heart weakness" twenty years before, probably transient hyperthyroidism, and this suggested disturbance of the endocrine glands. There were abscesses in the teeth which indicated the possibility of still another source of toxemia. Malignant disease was not probable, for the sickness had now lasted over four years. The roentgenogram showed dullness and opacity in the sternal region which might be due to enlargement of the thymus. As to the treatment, there was no cure for myasthenia gravis. Good nutrition was important, for there were crises when swallowing was difficult; avoidance of fatigue and rest were always indicated, as making life more comfortable. If the patient rested as soon as he was conscious of increasing weakness his improvement was usually surprisingly prompt.

Pulmonary Tuberculosis in War.—Dr. GERALD B. WEBB, of Colorado Springs, Col., believed that although it was too early to draw definite conclusions from the war regarding pulmonary tuberculosis, yet certain incidents connected with this disease in the U. S. Army suggested lessons to be ap-

plied to civil communities. These related to the diagnosis, the prevalence of tuberculous infection, and hygienic prophylaxis. The number of patients admitted to army tuberculosis hospitals was 8,500, and up to the present there had been 1,200 deaths. Over 1,200 in the first two million men who had been demobilized were suspected cases. It was impossible to pick out the men who in the first few months of army life would contract or develop this disease. The errors in the diagnosis of pulmonary tuberculosis in the cases admitted to the free observation centres of France were in order of frequency: first were pneumonias of delayed convalescence; then the bronchitides, frequently complicated with nasal sinus infections; gastrointestinal conditions with loss of weight, cough, asthenia, and other symptoms of phthisis; hyperthyroidism; psychoneuroses, including effort syndrome; syphilis of lung or new growth, and bronchitis due to Klebs-Loeffler bacillus. No streptothrix conditions were found. Mustard gas and excessive cigarette smoking both caused mistakes in diagnosis though neither appeared to precipitate cases of pulmonary tuberculosis. A decided increase in the numbers of positive cases of tuberculosis occurred following the mild epidemic of influenza in the spring of 1918, and the more severe epidemic of the fall of the same year. Neither trauma nor gunshot wounds of the chest seemed to cause the development of this disease. Overfatigue was a distinct factor in bringing about pulmonary tuberculosis. About 500 soldiers died in France of a rapid form of tuberculosis. Only nine per cent. of the first 700 soldiers returned to the United States as tuberculous gave a history of pleurisy with effusion, and it did not appear that very many of these pleurisy cases were tuberculous in origin. Streptococci were found in the fluid removed from some of the cases. A remarkable opportunity was offered in the American Expeditionary Forces for the post mortem investigation of tubercle deposits. The observations of the pathologists presented at the tuberculosis meeting of the Research Society of the American Red Cross in Paris in November, 1918, of the work of Major D. J. Glomsett, Major H. R. Robertson, Captain A. N. Desjardins, and Col. Sir Almoth Wright indicated that a much smaller proportion of young American adults might have deposits of tubercles than had been supposed. Heretofore it was the impression that seventy-five per cent. or more of humanity had tubercles deposited somewhere in the body, and this had been considered a protection against the development of pulmonary tuberculosis. The careful elimination from the camps of all tuberculous carriers would seem to have minimized the spread of this disease under the conditions of mobilization. The home centres of these tuberculous soldiers were looked up and tabulated and it was found that more tuberculous soldiers came originally from Texas than from Pennsylvania, and more from Kentucky than from Massachusetts. The larger proportion were from agricultural states and farming headed the list of occupations; this was the same element that succumbed most readily to measles and pneumonias in the cantonments. This was very strange in view

of the fact that the Von Pirquet tests had been known for some time to yield fewer positive reactions in country districts than similar tests made in the cities. Moreover, twice as many of the first 700 cases returned from France came from service in cities and villages as from the front. Fourteen per cent. of these returned cases were negroes, and it should be remembered that possibly not five per cent. of all the troops were colored. The mortality among negroes at the age of twenty-five had been figured in civil life to be five times greater than that of whites.

Coming now to the third lesson, that of hygienic prophylaxis, it was a fact, though a regrettable one, that the enjoyment and the employment of fresh air was not instinctive to the human race. This had been apparent in all ranks of army life. Although this was probably the most important of all prophylactic measures it was ignored to a very large extent. The men themselves huddled around stoves in shut tents in Texas, and stuffed their clothes in ventilators and port holes on transports. Nurses and ward masters kept their wards so illy ventilated that to those who had worked in outdoor tuberculosis shelters and barracks, the atmosphere was unbearable. Even medical officers of exalted rank slept with hermetically closed windows, and lastly much of the Army of Occupation housed in Germany slept and lived behind closed windows. It would seem that the campaign for fresh air had fallen largely on deaf ears and needed stimulation.

Discussion.—Colonel GEORGE E. BUSHNELL, of Washington, D. C., said he had gained the impression that Doctor Webb's idea was that the cases which did not show anatomical lesions were primary cases and that they had never come into contact with the tubercle bacilli, which was extremely improbable. It should be remembered that those that had lesions were eliminated by the draft boards. Results were not comparable in this selected class of men to the general population. It had been observed that when men of the athletic type got tuberculosis it was frequently the acute type of the disease. This was probably the result of freedom from contact with the disease. If a susceptible person was exposed to the disease he would get it in the acute form, but in the majority of army cases there had probably been a previous infection perhaps of the glands with no lesion in the lungs at the time of examination by the draft boards. In the American Army of 2,131,000 men there were only 1,220 deaths from tuberculosis up to May 1, 1919; that was 52:1,000,000, which was a small mortality.

Dr. FRANCIS M. POTTENGER, of Monrovia, Cal., considered that Colonel Bushnell had supplied the key to the situation. It was, as he said, quite possible to have a very small focus or no focus at all in the lungs and yet have enormously enlarged glands. It was hardly possible that the acute type of infection seen in the army was a new infection for it was not likely that these men had not come in contact at some time in their lives with the tubercle bacilli. The danger of infection from one adult to another was extremely slight, since most adults had previously suffered from infection, and

it was important that this be known from the viewpoint of phthisiophobia. The development of an enormous amount of immunity could be found in advanced cases of tuberculosis. Millions of tubercle bacilli could pass over the mucous membranes without causing infection. The draft boards had referred to Doctor Pottenger a great many of the rejected men and he found that tuberculosis was diagnosed probably three times as often as it actually existed. Conclusions drawn from selected groups of men should not be applied to the general population.

Doctor Webb, in closing the discussion, explained that the evidence in favor of so many of the cases being primary infections was the fact that many of these men were from the country; if they had come from the city it would have been entirely different and they would have been much more likely to have harbored early infections. The pathologists who had conducted the autopsies had not forgotten to examine the lymph nodes.

Experiences in the Office of the Surgeon General.—Lieutenant Colonel CHARLES W. RICHARDSON stated that just before the declaration of war on April 6, 1917, he acted as a member of a committee of three, representing the American Otological Society, American Laryngological Association, and the American Laryngological, Rhinological and Otological Association, appointed to confer with the Surgeon Generals of the Army and Navy for the purpose of ascertaining wherein the members of these bodies could be used to the greatest advantage in these services. This committee, consisting of Dr. Harris P. Mosher of Boston, Dr. Burt G. Shurley and himself, was the second organization of specialists accepted and put into action in July, 1918, as the Section on Otolaryngology by the Medical Section of the Council of National Defense. Their activities embraced the listing of the known specialists in otolaryngology, preparing and sending to them questionnaires, and, according to the replies, maintaining a card index and files. In this way they obtained the request or consent of several hundred physicians to enter the service as members of the medical reserve corps. The officers in charge of the various divisions of the Surgeon General's Office were men distinguished in the regular army service for their organizing and administrative ability. The heads of some few of the special divisions and the assistants in all divisions were well known physicians who had been civilians. All these men lived up to what was expected of them, as was thoroughly demonstrated by the smooth running of the office and the wonderful results attained, which would only be fully known when the surgical and medical history of the war was published. The administrative work in charge of six officers with a force of about 100 civilian clerks grew until at the present time it comprised 250 officers and nearly thirteen hundred civilian employees. Under war pressure as many as 6,000 telegrams had been received in the Surgeon General's Office in a single day.

It had been the policy of the Surgeon General's Office to utilize the services of specialists as far as possible in their own medical field, and the results

of this arrangement had proved eminently satisfactory to the soldier patients as well as to the medical officers. It marked a signal advance in the administration of military medical affairs.

The Hospital Division was organized in May, 1917. It was responsible for the construction, organization, and supervision of all military hospitals, hospital trains and ships, sanitary trains, sanitary squads for lines of communication, convalescent camps and depots, and reconstruction hospitals, schools and workshops, for the after care and rehabilitation of those who had to be prepared to re-enter civil life as good social units. It accomplished its manifold objects to such purpose that in the well equipped base hospitals now in this country there were all the necessary facilities for the operative and other treatment of the most complicated cases not surpassed by the best civilian hospitals. There were 6,544 beds in army posts at the beginning of the war. At present the number in the service of the army in the United States is 79,077. In November, 1918, there were 236,000 hospital beds available in France for the American Expeditionary Forces, and 121,883 in the United States, a total of 357,883. In November, 1918, there were 193,448 cases in the American army hospitals in France of which 99,000 were due to injuries; there were 70,000 in the base hospitals in the United States on the same date.

The laboratory division had supplied all the army hospitals with equipment for the laboratory work in the treatment of acute infectious diseases and diseases of metabolism. It had also furnished the vaccines for the entire Army, Navy, and National Guard, and for the men employed in connection with army work. All these vaccines were produced at the Army Medical School. Its labors extended to the Army cantonments, where it worked in co-operation with boards of health and municipal governments.

Internal Medicine at a Base Hospital in France.

—Dr. GEORGE MORRIS PIERSOL, of Philadelphia, delivered this address. The data used for the present report was taken from the records of Base Hospital No. 20 and covered the period of that organization's active operations in France. The accomplishments of the surgeons in the recent war had perhaps naturally attracted more attention than the less spectacular but no less important work of their medical colleagues, which was also deserving of consideration. Statistics showed that in all great wars, and the recent war was no exception, more men were disabled as the result of medical conditions than surgical, and that disease was a more potent factor in the production of casualties than shell and rifle fire. As a matter of fact experiences of medical officers in France differed greatly and varied widely according to the type of work they were called upon to perform.

As the medical cases were, for the most part, transportable and very properly were rapidly evacuated to the rear, the best places to obtain an accurate idea of the scope and importance of internal medicine in the A. E. F. was at a base hospital; particularly at a base hospital located in a rear area. Here they were allowed to remain for a suf-

sufficiently long time for careful diagnosis and treatment. A total of 8,706 patients was admitted to Base Hospital No. 20. Of these 3,752 were credited to the medical section. In the military hospitals of France the patients were drawn from a selected group of able bodied, reasonably healthy young adult males, engaged in an exceedingly hazardous occupation which subjected them to unusual degrees of exposure and fatigue in conjunction with bad living conditions, and frequently and of necessity a poorly prepared and monotonous diet. The result was that they were usually suffering from acute conditions, such as infections, fatigue phenomena, and gastrointestinal disturbances. The medical cases met with in a base hospital could be divided into two main groups; first, those whose condition was directly the result of the activities of warfare, and, secondly, those who were suffering from diseases not peculiar to war but which might overtake any individual at any time.

The most conspicuous condition belonging to the first group was that resulting from the effects of various poisonous gases, 1,415 of these having been admitted to Base Hospital No. 20. Only three of these gassed cases proved fatal, although many were seriously ill. This low mortality was not surprising in view of the fact that cases of gas poisoning in the acute stage were not transportable and never got back to this hospital. Mustard gas poisoning often showed only delayed disabling manifestations and there was a better opportunity for observing these cases than was afforded by any other form of gas poisoning.

(To be concluded.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Manual of Exercises for the Correction of Speech Disorders. By MAY KIRK SCRIPTURE, B. A., Instructor in Speech, Columbia University; Director of Speech Correction, Vanderbilt Clinic, Neurological Department, College of Physicians and Surgeons, New York City; Lecturer at State University of Iowa, etc., and EUGENE JACKSON, B. A., in Charge of Speech Correction at the University and Bellevue Hospital Medical College Clinic, New York City; Teacher for the Correction of Speech Defects, New York Evening Schools. Illustrated. Philadelphia: F. A. Davis Company, 1919. Pp. xviii-236.

Educators and others interested in proper speech for children will find in this little book of some two hundred pages a rather interesting volume intended for the correction of speech defects, particularly stammering. The authors have chosen simple colloquial English for the exercises and have avoided the usual trick sentences and words which have been for so long in common use in works of this kind. Every sentence mentioned in the book has been found useful in the authors' clinics or in private practice.

The authors call attention, and, we believe, with justice, to the fact that the education of physicians in the matter of speech defects has been seriously

neglected, with the result that sufferers from speech defects have flocked to so-called "stammering schools" and "speech specialists," who are in most instances merely quacks guaranteeing cures they cannot always obtain. At the authors' clinics the usual procedure is along psychological rather than physiological lines, in addition to the benefits which are derived from respiratory gymnastics, change of environment, removal of nasal obstructions, etc. To those interested in this subject, we believe this book will prove to have distinct merit.

Urology. A Textbook of Urology in Men, Women, and Children, Including Urinary and Sexual Infections, Urethroscopy, and Cystoscopy. By VICTOR COX PEDERSON, A. M., M. D., F. A. C. S.; Major, Medical Corps, United States Army; Consulting Physician to the Selective Service Headquarters in the City of New York; Member of the Council of National Defense, New York State Committee, Medical Section; Visiting Urologist to St. Mark's Hospital; Major, Medical Reserve Corps, United States Army; Member of the Committee on Venereal Diseases of the Advisory Council of the Department of Health of New York City. Illustrated. Philadelphia: Lea & Febiger, 1919. Pp. vi-991.

The author has contributed an excellent addition to American works on urology in men and women. The book is characterized by a wealth of detail, some of which might very well have been omitted because of its elementary character. This is not a serious fault, however, for the author has gone into great detail in many instances which are usually omitted from large textbooks. Much is to be said in favor of the author's generosity in recognizing contemporary American urologists in his numerous references and quotations, a practice not common with American medical writers. The book is well printed and illustrated and on the whole represents a distinct gain to the literature on the subject.

Births, Marriages, and Deaths.

ANTILL.—In Philadelphia, Pa., on Tuesday, September 9th, Dr. Joseph V. Antill, aged sixty-six years.

BARWIS.—In Trenton, N. J., on Wednesday, September 10th, Dr. Elmer Barwis, aged sixty-nine years.

GOOTENBERG.—In Stapleton, S. I., on Friday, September 12th, Dr. David O. Gootenberg, aged thirty-two years.

GREEN.—In Longmeadow, Mass., on Thursday, September 4th, Dr. Benjamin Green, aged sixty-five years.

HAWKINS.—In Greenville, Tenn., on Monday, August 18th, Dr. W. H. Hawkins, aged fifty-eight years.

HENEBERGER.—In Washington, D. C., at the Naval Hospital, on Sunday, August 3rd, Captain Lucien G. Heneberger, Medical Corps, U. S. N., retired, aged sixty-eight years.

KASSON.—In Bath, N. Y., on Monday, September 1st, Dr. Ambrose H. Kasson, aged seventy years.

KENEFFICK.—In Lawrence, Mass., on Tuesday, September 9th, Dr. Joseph A. Kenefick, aged fifty-eight years.

MOAT.—In Philadelphia, Pa., on Friday, September 5th, Dr. William S. Moat, aged seventy-nine years.

PERRY.—In Lexington, Ill., on Monday, August 25th, Dr. Herbert Perry, aged sixty years.

PYFER.—In Norristown, Pa., on Saturday, September 6th, Dr. Howard F. Pyfer, aged forty-seven years.

RICHARDS.—In Orange, N. J., on Tuesday, September 9th, Dr. George Herbert Richards, aged fifty-six years.

SASSER.—In Memphis, Tenn., on Sunday, August 17th, Dr. J. D. Sasser, Sr., aged seventy-nine years.

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Original Communications

DIET IN DIGESTIVE DISEASES IN INFANCY.*

By J. P. CROZER GRIFFITH, M. D.,
Philadelphia,

Professor of Pediatrics, University of Pennsylvania.

This is a subject which in theory might be called easy, based on the assumption that we understand thoroughly the chemical composition of the diet and just how it acts in the gastrointestinal canal. In its practical application, however, the matter is often extremely difficult. We do not yet understand thoroughly all the physiological processes connected with digestion, and we have to deal, in addition, with the individuality of the patient. The prompt response we obtain in one infant following dietetic treatment fails to appear in another who apparently is suffering from similar symptoms. The topic is a very comprehensive one, and can be reviewed only superficially here, with an effort to touch upon certain salient points in selected subjects. We shall therefore discuss the following disorders only: 1, Acute gastric indigestion; 2, acute diarrhea; 3, acute gastroenteric intoxication; 4, ileocolitis; 5, chronic gastric indigestion; 6, chronic intestinal indigestion. Some consideration must be given to the causes of these, in order to enable us to discuss the diet intelligently.

Acute gastric indigestion.—As a matter of convenience we may include acute gastritis in this classification. Although theoretically different, in that indigestion is a purely functional disturbance while gastritis has the element of inflammation added, clinically it is difficult to establish any sharp distinction. The causes may be mechanical or chemical. The infant may have received too large a quantity of milk, or the food may have been chemically unsuitable, possibly because changes have taken place in it before it was ingested, or because the composition of the milk mixture may have been entirely faulty. Sometimes attempts have been made to give the child food to which it had been entirely unaccustomed. In any event, the process is an acute one, and very largely local, there being, as a rule, few constitutional symptoms except the occurrence of fever. The chief symptoms are vomiting and abdominal pain, and later, if the irritating substance has passed into the intestine, diarrhea. The dietetic treatment is usually simple.

*Part of a symposium read before the Northeastern Branch of the Philadelphia County Medical Society.

Since food has caused the difficulty and the condition has become one in which there is a temporary loss of power to digest anything, the entire cessation of all food is imperative. No food whatever should be given for at least twenty-four hours, with the exception of barley water, which is really no better than ordinary water, but is more satisfactory to the mind of the mother. Indeed, if the vomiting is very obstinate, it may even be better to withhold water altogether, and give any liquid which is required by way of the rectum. After the attack has subsided, barley water may be continued, or small quantities of albumen water or fat free broths given frequently. Then a return may be made to the ordinary diet by way of diluted skimmed milk, the fat of the food often not being well tolerated in this condition. If there remains difficulty in digesting milk, concentrated amylaceous gruels may be used for a time, avoiding such as oatmeal, and selecting rather one of rice or arrowroot. The important matter is that there should be no hurry in returning to the ordinary food, since the child was presumably in perfectly good health before the attack, and therefore can well stand a little starvation. Too much haste may bring on more serious trouble.

2. *Acute diarrhea.*—The causes of this condition are much the same as those of acute gastric indigestion. In fact, acute diarrhea is often a sequel to acute gastric indigestion, though it is likely to give more trouble on account of being more prolonged. Should diarrhea occur, an inspection of the stools may aid in the selection of the proper diet. If the stools contain curdy masses in a greenish or yellowish watery fluid, with a small amount of mucus, we may reasonably infer that the fat is not being digested. If they are sour smelling and often fermented in character, causing excoriation of the buttocks, there is too much carbohydrate which is undergoing an acid fermentation. If they have a decidedly offensive odor, protein decomposition is going on. We must remember, however, that when albumen water is being administered an offensive odor to the stools is nearly always produced. The same dietetic management should be employed as in acute gastric indigestion, having, however, the character of the stools in view. It is particularly important to be slow in getting back to a milk diet. Milk, which seems to be the natural food for an infant, becomes often one of the most dangerous

when disturbances of the gastroenteric tract are present.

3. *Acute gastroenteric intoxication.*—This is a much more severe type of gastrointestinal disorder, in which in contradistinction to the diseases already mentioned we have the element of decomposition of the tissues due to the toxemia. The local symptoms are important, but the constitutional ones are still more so, and much more dangerous. The disorder may develop primarily or may follow an ordinary diarrheal disturbance. Whether the multiplication of bacteria which are found in the intestine is the cause or the result is uncertain. My own positive belief is that the influence of bacteria as a causative element can by no means be eliminated. The fever here is of longer duration than in the first two diseases, and is accompanied by the usual toxic symptoms of prostration, sunken eyes, and even unconsciousness or convulsions. Vomiting does not usually continue long, if, indeed, it has occurred at all. It is quite possible for this disease to arise without the development of any diarrhea whatever, in fact, as diarrhea begins, the constitutional symptoms are prone to subside. In another form diarrheal stools become very frequent and of a serous nature, and the condition is classed as one of the subvariety, cholera infantum.

The great desideratum in the treatment of gastroenteric intoxication is not to allow it to occur. Weaning in summer time should be avoided if this is in any way possible. If acute gastric indigestion or acute diarrhea develops, treatment of the attack must be prompt and thorough, and starvation continued long enough to insure that gastroenteric intoxication does not occur as a sequel. Every care possible should be taken to prevent bacterial contamination of the food. The milk, even the best, should always be pasteurized at home during hot weather; and during this period, too, the quantity and the strength of the food had better be diminished, even though there is a temporary cessation in the gain in weight. The dietetic treatment of the attack itself is very similar to that outlined; and the return to the ordinary food must be very slow. In the meantime, however, it is essential that the infant receive an abundance of water, to prevent drying of the tissues as well as the production of an acidosis, both of which are probably prominent factors in bringing about the toxic symptoms. It is only where the children are already marantic from previous illness that one must be cautious in too prolonged a starvation. Sometimes nourishment may be administered in the form of glucose by the rectum in five per cent solution, since this is readily absorbable. The return to the ordinary diet may be made by means of broths, thickened with a starchy substance. Where there is little appetite, and not sufficient food is taken, concentrated cereal decoctions in the form of gruel serve a good purpose. They are often retained and digested when milk would not be well borne. One cannot continue too long upon a diet solely of this nature, lest edema develop through the absence of other articles of food. Again I would emphasize that it is important, even more so than in the diseases previously described, to be extremely slow and careful

in returning to milk; but at the same time the food must be administered as the days go by in a sufficiently concentrated state and in sufficient amount to give the child the necessary nourishment.

4. *Acute ileocolitis.*—The fact that this is an inflammatory disease must be borne in mind, otherwise the persistence of fever, which is one of the symptoms, might lead us to do without food for too great a length of time, on the ground that the child still showed evidences of toxemia. The condition is not a toxic but an inflammatory one. Its characteristic symptoms are not the loss of large quantities of liquid from the body, but the frequent passage of small mucous stools with straining. The disease may develop as a primary one, but is oftener a sequel to some of the other conditions described. Consequently no starvation period is required. Dietetic management is, however, of the greatest importance. Milk should be entirely avoided at first and possibly even throughout the whole attack. However, as the disorder is one which is always somewhat prolonged, lasting several weeks at least, it is necessary to see from the beginning that the infant takes sufficient food. This is sometimes a difficult matter, as the appetite is often much impaired. In place of the milk, broths may be used, bearing in mind, however, that an ordinary strained, clear broth gives no nourishment whatever, and to make it of any value it must be well thickened with some starchy substance, and often be allowed to contain the meat fibre which has been well broken up by thorough, prolonged cooking. Strong gruels may also be employed, and may sometimes be dextrinized with advantage. One must remember, however, that both broths and dextrinized foods are sometimes capable of increasing diarrhea. Albumen water may be employed to supply the protein which is needed and scraped beef may also be of service. Finally one may return to a milk diet by the use of whey, skimmed milk, peptonized skimmed milk, casein milk, buttermilk, and the like. All these have the advantage of being comparatively free from fat, which is often not well tolerated by infants suffering from gastrointestinal disturbances. Only trial can determine which of them will be best suited to the individual case. Frequently the food is best administered in small amounts at short intervals. In other cases this seems to increase the peristalsis of the intestine, and larger amounts at longer intervals are to be preferred. It may be months before the infant can return in full to the ordinary diet, since relapses are brought about very readily by any indiscretion.

5. *Chronic gastric indigestion.*—This condition is the cause of the troublesome vomiting cases in infancy. The disease is usually a sequel to one or more attacks of acute gastric indigestion from which recovery has not been satisfactory. It is very often brought about, too, by the continued use of a milk mixture which is not suitable for the infant. Very frequently, indeed, the fat of the food is in too large an amount. In other cases a diet is being administered which contains substances other than milk, entirely unsuitable for the child. Various constitutional diseases, such as rickets and tuberculosis, are powerful predisposing factors. The

study of all these causes is very important in determining the nature of the treatment, and it is imperative, too, to make sure that some other cause than indigestion is not operative. The most important symptom is the frequently repeated vomiting which interferes with the retention of food sufficient to allow the child to progress in weight. More or less mucus may be present in the vomitus in cases which are at all long continued.

It is very important in this connection, before determining upon the diet and other treatment, to be sure that the case is actually one of chronic indigestion and not of some other disease. The infant may, for instance, be suffering from pyloric stenosis; or the vomiting may be of a nervous nature or of a habit vomiting character. It may be that the infant is fed too large amounts of food, and that nothing at all is wrong with the composition of it. If all these matters are eliminated, we then have to study the character of the food given. As a rule we first suspect that it is too rich in fats, and after this that the sugar may be in excess. The protein is usually borne better. The determination is an experimental one. First, the fat should be reduced and for this purpose a buttermilk mixture is very serviceable. This consists of buttermilk fortified by the addition of wheat flour and sugar in quite considerable amount, raising the total carbohydrate to possibly ten or eleven per cent. If vomiting continues in spite of this, I have sometimes had very good results from reducing very decidedly the amount of sugar present. In other cases casein milk is borne very well. In these the fat is somewhat reduced, and the salts and sugar very decidedly so. In order to make the child thrive upon this for any length of time the addition of sugar in some form is necessary. Malt soup mixtures often are very serviceable. In this the fat is reduced a good deal, although not so much, of course, as in buttermilk, and the wheat flour has been added. Both in this and in buttermilk the presence of unconverted starch serves a good purpose. In some way, probably mechanically, it aids very greatly in the digestion of the other elements of the food. The presence of a large proportion of carbohydrate certainly aids in the digestion of the protein, and probably also of the fat. Some infants exhibit for quite a while an entire intolerance for milk in any form. In such cases I have had at times good results from the administration of concentrated amylaceous gruels, and of these arrowroot seems to be particularly serviceable. This contains about ninety-five per cent. of starch, and it is necessary after a time to furnish other ingredients, especially protein in some form, to prevent damage coming from the extensive employment of a starchy food.

6. *Chronic intestinal indigestion.*—This is a very common and exceedingly troublesome disease. It may be associated with chronic gastric indigestion, or occur alone. It may be brought about by poor hygienic surroundings, be a congenital constitutional debility, or may follow an acute ileocolitis; but of all factors most frequent is the continued employment of an unsuitable diet. All the causes here are operative which are seen in chronic gastric indiges-

tion. Just what these dietetic causes may be is important but often difficult to determine. Formerly the blame was attached to an excess of protein. Now the disposition is to attribute it to the whey, the carbohydrate, or the fat. In fact, every element of the food has been blamed. The addition of untransformed carbohydrate to the milk mixture is a cause in some cases, while in other instances it appears to be of distinct benefit. Many of the proprietary infant foods would seem to be harmful. It is important to realize, too, that the trouble may not be purely in the intestine itself, although primarily so, so much as due to the metabolic processes in the tissues.

The symptoms vary with the case. In some there is constant diarrhea, with watery, greenish, and sometimes curdy stools. If there is a large amount of mucus present it is probable that a chronic ileocolitis of mild grade has developed. If there is but a small amount, then the disturbance is largely functional. In other cases the stools are diarrheal only at times, but for the most part are pasty and of the soap stool character. Here the fats are clearly not being digested. Vomiting may occur occasionally, or not at all. The appetite is often very good; in other cases poor. The principal symptom is a steadily increasing malnutrition. The impairment of health seems out of proportion to the visible gastrointestinal manifestations. With this preamble it may be readily seen how difficult the dietetic treatment in such cases must be, since we are often so little able to come to a positive conclusion regarding the exact cause of the disturbance. It is necessary to obtain a very detailed history of the previous life of the infant so far as the matter of its diet is concerned. This may show us what fault in the food originally caused the trouble or has maintained it. Then the degree of digestion of the food which is being given must be determined by an examination of the stools. We are now in a better position to institute a proper dietetic treatment.

A word ought to have been said regarding prophylaxis. It is very much easier to prevent the occurrence of chronic intestinal indigestion than it is to cure it; and the most important matter here is to avoid weaning if possible. Very many mistakes are made in this connection. An infant in the first few weeks of life does not, perhaps, appear to digest thoroughly, and the physician is too often disposed to advise weaning with, what seems to me, undue haste. It is perfectly possible that a little longer continuance with breast feeding will establish a more normal secretion of milk and a better digestive power on the part of the baby. Then, too, in the instances where the breast milk is insufficient, it is far better to help out with supplemental feedings than it is to wean entirely, since the breast milk, as far as it goes, supplies elements which the cow's milk does not contain. In severe cases of disease in babies who have been artificially fed, often the best procedure is the prompt obtaining of a wet nurse. Should this not be possible, however, or for any reason inadvisable, we are obliged to content ourselves with proper modifications of the diet. If an acute exacerbation of the symptoms

be present at the time, we may begin with a temporary partial starvation, using a thin cereal decoction, or arrowroot water. After this the nature of the diet will be determined to some extent by the nature of the stools. The characters of these in disease have already been referred to in discussing acute diarrhea. The fat is most often at fault; the carbohydrate if the stools are very liquid and of an acid character. In the event of the first we may begin with a skimmed milk mixture, or, better still, buttermilk. The presence of lactic acid in the buttermilk seems to have a decidedly beneficial effect, since I have repeatedly found that food of a similar percentage strength in its ingredients, but made from skimmed milk, is not as well tolerated, and the infant does not grow as well upon it. Casein milk without the addition of sugar is often very serviceable when there is indigestion of the sugar as well as of the fat; the large protein element apparently being well tolerated. It is also to be noted here that there is often a distinct difference in the digestibility of the sugars, and that sometimes saccharose or a dextrin maltose preparation will be borne better than lactose. It is not infrequently observed, too, that unconverted starch is tolerated better than is sugar; and in cases where milk is not borne at all, the diet may sometimes consist very largely of amylaceous substances. It is perhaps for this reason that various malt soup preparations are frequently digested so well. Caution must be observed, however, that the tendency to diarrhea is not increased. Such an occurrence does not mean necessarily that these preparations must be abandoned, since suitable medication may relieve the trouble. Sometimes whey is extremely useful as a temporary food. Its caloric value, however, is not great enough for any long continued employment of it.

With regard to all these substitutes for the ordinary diet, it should be borne in mind that they are but substitutes, and that in most cases it is wise to return as soon as convenient to a regular milk mixture suitable for the condition of the child. There should, however, be no undue hurry about this, and it is perfectly possible to feed an infant satisfactorily on a buttermilk mixture or malt soup for months at a time. Indeed, if the child is found to be thriving on it, there is really no reason for a change at all until the age of a year is reached, when the ordinary diet for that age may be instituted. All this must be determined in the individual case.

The matter of the dilution of the food and the frequency of administration is also important. Some children do better when the food is concentrated; others when it is more diluted, although the total number of calories may be the same. Only a trial can show which is the best in the particular case. Then, too, the mutual influence which the various food elements exercise upon each other is of importance. The protein and the fat, for instance, may be made more digestible if a high carbohydrate content is present; and it is possible, as Finkelstein asserts, that the fat is better tolerated if the whey, with its contained salts and sugar, is reduced. As a rule proprietary foods are to be

avoided. They serve no good purpose whatever, contain nothing which cannot be prepared at home, and add decidedly to the expense of the household.

What has been said constitutes a brief review of some of the dietetic principles to be followed in the treatment of the digestive disorders of infancy. No reference has been made to other measures, such as lavage of the stomach and intestine, general hygiene, employment of drugs, and the like, not because they are unimportant, but because the topic assigned to me precludes any direct reference to them.

1810 SPRUCE STREET.

MEDICAL THEORY AND PRACTICE OF AN EIGHTEENTH CENTURY DOCTOR OF DIVINITY.

By WILLIAM RENWICK RIDDELL, LL. D.,
Toronto.

The history of medicine has been presented in many interesting volumes and in several languages, but neither the English Greenhill or Creighton, the French Littré, nor the German Hirsch or Baas has fully exhausted the subject, for the subject, like all else which goes to the very basis of our humanity, is inexhaustible. None of these writers has paid much attention to the outsider, the self taught person who, without medical education or training, often engaged in some trade or occupation, by his own unaided genius with or without observation, has discovered a panacea for all physical ills. These curealls range from caustic poison like St. John Long's arsenical plaster for cancer, through the comparatively mild lobelia of Samuel Thomson and the euphorbium purpureum of Joe Pye (Joe Pye's weed) to the harmless tar water of Bishop Berkeley.

One of the last named class was the discovery (as he thought) of the Reverend John Hancocke, D. D., Rector of St. Margaret's, Lothbury, London, prebendary of Canterbury, who in the early part of the eighteenth century published it to the world in a 12mo volume at the modest price of 1 shilling. This little book (1) ran to at least six editions, the sixth being dated 1723.

Hancocke, though apparently unknown to the biographers, did not confine himself to writing on medicine: he advertises for the small price of 1 shilling a work vindicating the Antenicene Fathers from the imputation of being favorable to the Arian Heresy (2).

The reverend author in his medical work places on his title page the desideratum for which Archibald Pitcairn sought all his life "A medicine to be desired which will speedily remove the rareness of the blood and reduce its motion without evil symptoms following." Then he writes "Heureka" (3) and follows this up by the celebrated initial verse of Pindar's first Olympian Ode, *Ariston men hudor*, adding the well known lines of Persius on the uselessness of applying remedies too late, *Venienti occurrere morbo*.

These quotations (in the original Latin and

Greek be it said) give the keynote to Dr. Hancocke's book.

Pindar by his simple words, "Water is the best," probably meant no more than to emphasize the merits of water as the source and sustenance of life, though his early commentators considered that he had in mind, and not obscurely hinted at his belief in, the theory of Thales that water was the first cause of all things, from which earth, air, and fire successively came as secondary elements by transformation and evolution, rather than that of Heraclitus, "the weeping philosopher," who assumed fire as the primal matter.

However that may be, Dr. Hancocke's proposition is that he had discovered in common water the medicine for which Pitcairn sought in vain—the great febrifuge: he is quite certain that it will cure all kinds of fever, tertian, quartan, scarlet fever, measles, cholera, probably smallpox; but it grieves him to admit that he is not sure of the gout. This, however, he should not have taken so much to heart; gout was the reproach of the profession, and to the challenge, "Physician, heal thyself," the unfortunate afflicted with the gout could not effectively respond. That gout was the reproach of the profession was the saying of the great Sydenham himself—Sydenham, who notwithstanding his addiction to copious and frequent bleeding (4) saved by precept and example thousands of lives. Yet even he, afflicted with gout from his thirtieth year, and living a sufferer for more than thirty more, wrote his celebrated description of the gout, a classic in its way, still unsurpassed in clearness of style and vision, and bemoaned his helplessness to cure it. Hancocke did not rush into print without long preparation and much experience; nor was he an ignorant man as learning was then understood. During the first seven years of his studies he read as much of the various branches of "physick" as most who did intend to practise it, and had a pretty good collection of the authors then most in vogue. But he took orders, and for nearly thirty years he never looked at these books; he gave them all away to his son, who was a practising physician. To obtain a degree in medicine or "physick" in those days, one was required to be a Latin scholar—it is said that the first medical lectures in English were by Cullen in 1770.

From internal evidence, it would seem that his books comprised—for he seems to have read—Archibald Pitcairn (5), the works of Thomas Willis of Oxford and London (also physician to Charles II), who was the first to distinguish diabetes mellitus; Van Helmont's works, probably in the edition of Dr. Walter Charleton (6) (1650), who attended Hancocke for a "consumption" (7), (Hancocke seems well acquainted with Van Helmont's odd theory of the "Archæus" presiding over the different parts of the body and their functions); the works of Mich. Ettmüller, of Leipsic (of the Chemical School), whose doctrine was that fever is a false crisis of the blood; Giovanni Borelli, of Naples; Lorenzo Bellini, of Florence; the celebrated Marcello Malpighi (discoverer of the blood corpuscles and remembered by every medical student from the Malpighian vesicles); Georgio Bag-

livi, of Rome; the famous Daniel Sennert (who wavered between the chemical doctrines of Galen and Paracelsus); Isband van Dimmerbroeck, of Utrecht; Lazar La Rivière, of Montpellier, (Riverius of the *Potio Riverii*); the Honorable Robert Boyle, chemist and natural philosopher, who opposed the Iatrochemical School on chemical grounds, but whose sure passport to eternal fame is his discovery of Boyle's Law of the relation between the elasticity and pressure in a gas.

Hancocke quotes from all of these and from others of less note, but he claims that from none of them did he receive any hint of his own great discovery.

Within a year of taking orders he became curate in a parish containing a pretty large market town in which the common mortality was about three hundred, when (as often was the case) fevers or smallpox were epidemical, rising to four hundred or more. He was called upon frequently to visit those in fevers; and he observed that even when a physician was sent for early, and bleeding, vomiting, and sweating were "one would think not too late," yet the fever went on, got head; and often proved mortal. Notwithstanding the frequent failure of sweating, and for some reason which he cannot explain, he formed the opinion that sudorifics were the most proper cure for fevers—"That fancy running in my head," as he says, having a very violent cough, accompanied by jaundice and fever, he was advised by a friend to take a little powder of yellow amber in half a pint of cold water; he did so and the cough stopped at once. He thought that it could not be the amber but it must be the water that had this instantaneous effect; and some hours after when the cough began to be troublesome again, he took half a pint of cold water without the amber and found it had the same effect. When he went to bed he drank a glass of water, he slept well and woke in a "fine easy gentle sweat"; repeating the treatment the following day and the day after, he found himself both mornings "in a gentle sweat and still better." "And the fourth morning was not in any sweat at all and was well, the cough, the fever, and jaundice gone."

"Heureka!"—he had found the right sudorific—the "phlegm" which he had "got up in considerable quantities, as black as my hat" was a thing of the past.

His own son he cured of a fever by the same treatment, a neighbor who had contracted a "most malignant fever" of which his wife had died, was saved in the same way; a justice of the peace with cholera, many with agues—though he admits "the bark (8) is a noble medicine," every one knows that it seldom does the business in quartan agues and not always in tertian. Still he no more disparages "the bark than Doctor Pitcairne does by preferring camomile flowers before it" (Samuel Thomson (9), the founder of the Botanical School in America, it will be remembered, recommended camomile tea for bowel complaints, but that was not the English camomile). His own children he successfully treated for scarlet fever (which he considers "a less distinct form of measles"), one daughter with smallpox and one with measles.

Many cases of common colds he cured in that way, some of pleurisy, quinsy (or "squintancy"), miliary fevers, which he considers "a kind of imperfect smallpox," and asthma, whether dyspnea or orthopnea (it must be remembered that asthma was then a very broad term—when William Heberdin, of London, in 1766 first described angina pectoris, it was called asthma Heberdenii—also cholera morbus, cholick, bleeding at the nose, rheumatism, etc., and he believes that the same treatment would be effective with the plague.

After he had perfected his system he read at least cursorily Sydenham's *Methodus Curandi Febres* but not his epoch making *Observationes Medicae* (1676); Richard Mead's works; John Freind's *Hippocrates de Morb. Vulg.* (Freind was the first real historian of medicine in England—of him and Mead is told the story of one of the most creditable episodes in the long history of medical men. Freind was a friend of Bishop Atterbury and in 1713 as a member of the House of Commons, spoke against his imprisonment; thereupon Sir Robert Walpole caused Freind to be placed in the Tower. Walpole being ill sent for Mead to attend him, but Mead, though opposed in almost every particular to Freind's theory and practice of medicine refused to attend Walpole until Freind should be released)—Walter Harris's *De Peste Dissertatio* (1721) he quotes as *Harris's Latin Book on the Plague*.

Of George Cheyne's (he calls him Chene) (10) works on vegetarianism, etc., he had some knowledge, but Cheyne's most important work, *An Essay of Health and Long Life*, he did not know as it did not appear till 1724. (Cheyne was one of the first of English writers on private hygiene, he advocated vegetarianism and may be considered the original hydrotherapist—he lived sixteen years on bread and milk alone.) Herman Van der Heyden's work *De Aqua frigida, Sero Lactis et Aceto* (of Cold Water, Whey and Vinegar) he procured after twenty years' search; he quotes from Sir Richard Blackmore (it was Blackmore who, enquiring of Sydenham a good guide in practice, received the answer "Don Quixote"—Sydenham did not much believe in mere book study or indeed in drugs—he declared that the arrival of a good clown would do more for the health of a city than that of twenty asses laden with drugs) and other contemporaries.

Of the success of Hancocke's praxis there can be no doubt—the real reason being that *vis medicatrix naturæ* was not interfered with—something most of the regular profession had not yet learned—it was no empiric or other outsider but a high pundit in the regular profession who boldly asserted that the practitioners of medicine had done more harm than good, killed more than they cured. One would make no serious error if he said this was true until well within a century back.

At the time of Hancocke, as for some decades before, a war was raging between the Iatrochemical and the Iatromathematical (Iatromechanical or Iatrophysical) schools. Speaking very generally, it may be said that the theory of the Iatrochemicals was that health consists in the undisturbed performance of the processes of fermentation within

the body without the appearance of acid or alkaline salt; the theory of the Iatromathematicals considered health to consist in the undisturbed performance of mechanical and physical processes—the former school held that fevers were the result of the formation in the blood of an acid or acrid humor which caused an excessive action of the muscles of the heart; the latter, the result of a retarded motion of the blood due to thickening and the friction of corpuscles. Again speaking generally, both schools believed that the immediate cause of fevers was thickening (11) of the blood, viscosity, grumosity which retarded its flow. By what seems now an extraordinary process of reasoning it was considered that bleeding would reduce this viscosity; six, eight, ten ounces and even more being often taken and that repeatedly; vomiting and purging were supposed to have the like effect, and by most practitioners sudorifics were highly approved. But the sudorifics most in vogue were composed of the "hottest simples" and intended to act not only in producing perspiration but also as cardiacs to strengthen the overworked heart and alexiterials or alexipharmics, to resist and quell the supposed poison and malignity caused by the corruption of the blood. These alexipharmics, Doctor Willis, however, thought actually increased the fever and Doctor Mead was not orthodox when he discouraged the use of hot sudorifics and cordials in the plague and advised an infusion of Virginian snake-root (12) diluted in a quantity of common water. Though Sydenham, Freind and others were opposed to the excessive use of hot cordials and similar concoctions, no one seems to have hit upon the use of plain cold water. The practice had indeed been known to Hippocrates and other ancients but had long been abandoned by the Faculty. Hancocke points out that the administration of water will reduce the viscosity of the blood and promote its circulation; while as to alexipharmics, the poison in the blood caused by corrupted juices which sometimes raised the violent fevers "to that degree of putrefaction as to be as bad as the poison of toads or serpents" may best be rendered harmless by being diluted with innocent water. His remarks on Van Helmont's theory of fevers are sufficiently amusing. "I had indeed forgot to except Van Helmont's fanciful account of the Cause of Fever, his Archæus that inhabits in the upper orifice of the stomach, and when any thing offends him, like a surly master or a scolding mistress in a family, sets all in a flame, and disturbs the whole animal economy, that is, causes a fever. But if there be such a testy old gentleman in the mouth of the stomach I have found if you put him to bed and pour a pint of cold water on his head he will be quiet as a lamb."

He insists that cold water is better than any other drink, "Sack whey, small beer or small beer posset drink (I say small beer posset drink for that with strong beer is dangerous) or any other liquid"—not excepting the ptisane which Van der Heyden recommends. Confidently asserting the superiority of cold water as a sudorific he warns against the use of "hot sudorifics, such Methridate, Venice treacle, (13) etc.," for these unless followed by a good quantity of innocent warm liquid do more

harm than good in fevers. Not satisfied with claiming for cold water greater sudorific power than any hot sudorifics known, he asserts that it is the most powerful aperient except mercury and infinitely safer than that.

This is not all—"the Dolor Ischiadicus, the sciatica or hip gout, if taken at the beginning is cured in four or five days only by drinking cold water" and it is better for rheumatism than "brandy or Hungary water" (14). In fact he has quite the modern way of treating gout, rheumatism, sciatica and other allied complaints, give plenty of water and little else—certainly no drugs. Cold water too, whether "pump or well or river water so it be clear and sweet" though he generally used "pump water" because nearest and easiest to be had, and the New River Water (15) is often not so clear and sweet," will speedily cure erysipelas, peripneumony, pleurisy, by its sudorific effect—and surfeit "better than brandy or any of those spirituous liquors that most people use," "heart burning sooner than chalk or any of those dry absorbing earths tho' they are very good, and vomiting" but apparently not by any sudorific process. "It is good for stone tho' not to cure it, yet to prevent it or to give some ease in the paroxysm." and he is pretty sure that "hiccicks" (16) could be cured with cold water as Galen says, but he never had any experience (17).

The reverend doctor found what many of us have already discovered and more will discover after July first, that when spent and fatigued and requiring something to refresh the exhausted system, "Canary, Malaga, and Tent" (18) or "a large draught of strong ale" will not prove the most satisfactory restorative—toast bread and drown it in cold water, drink the liquid without sugar and "this will refresh more and take off any fatigue or weariness sooner than any strong wines, strong ales, small beer warmed, coffee or tea (for I have tried them all) or any other liquor than toast and water."

Leaving theories to one side, the practice laid down in this little treatise is wholly sane and two centuries ago anticipated much of the modern practice. Speaking of those who consider acrid salts as the cause of fever he holds out this warning: "Salts are dogged things, at least some of them and fevers are tickle things, and we must have a care that instead of destroying those supposed febrile salts we do not destroy something else or give such salts as instead of destroying the enemy will join with him." Then quoting one of Borelli's two methods of "tempering, moderating or destroying the noxious power and virtue of these febrile salts.

adhibito Cibo et Potu tenui et aquoso (the use of a low and nearly liquid diet and watery drink)" he says "no drink can be more thin, small, weak, and watery than water itself. Every body thinks water to be the best imbiber and dissolver of salts."

And so we take leave of this entertaining writer of Hanoverian times. I adopt for myself *mutatis mutandis* his modest closing words. "I confess it is a little out of my way to write on physick, but I am not the first man that has writ a book of a subject he knows little of. And if any of the profession that censure me for this, will write a good book in divinity or morality (as some of 'em have lately

done very good ones) I shall not think they intrude upon my profession, I will buy it, and read it, and thank 'em for it."

OSGOODE HALL.

BIBLIOGRAPHY.

1. My edition is the Sixth, 1723: "Febrifugum Magnum/ or/ Common Water/ the best/ Cure for Fevers/ and probably for the/ Plague/ By John Hancocke, D.D., Rector of St./ Margaret's Lothbury, London, Prebenda/ ry of Canterbury, and Chaplain to his Grace/ the Duke of Bedford/ . . . The Sixth Edition/ London/ Printed for R. Halsby in St. Michael's Church/ Porch, Cornhill; and sold for J. Roberts, near/ the Oxford-Arms in Warwick Lane. MDCCLXXXIII. Price One Shilling." It is a 12mo IV, 3-108 pp., bound with the Fourth Edition of work by John Smith, C.M. (Master of Surgery), on the Curiosities of Common Water, London, 1723, of little value. The binding is of beautiful contemporary calf, somewhat elaborately tooled: the bookplate of Richard Law, equally unknown to fame, is inserted, the motto *Cano Iustitiam*.

2. "Arianism not the Primitive Christianity."

3. Generally but incorrectly written *Eureka*. Greek for "I have found it."

4. The persistence of the practice of bleeding is one of the mysteries of the profession; a little over half a century ago bleeding was resorted to on all occasions—popular literature was full of such statements as "Fortunately a surgeon was near and by prompt and copious bleeding saved this valuable life." In the *Canada Lancet* for January, 1891, I have an article, Medical Slander Case Eighty-five Years Ago, describing an action by a medical man who had drawn five quarts of blood from a young girl; this was sworn to as good practice.

My old preceptor, Dr. Richard Hare Clark, who has as much to do as any other single agency in causing the abandonment of bleeding in Ontario (Upper Canada), retained the practice himself in certain cases of insanity.

5. PITCAIRN, ARCHIBALD: *Dissertatio de Curatione Febrilium*, 1695.

6. RIDDELL: See NEW YORK MEDICAL JOURNAL, March 2, 1912, A Seventeenth Century Surgeon and His Fee.

7. The name consumption was applied in recent years to pulmonary consumption, phthisis pulmonalis—it has been only within the last half century that the name tuberculosis has acquired any vogue—within forty-five years I recall my preceptor, Dr. William Wade, exciting derision in some older members of the profession by using the term tuberculosis after his return from St. Thomas's, London. In the seventeenth and eighteenth centuries the word consumption had a very large meaning—it may interest some at the present time to read the definition about the time of Hancocke. William Salmon (1644-1713), perhaps the most prolific medical writer in the latter part of the seventeenth and the early part of the eighteenth centuries (the author of *The New London Dispensary* (1678) published a work called *The Practice of Physic* (1707). In that work, which had a wide circulation, and which was in reality but a translation into English of Sydenham's *Processus Integri*, four species of consumption are described. The first is that "which is called in Latin, *Atrophia* and *Consumptio*; in English, a *consumption*, *pining* or *wasting* of the whole body . . . which is without any ulceration of the lungs"; the second "is called in Latin *Phthisis*, and *Viceratio* vel *Vicus Pulmonis*. An *Ulcer of the Lungs*; by reason of which the whole body wastes also and consumes"; the third "is called in Latin, *Hectica* . . . an Hectick or melting Consumption, which by continual preternatural heat, melts away, as it were, and so consumes the whole body"; the fourth "is called in Latin, *Consumptio Symptomatica*, a symptomatic Consumption, or that which proceeds from some other disease."

8. Of course, cinchona—quinine sulphate—had not yet been discovered.

9. On Thompson's Pharmacopoeia see my articles, Botanic Family Physician, NEW YORK MEDICAL JOURNAL, September 13, 1915; Pharmacopoeia of a Botanical Physician, *Canadian Journal of Medicine and Surgery*; The Pharmacopoeia of an Early Botanical Physician, *Botanical Society, Edinburgh*, November 13, 1913, and Pharmacopoeia

of a Botanical Physician Later, *Botanical Society, Edinburgh*, January 14, 1915.

10. John Wesley, another divine who launched forth into medicine, called him Chyne, *Wesley's System of Medicine*, NEW YORK MEDICAL JOURNAL, January 10, 1914.

11. One must speak very generally; almost every medical author of note had a modification of the general theories or even some special theory of his own; for example: William Cole, of Bristol, about 1675, a follower in part of Sylvius and Willis (Introchemical School) thought fever was caused by a deposit of abnormal material upon the nerve roots, differences in the material occasioning modifications in the disease, while George Cheyne (1671-1743), an iatromathematician, deduced ordinary fever from a stoppage of the glands and lingering fever from atony of the glands.

12. Samuel Thomson used snakeroot for a "Tea for measles and other eruptions to keep the disorder out," also "for all nervous complaints."—See note 7, supra.

13. I had written a full note on this remedy, but finding the following in a popular magazine, I copy it as sufficiently full and accurate:

"Mithradatum was the name of the great antidote of Roman Pharmacy. It had from forty to fifty vegetable ingredients, few of which had any real medicinal value except opium, and these drugs were blended with honey. It remained for Nero's physician, Andromachus, to put the finishing touches to this wonderful compound. Andromachus added viper's flesh to the formula, and called his new compound Theriaca. He wrote many verses dedicated to Nero, describing this medicine, and claiming virtues for it. . . . Evidently he believed that he had created in this one compound a veritable pharmaceutical monopoly. Galen, one of the fathers of medicine, went even further. He recommended it as a cure for all poisons, bites, headaches, vertigo, deafness, epilepsy, apoplexy, dimness of sight, loss of voice, asthma, coughs, spitting of blood, tightness of breath, colic, the iliac passion (appendicitis), jaundice, hardening of the spleen, stone, fevers, dropsy, leprosy, melancholy, all pestilences, etc. As Galen's writings dominated medical thought for one thousand five hundred years, it is not surprising that this advertisement made Mithradatum, or Theriaca, a valued remedy. Every physician of note for centuries afterwards claimed some improvement of the original formula." It was called Mithridate (or Methridate) from being supposed to be based upon the medicines which Mithridates VI, the celebrated King of Epirus, took as a prophylactic against poison. Some of the modifications or improvements of this original medicine were sufficiently extraordinary; one very famous physician, Pietro Andrea Mattioli (Mathiolus), of Florence, 1501-1577, put six score, 120, ingredients in his elixir. It was called *Theriaca* or *Theriac* from the Greek *Ther* or *Therion*, a wild beast, as it was considered a specific against poisonous bites of beasts and serpents, and from its great improver *Theriaca Andromachi*. Through a corruption of the old French it became known in English as *Treacle*—from its supposed place of manufacture it was called *Theriaca Venetiana* or *Venice Treacle* (See "The Sister Profession," *Canadian Journal of Medicine and Surgery*, July, 1912).

Complaints were always being made that the Real Venice Treacle was not supplied by the apothecaries, the fact seeming to be that every physician, surgeon and apothecary made a nauseous mixture after his own formula and called it Venice Treacle, a species of fraud unknown to our own modern druggists, who never palm off something "just as good."

14. Not Hunyadi Janos Water but a cordial or liqueur made from Rosemary flowers infused in rectified spirits of wine (i. e., considerably overproof) and then distilled.

15. The New River is the water conduit built to supply part of London with water from springs in Hertfordshire; it was built under the authority of the Act of 1605 (3 James I. c. 18), begun 1609 by Sir Hugh Myddelton, finished in 1613, and is still in active operation. Until a comparatively short time ago the implied reflection on the water of the New River was quite well deserved; it is now, however, excellent, much better than any "Pump or Well" water.

16. What is meant by Hecticks will be seen from the quotation from Salmon in Note 5, supra.

17. It may be worth while to quote some of Hancoccke's remarks concerning the Plague:

"All Physicians confess, there is no Specifick yet found out that will certainly take off and cure the plague. And 'tis no great Wonder, when Dr. Pitcairne proposes it, as a *desideratum* in Physick, to find out some Remedy that would at once take off a Fever. *Etmuller* says, there is no Specifick unless we may reckon dry'd Toad, or *Camphire* to be so. As to the first, Van Helmont seems to have an opinion of it: And says, he learnt it off one *Bulter*, an *Irish* physician, who pretended to have cured many with it. But he could not thoroughly learn the Secret, because the Man was banished soon after. I suppose this Remedy has been used so seldom, that if any that used it, either escaped the Plague, or did well with it, presently this was the Cause, tho' it might be purely accidental; for as bad a Distemper as the Plague is, some will escape having it, tho' they should do nothing either to prevent or cure it. Not to say, that one would think, when the Toad lies so near the Heart, the Heart should be likelier to attract the poisonous Particles from the Toad, than the Toad from the Heart.

"As to *Camphire*, tho' it is mightily extoll'd as a most powerful Diaphoretick, yet I never find it prescribed alone either in the Plague, or any other Fevers. And it is of so piercing and searching a nature, as those that write of Simples assert, that it will diffuse itself even through the solid Parts, as soon as it is warmed by the Stomach, I should think it were as good let alone as taken inwardly. And that it cannot be such a powerful Diaphoretick as is pretended, unless seconded with great plenty of liquids, which perhaps would do the Work without it. . . . Sir Rich. Blackmore says that he could never find any great effect of *Camphire*, but that it is offensive to the stomach, as most Balsams, and Balsamick Gums are. I find also the greater *Celandine* much commended. Hippocrates used *Ivy-Berries*, as also *Sulphur*. If *Sulphur* be good, I should think either *Gas of Sulphur*, or *Flower of Sulphur* boiled in water should be the best way of taking it. The latter of which I have heard will cure the most obstinate Itch without any outward Application. Whether any of these may deserve the Name of Specifick, I cannot tell. *Van Helmont* brags much of his *Mercurius Diaphoreticus*, and his *Arcanum Corallinum*; but he keeps 'em *Arcana*, for I do not find he has told us how to make 'em."

18. "Canary" is light sweet wine from the Canary Islands; "Malaga" is a white wine from Malaga in the south of Spain; "Tent" a deep red wine chiefly from Galicia, a Malaga much used as a sacramental wine. To any one tempted to indulge in any of these (except perhaps the first) the advice may be ventured which *Punch* gave those about to marry—"Don't."

REQUIREMENTS OF THE MEDICAL PROFESSION FOR MILITARY SERVICE.

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The complacent view that the final major war has been fought is as dangerous and as likely to prove false as it was five years ago. Not only should we "in peace, prepare for war" but we should do so while the lessons of the past war are fresh in our minds and while there is leisure to consider nonemergency details. In no spirit of complaint, still less of a personal nature, it is proper to consider the general subject from the standpoint of the desires of the medical profession.

1. For any future mobilization of the profession on a large scale, the principle of collective bargaining should be applied rather than that of individual dealing. The objects, however, are decidedly different from those usually connected with these terms. Such a method would secure and maintain an adequate medical force with a minimum of per-

sonal sacrifice on the part of physicians and a minimum disturbance of civilian practice. It would better solve the problem of choice between personal, family, and local duties and those of a military nature. It would do away with personal dickering as to commissions. We can remember the boy who would not play unless he could be captain. He grew up to be the medical patriot who would not serve unless he could be major. The general principle involves the establishment of a board of mediation and appeal, open to surgeons from civil life conveniently and without prejudice. Such a board would be purely advisory of course so far as the military authorities were concerned but, by its influence professionally, especially with reference to future demands for material, and politically in a proper sense, it could be efficient. The board should obviously represent the most general and representative medical organizations and should have local branches both in civilian communities and military stations of a size to warrant them. Whether it could eliminate professional and other politics and be thoroughly fair and just is a moot point.

2. In regard to rank, absolute justice, much less universal satisfaction, is impossible. On the average, the medical profession has been fairly if not generously dealt with in the past, in this particular. The personal dickering mentioned would be supplanted by a proper presentation and consideration of claims by the general professional board. While military efficiency, at least during war, requires selection rather than seniority as a basis for promotion, a reasonable degree of promotion should be assured for length of service, especially since opportunity to demonstrate ability and merit is often lacking. Jumping grades has always produced dissatisfaction in all lines of the army and should not be allowed except in the greatest emergency, but a reasonable interval between successive promotions should be required in the interests of others. So far as possible, when the available promotions are less than the number of worthy individuals, personal and local determination should give place to some general form of competitive examination. Rapid promotion of the regular staff, in time of war, is necessary on account of superior experience in executive and military matters; but, so far as practicable, promotion of volunteers should be in proportion to their numbers and should proceed to grades as high as possible but should be gauged by military service and not by previous prestige, which is inevitably a factor in initial commissions. For reasons elsewhere given, the grade of second lieutenant should be provided in the medical corps, or at least the sanitary corps, for the sake of securing assistants not fully qualified for the ordinary duties of surgeon, with opportunity for advancement on completing technical requirements. There should be no rank in mess or at other social gatherings, or as influencing technical decisions.

3. A medical man who has, in good faith, volunteered for professional service, and has been rejected for reasons not implying professional incompetency, should not be drafted for general service.

4. Examination for commission should be completed at the outset. Reexamination may properly be required at reasonable intervals as a routine or in anticipation of promotion or distinct change of duty, as for overseas service, or on account of actual manifestation of physical or other defect. But the everlasting making out of qualification cards, belated inquiries as to genealogy, psychopathic tests, and public stripping at short intervals should be discontinued.

5. Inquiries as to personal preferences, with regard to specialization, overseas service, location, etc., should either not be made at all or should be followed by a genuine inclination and workable system of complying with preferences. The general cynical opinion that these inquiries were made in order to determine individual weaknesses and with the expectation of disregarding them in assignments or even of going contrary to preferences, tends to injure the *esprit de corps*; while, if for any reason the government really needs to know individual preferences, disregard of them tends to reports of a negative or contrary nature.

6. Assignment to duty outside of the particular line of practice for which a man has fitted himself in civil life should not be made without both the consent of the individual and the determination of his fitness, unless in an emergency. On the one hand, a perfectly competent man is handicapped by attempting to discharge duties contrary to his training and tastes; on the other, mere willingness of the individual to go outside his specialty is not sufficient—for example, a dentist claiming to be an expert anesthetist, or a general medical practitioner with surgical ambitions. In both instances patients may suffer.

7. A consistent policy should be carried out with regard to periods of training. Waiver of training, except for previous training as in the National Guard, at Plattsburg, or some military academy, is, from one point of view, an unwarranted favor to an individual, but it also handicaps him in competition with those trained. The course should be definite and, as in any other school, terminated by graduation or by compulsory repetition in part or entirely, or by permission to do so as an alternative to discharge. The rigors of training camp—excessively early and long hours, lack of leisure and necessity of haste to perform personal and other tasks for which inadequate time is allowed, strain of discipline and menial work—may be considered a necessary test of physical and psychic strength and are generally well borne for a limited period, but training to a point of staleness was frequently noted. So far as colleagues could judge, neither was unduly prompt assignment to duty based on merit and ability nor inordinate delay on contrary qualities. Whether, for the probable brief duration of volunteer service, an analogy to the training of cadets for permanent service is advisable is a moot point. On the one hand, very few other professions need the hard knocks at habits of egoism as does ours; on the other hand, cadet training and discipline, combining the responsibility of officers with the status of privates, is a hard strain on men of mature years and accustomed to more or

less deference, and there is no doubt that it discouraged volunteering at a time when all but **pro-**ponents considered it most necessary.

8. Generally speaking, the precedents of the army with regard to the amount of work and leisure and personal consideration and courtesy, are reasonable and proper. Exceptions noted, outside of training camp, were due either to the general fact of being at war, to actual emergency, or to faults in carrying out a general system. Some felt that, simply on general hygienic grounds, the attempts at a high degree of efficiency by intensive effort, would have paralyzed the whole military organism if the war had been protracted to the degree anticipated or stated by the high authorities. The general spirit was to put forth the utmost effort consistent with its sustenance. Most criticisms applied to details and not general policy. For example, men who had willingly gone without sleep and had overworked to the utmost in an epidemic, resented being kept on duty at their posts, even for reasonable periods when there was no work for them to do, and still more so the sarcastic wording of the orders. In this and other instances, the criticism was made that Uncle Sam was like a school boy who had learned to add but had not got as far as subtraction. In some cases, persistent overwork was due to the ambition of subordinate commanders to produce large results with the minimum force. Apparent actual lack of surgeons was also due to the opposite tendency to hold in relative idleness as large a force as could be obtained, for the sake of some remote emergency. The idea held by some that regular army officers were mainly at fault in any of these respects, does not seem just. If anything, injudicious display of authority seems to have been the tendency of amateurs. The main thing to be kept in mind is that all criticism along these lines is based on exceptions to the general policy of the army and not on the intention of the high authorities. The faults are those of individuals and can be best corrected by the first suggestion of a board of mediation and appeal.

9. There should be a restriction of the power of subordinate commanders to extend, complicate, and distort the general published regulations. Most of the complaints of volunteer surgeons as to paper work, especially as regards prolix reports of trivial cases, repetition of histories on readmitted cases, the requirement of personal instead of deputed clerical work, contradictory and arbitrary orders as to uniform and insignia, elaborate equipment, etc., as well as the complaints considered under paragraph 8, were due to local and personal attempts to improve on a general system.

10. The system of accountability and responsibility for property, perfectly reasonable for fairly permanent establishments, with a well trained personnel, suitable buildings and properly secured places of deposit, and allowing an easy escape at the front through the endorsement "lost in action," often involved undue financial responsibility and occasionally heavy personal loss under the conditions of temporary cantonments. The individual surgeon actively engaged in the care of patients should have as little personal responsibility for

property as possible and should not be mulcted for losses unless provided with ample authority to secure the safe keeping of property.

11. The system of confidential reports by immediate superiors, while doubtless properly controlled in the Regular Army in peace by opportunities for personal acquaintance with both the critics and the criticised, is obviously liable to abuse, especially in war, not only on account of prejudice but hasty judgment. The writer, for example, while very reluctantly assisting in such a marking system, had the opportunity to see a mark previously made on himself, with regard to executive ability. The mark was fairly good, very likely better than was deserved, since there had been no opportunity to exercise such authority on the scale and in the sense of command that it has in the army. The objection to the mark was that it was made without any opportunity to know the truth and at a time when any demonstration of executive ability would have been an act of insubordination. In another instance, an officer was examined for syphilitic tares and psychic abnormalities, the only conceivable explanation being that he had formerly occupied a room near some one else who had night-mare. In several instances, more or less formal inquiries as to efficiency or conduct were postponed till anything like dependable evidence, pro or con could not be obtained, although prompt charge and trial is one of the primary points of military law whose general spirit, though severe, is eminently fair. Criticism of superiors is properly forbidden in the army, the prohibition even extending to the President, cabinet, and Congress, whom the volunteer soldier is prone to regard as political servants and open to criticism by every one. Under proper restrictions, charges may, of course, be made by an inferior against a superior. The whole problem, at least for volunteers, could best be solved by making the same rules apply in both directions, in particular by limiting criticism of an inferior to a face to face interview or to a written complaint of which he shall have a copy immediately and to which he may make a rejoinder.

12. The very frequent complaint of surgeons that they were nothing but interns was absurd so far as it implied objection to reasonable attention to patients in a ward, and whatever justification these complaints may have had has been covered in paragraphs 2, 8, and 9.

13. The problem of personal and menial service, very simply solved in the past in our army and even at present in other countries, including England, should be candidly attacked. In training camps there can be no objection to following the custom of the recent war; if anything, officers should even have personal experience in cooking and the other work of the mess. On active duty, there was more or less objection to officers performing the somewhat undignified duties connected with stoves, beds, removal of dirt, etc., but even when it was nominally done and actually paid for, many officers found it necessary to cast aside whatever false pride they may have brought from civil life. Regulations even made it difficult to secure proper help for general tasks of this kind not involving indi-

vidual officers and at least one commanding officer confessed to his officers that he was actually violating the regulations as a matter of necessity. At one station, two physicians caught in the draft as privates, volunteered to shine the writer's shoes and perform other tasks of the same kind out of gratitude for—guess what—just plain ordinary decent treatment. The writer has no solution for the difficult problem of menial service but feels that it should be solved in some consistent way.

14. The paper work is the subject of almost universal complaint, sometimes humorously, sometimes bitterly. Broadly speaking, no business can be run without accurate bookkeeping and, with due regard for the manifold ramifications and interlockings of the business of the army, the system is nearer perfection and nearer simplicity, with allowance for its enormousness, than that of private corporations. There is, of course, room for improvement and many changes have been made in recent years, nearly all in the direction of simplification. In a few instances, through unavoidable oversight, simple means have been added to instead of substituted for complicated ones. In fact, excepting as implied under paragraphs 8 and 9, the principal points for specific criticism come under this last head. In quite a number of instances the same basic data must be reported in different ways to different officers, in more or less elaborate ways which do not easily check against one another but which must agree in general. One is reminded of the man who cut a doorway for his cat and, beside it, a still smaller one for the kitten. Not only would the actual clerical work be simplified but the control against error would be more perfect if the maximum report necessary were used in duplicate for all purposes. In other instances, the blanks are simpler and smaller than the reports now necessary and the method of filling in becomes complicated and arbitrary. But all criticisms of this nature apply only to details which will unquestionably be corrected as experience demonstrates the need and time is afforded.

While by no means sharing the view so often expressed regarding paper work, which is a most fascinating study, the very radical opinion may be stated that the only satisfactory solution of the problem, as applied to volunteers at least, whatever their primary line of service, is to establish a special bookkeeping department, either for each line and staff department, or as an extension of the quartermaster's department which already is mainly concerned with paper work, or in some other way; to make medical or other officers responsible merely for supplying the data for all such work; to expand the clerical force in emergency by selection from those whose civil occupations have been mainly as accountants and bookkeepers. This method is not solely to cater to the preferences of men trained for other lines of work but to utilize their services in the most economical way and to secure efficiency.

15. The experience of the past war has, in many different ways, raised the question as to the wisdom of carrying the military conceptions of rank and

discipline to the extent established in the past. The superficial conflict between this conception and democracy is acknowledged by all and the issue is practical rather than theoretical. That the present conception and expressions should be maintained so far as actual military duties are concerned, is conceded by all but the most radical. Whether they should permeate the whole social life of the army, as at present, is quite a different issue. Many officers regret that they are limited in their social intercourse with privates, while many privates consider the present conception necessary to discipline. The most practical argument against free social intercourse irrespective of the distinction between enlisted men and officers or relative rank of the latter, is that it would give opportunity for favoritism, but the complaints on this score could scarcely be increased, and it is also argued that if the opportunities for personal acquaintance were free and open and general, instead of depending on the more or less surreptitious initiative of a superior, favoritism would actually be diminished. It is also held that the average greater intelligence of the present generation and the tendency to abolish class distinctions, never of course formally recognized in this country but accepted in practise to a greater degree than in some countries which formally recognize them, imply a discretion that can be depended on to maintain discipline and proper respect for authority in military duties, in spite of free social intercourse. Some of the major abuses of authority aired after the war would unquestionably have been prevented if military caste lines had not been so sharply drawn. As might have been expected, unwarranted and extreme interpretations of rank and discipline nearly always occurred among those of comparatively low military rank and standing according to civilian standards and among volunteers rather than Regular Army officers.

While the writer's tendency is toward the democratic ideal, he feels that the determination of this point should rest mainly with those of life long experience. One little incident may, however, be taken as indicating the average opinion of the medical men of the army. Just after being discharged and while still wearing the (winter) uniform, the writer gave a ride to an enlisted man. After a few minutes, the latter said "You belong to the medical corps, don't you?" As there had been nothing said along medical lines, there was nothing to suggest one's profession in the car, and the staff insignia are not worn on the overcoat, some surprise was expressed at this Sherlockian penetration. The explanation was "The medical officers were always good fellows."

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Lumbar Medicinal Injections in Pernicious Malarial Fever.—Monziols and Castel (*Presse médicale*, May 29, 1919) report three cases in which favorable results were obtained by lumbar puncture followed by intraspinal injection of an oily medicinal preparation. The oil contained in each mil 0.05 gram of quinine, 0.1 gram of camphor, and 0.05 gram of lipoids.

DEMENTIA PRÆCOX.

Description and Diagnosis.

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(Concluded from page 495.)

DIAGNOSIS.

Some of the characteristic signs are found in other psychoses; so you should make your diagnosis on the picture as a whole, and not on any one sign. Primary defects in apprehension, orientation, memory, consciousness and motility are foreign to dementia præcox. The presence of these help to differentiate the organic psychoses. Negativism and suggestibility are found not only here, but also in children, hysterics, and senile patients.

The diagnosis is made on the early appearance of the affective and reaction disorders, and the later intellectual disorder, which may be slight; the disharmony between the delusions and the affect; the purely automatic character of the excitement and the reactions. An unimpaired ability to understand and remember is diagnostic. A beginning depression, with vivid hallucinations or confused delusions usually indicates an early dementia præcox. Emotional dullness with good comprehension and a very lucid sensorium is also diagnostic. The præcox is formal and affected. He has feelings of sensations being introduced into his body. Automatic obedience alternates with negativism. There is a purely automatic character to the excitement and the reactions.

There is a withdrawal of the libido from the external world, which is characteristic of dementia præcox vs. hysteria, which shows the opposite reaction. It should be remembered that chronic alcoholic psychoses are often essentially dementia præcox cases.

It is very important to differentiate this condition from manic depressive insanity, because of the marked difference in the prognosis, it being of course much better in manic depressive insanity. We will merely indicate a few of the points here, and will go into them more in detail later on.

In the depression of dementia præcox, the emotional tone is uneasy; and the patient is shallow or silly—vs. the autopsychic sadness seen in the manic. There is no retardation in dementia præcox but merely apathy. The stream of thought shows unaccountable preoccupation. There is allo- or somatopsychosis. In the manic, the stream of thought is narrow but not incoherent; there is difficulty about the future and reproach for the past. The symptoms in the manic are psychologically more understandable than in the præcox; the manic having a more normal personality before the onset—being more like the rest of us. But there are some cases which appear to merge into the præcox group. The manic shows no deterioration.

DIFFERENTIAL DIAGNOSIS.

Vs. Acute alcoholic hallucinosis.—The præcox presents a more gradual onset; is more stupid; his

thought is looser; his conduct is more peculiar; persecutory delusions involve the personality more; emotionally he is more superficial. There is no alcoholic etiology; the evolution of the case is different. The alcoholic shows more genuine anxiety. Auditory hallucinations predominate in alcoholic hallucinosis, unlike the visual hallucinations of delirium tremens.

Vs. Chronic alcoholic hallucinatory dementia.—In the præcox the onset is chronic; there is less emotional and intellectual activity; his conduct is less natural, and he is less approachable; there is an absence of the characteristic physical signs seen in the alcoholic. The memory is early affected in the alcoholic and he is full of excuses for his transgressions. Even with abstinence from alcohol, the symptoms progress in the præcox. Remember that in the præcox patients, the deterioration is more rapid than in normal people from alcohol, and quicker than could be explained by the alcohol alone. So alcoholism in the præcox is a serious matter.

Vs. Delirium tremens.—In delirium tremens you get the characteristic visual hallucinations, marked autopsychic disorientation, and intact autopsychic orientation, with the history of alcoholic indulgence, and the physical evidences of alcoholism. The delirium tremens patient shows a fearful and apprehensive mood; also marked tremor; albuminuria is present.

Vs. Acquired neurasthenia.—In dementia præcox the emotional attitude is one of ill-humor, with dullness, indifference to the future, and senseless hypochondriasis. It is quite the opposite in acquired neurasthenia. In the præcox there is the presence of signs of dementia; he has silly ideas, especially sexual ones; judgment is faulty; there is apathy, as opposed to anxiety in the neurasthenic. Quiet and relaxation have no effect on the præcox. In the præcox there are hallucinations, automatism, and stereotypy—all of which are absent in neurasthenia. Grotesque delusions and bizarre conduct are against neurasthenic depression, or the depression of anxiety neuroses, as is negativism. Neurasthenia of course is a pure fatigue neurosis, with weakness or irritability of various functions, occurring in the motor, sensory, visceral or psychic spheres.

Vs. Hysteria.—The præcox is less aggressive, shows less contact with the environment, in which he takes little interest, and is more seclusive. The hysteric on the contrary, projects his ego into the environment. Hallucinations favor the præcox they being absent in hysteria. The præcox is more desultory, shows weaker judgment and an indifferent emotional attitude—the hysteric being quite lively. The præcox shows a similar and purposeless conduct; whereas the conduct of the hysteric is purposeful, and varied. He is shrewd, capricious, sly, keen, tyrannical, and obstinate. In the early stages, with no deterioration, the diagnosis is often difficult. Regressions are more profound in the præcox than in the hysteric. Dementia præcox may have similar reactions to hysteria: to that extent they resemble each other. There is greater sexual miscarriage in dementia præcox than in hysteria.

Vs. Infection-Exhaustion psychoses.—You may get clouding of consciousness and confused speech in both. The precox, even in the greatest excitement, is well oriented, and apprehends better, and may show katatonic features; whereas in the confused patient, even if there is catalepsy and automatism, you never get general negativism, verbigeration, stereotypy, mutism and mannerisms. The actions of the precox are silly, constrained and eccentric; whereas the infection-exhaustion patient is more natural. In the precox the impossibility of memory is much less disturbed. The precox can solve problems better, does not lose the thread of conversation, and is not so incoherent; and though apprehension is good, he answers questions in a silly way, or not at all, or he may be witty. The emotional attitude of a precox is stolid and apathetic, whereas in the confused exhaustion patient it is changeable—depressed or exalted. The precox takes little interest in the surroundings; whereas though the confused patient does not recognize well, still he gives attention. In the precox there is the absence of the acute exhausting factor found in infection-exhaustion psychosis. Improvement is more rapid in an infection-exhaustion case. Nutrition suffers much less in the precox.

Vs. Manic depressive insanity.—The history of repeated attacks without deterioration is characteristic of manic depressive insanity. It is well first to notice the difference in the affects. The precox has a feeling of deficiency and queerness, whereas the manic shows a feeling of mere difficulty and impotency. You may get depression with selfaccusations and irrepressible ideas in both the precox and the manic. But in the manic you find difficulty in thought, great emotional excitement, and an absence of eccentricity and negativism. The visits of relatives have no effect on the precox, but usually make the manic worse. The manic is more anxious. The lamentations of a precox are due to a persevering impulse, whereas the lamentations of a manic are due to a persistent genuine sadness.

Attention.—The manic slowly pays attention, and is influenced by his surroundings; while the katatonic precox pays little or no attention to the environment, and appears stupid and indifferent. The precox is not easily distracted, while the manic is very distractible. The precox may be childishly happy; the manic is exalted, frolicsome, irritable.

Reactions.—In the precox, movements are planless, impulsive, and of a uniform character; whereas the movements of a manic are purposeful, playful, understandable, and relate to ideas in the environment; they are due to a pressure of activity. Hypersuggestibility may occur in both, but the manic will exercise more judgment and caution in following commands; he will not repeatedly go back to the same position, and will defend himself. The precox is stubborn. He may withdraw from painful stimuli, but he does so without real defense. The manic may apparently show negativism, but in reality he is only slow, and he permits passive movements. In katatonia you see negativism and muscular tension; there is an absence of the facial expression of great suffering seen in the manic. In some manics you may apparently get con-

strained movements; however they are not stiff nor affected. In katatonic stupor, voluntary movements are rare; but if evidenced, they are executed rapidly, except when the patient is commanded to do them, when, because of his negativism, there is delay. The stuporous precox will not struggle; the manic may resist from fear or apprehension. In the manic all reactions are retarded. The activity of the katatonic is diffuse and incoherent; that of the manic is purposeful and shows a pressure of occupation. The precox is not susceptible to commands or conversation; the manic is very susceptible. The excitement of a katatonic shows less clouding of consciousness: even when excited, he is partly oriented; however, he speaks but little, and shows stereotypy and verbigeration. Usually in cases of dementia præcox the sensorium is clear, whereas in manic depressive insanity there may be some clouding of consciousness. There is no psychomotor retardation in the precox; in the manic, psychomotor retardation is marked. The actions of the precox are absurd, stilted, and manneristic—as opposed to the flighty, precipitate acts of the manic.

The precox fails to speak because he has no desire to do so, while the manic does not speak because of an inability to do so. The precox shows stereotypy in thought and senseless speech productions; the manic shows a poverty of thought. The incoherence of the precox lacks the volubility of the flight of the manic. The katatonic precox speaks but little, even when excited. The speech of the manic, even in great excitement is easier to follow, and shows a flight of ideas and marked distractibility. There is no parallel between speech and movements in the precox; for instance, he may lie in bed, and yet be very productive. On the contrary, in the manic speech and movement are parallel. The manic may run all over the room, whereas the precox will remain in one corner. The manic usually speaks in a low, slow voice.

Hallucinations and delusions, without clouding of consciousness, favor dementia præcox. In the precox, hallucinations are not coherent; whereas if they are present in the manic they are coherent. In the precox delusions are senseless, and they are frequently of physical influence; they occur with clear consciousness, and have not the proper accompanying affect. Manic delusions are usually selfaccusatory, and have a suitable affect. The delusions of the precox are usually allopsychic, symbolized, and grotesque.

Though Kraepelin maintained that manic depressive insanity and dementia præcox were fundamentally different, some of his own school express doubt as to this, saying that the difficulty of separating the two clinically indicated that an essential connection existed between them. Thus Urstein, in his book, states that manic depressive insanity is to be regarded as a syndrome of katatonia. This view has not been accepted.

Vs. Involution melancholia.—In the precox, especially in katatonic depression during the period of involution, you get hallucinations, but you usually get none in melancholia. The precox is inaccessible; the melancholic is accessible, except pos-

sibly when you refer to his delusions and topics of anxiety. The precox does not enter into conversation, is indifferent, emotionally dull, negativistic, constrained, and shows various mannerisms and senseless stereotypy. The lamentations of the melancholic are uniform, and accompanied by suitable affect. It is well known, of course, that Dreyfus and others tried to prove that involution melancholia really belonged to the manic depressive group of psychoses.

Vs. Paranoia.—In the precox the delusions are unsystematized, fantastic, and in the beginning there are prominent hallucinations. The onset is more gradual in paranoia, and it may be years before they have a few hallucinations. The character of the delusions in the precox are that they change beyond reason, have no system, do not harmonize with the events of the past life, and those of physical influence are prominent. In paranoia the delusions are chiefly morbid interpretations of real events, woven together coherently, extended to events of recent date; and the patient reasons logically. Emotionally the precox shows very little depression, but often silly elation and sexual excitement. He shows also constraint in thought and action. He may have remissions. The paranoid shows a uniform emotional attitude, is natural, with a normal demeanor, and may seek contact with the environment. He is often capable, and may hold a position a long time. If the precox has a remission, the delusions disappear at this time. In paranoia, the remissions are only partial, and while he may react less actively to the delusions, he never loses them. The paranoid is more aggressive. Some authors think that paranoia is an attenuated form of dementia præcox.

Vs. Presenile delusional insanity.—In the precox katatonic phenomena are present; if he is excited and resistive, the precox is more compulsive and spontaneous; whereas the senile's activities depend on his delusions or his moods. There is early apathy in the precox, whereas in the senile this does not occur until late, or he may be continually irritable or interested. The predominating disturbance in a precox is shown in the affects and reactions, whereas in the senile it is in the sphere of judgment. There are some cases appearing in the involution period of life, which show certain precox characteristics—a marked gradual impairment of judgment, with many unsystematized delusions of suspicion, and greatly increased emotional irritability.

Vs. Epilepsy—especially after the attack.—The precox is negativistic; the epileptic shows anxious resistance. The precox shows more disturbance of orientation, he answers in a silly way, and may obey rapidly; he is impulsive, and performs purposeless acts, and is full of mannerisms. The epileptic is more apt to try to escape and assault. The precox is emotionally stupid; the epileptic, ecstatic. Clark's description of the epileptic personality—his egocentricity, supersensitiveness, and emotional poverty, and his inability to adapt himself to normal social life, would also apply to the average precox patient.

Vs. Early paresis—in middle life.—In the pre-

cox there is a presence of mutism, verbigeration and stereotypy; whereas in paresis if they occur at all, they are less varied. In the precox there is less incapacity and weakness of the will; they are more unruly and eccentric. In the precox mental deterioration is less rapid and profound, and apprehension, orientation and the impressibility of memory are all retained; though in the precox these may be overpowered by negativism. There are more often hallucinations, mannerisms, and negativism in the precox. The physical signs and the examination of the spinal fluid are negative in the precox. You may get epileptiform and apoplectiform attacks in both. The etiologic factor is present in paresis. In later paresis, you get mental enfeeblement en masse. In the precox consciousness is less clouded. Early memory is much better in the precox. In the dementia of paresis there is less tendency for the patient to adorn himself. If katatonic features occur in paresis, they are accompanied by a greater disturbance of memory, and clouding of consciousness. The precox can figure better. Paranoid delusions may appear in both, but in paresis they do not show the delusions of influence so commonly seen in the precox. A dementia præcox patient usually does not show any feeling of wellbeing. Expansive delusions develop more slowly in a precox.

Vs. Constitutional psychopathic states.—In dementia præcox we have an autopsychic disintegration of the personality; whereas the reaction in constitutional psychopathic inferiority is to some definite cause, and is only an exaggeration of the normal, and is usually allopsychic, i. e., a reaction to the environment. In dementia præcox, after the attack, you may get deterioration; in a constitutional psychopathic state, reactions frequently recur, but they disappear if you remove the cause, and the personality remains as before. The precox is at first normal, and at some definite time the history shows a change. The constitutional psychopath has never been considered normal; he is abnormal from an early age. The precox shows a loss and an impairment. In constitutional psychopathic states the intellect—concerning memory, orientation, and the application of previous knowledge—shows no loss nor impairment. In the precox the sensorium may rarely be clouded, but this is not so in the constitutional psychopath. Incoherence may be present in the precox, especially in katatonia. In the psychopath there is no incoherence, nor blocking of thought, nor dreamlike conditions with phantastic delusions; there is no dissociation of the personality, if there is no coexisting hysteria. In the precox there is a definitely acute onset, it may be with catalepsy, stupor, filth, indifference, and these may occur without premonitory warnings.

In dementia præcox the onset is more definitely from the age of puberty; in a constitutional psychopathic state, we often have a long train of immoral acts. But the motives are different. In dementia præcox there is a mental conflict, and a doubt as to how to act, causing paralysis of the will. This results in cynicism, stubbornness, and stolidity. The changes are so rapid that normal conduct is often impossible. But in the immoral person, there is no

conflict, but only one motive—the desire for self-gratification. In many cases it depends on the attitude of the physician, as to whether to call a particular case one of dementia præcox, or a constitutional psychopathic state. It is necessary to carefully study the personality, and then to take a most careful anamnesis.

Vs. Feeble-mindedness—mild cases, of the grade of moron especially.—In præcox the onset is later; feeble-mindedness dates from childhood. Hallucinations and delusions are absent in feeble-mindedness. In the præcox you find evidences of early acquired knowledge. The præcox shows improvement at times; the feeble-minded remains the same. In the præcox the early life is frequently normal; in the feeble-minded it is always abnormal. Though the præcox present exacerbations, you always get signs of earlier knowledge, which is not so with the feeble-minded. Of course, it must be remembered that a patient must be more than illiterate to call him a moron. For his illiteracy may be due to a lack of opportunity. To be a moron, he must show a lack of native ability. There are, of course, transitional stages to feeble-mindedness, just as we see apparently normal patients, who are overcredulous, superficial in knowledge; who know a little of everything, and yet who are easily led astray. Such patients indulge in excesses, and are always in doubt as to the real motives for action. The Binet-Simon and other tests are only of corroborative value. One must remember that a moron can also have a superadded dementia præcox episode, at any time.

PROGNOSIS.

In a few cases after the attack there may be but little change in the patient's manner for years. Simple and hebephrenic forms are usually incurable from the outset. The prognosis is best in katatonia. I have now under my observation a number of katatonics who have been well for years, after a severe attack. The hebephrenic and katatonic forms are usually more acute. Hebephrenic cases rarely show remissions. Katatonics frequently do. Paranoid cases do not recover. Bjerre reports an unusual case, really one of paranoia, which recovered after a long treatment. It is the only case that I know of. One can read the literature through and find no mention of the recovery of a genuine case of the paranoid form of dementia præcox. Some time ago while on a visit to Baltimore I asked the resident at the Phipps Institute if he had ever seen a recovery of a paranoid præcox and he said he had not. This is the usual answer that you get from every one.

Where odd features prevail in relation to the fundamental instincts and longings the prognosis is worse. Multiple hallucinations are grave; they usually go with an acute course, leading to dementia. Motor hallucinations are usually considered bad. You cannot always predict the outcome of a given case. You may be able to say definitely that the patient will not get well, but you cannot predict the degree of deterioration.

Marked indifference is a constant and certain sign of incurability, if it is independent of any marked disorder of consciousness, hallucinations,

excitement, or stupor—i. e., where it is a basic disorder. Next to indifference in importance is inaction. We notice a weakening or loss of the attention in these cases. States of excitement are less grave than states of stupor. A condition of torpor is serious prognostically. Negativism, suggestibility or delusions are not prognostic. But stereotypy (in speech, movement, and attitude), marked incoherence, unexplained impulses—not due to delusions nor hallucinations—are bad, and usually show chronicity. Systematized delusions are a sign of chronicity also, but do not promise a marked deterioration. Indifference without a basis, is a sign of incurability. Other bad signs are multiple delusions—without confusion; psychomotor hallucinations, hallucinations of general sensibility, and transference of the personality. An insidious onset, with shutin personality is also a grave sign. An abrupt onset in a normal makeup is, of course, much better. Autism, when marked, according to Hoch, is one reason for giving a poor prognosis in dementia præcox.

Deterioration is shown by emotional dullness, loss of mental activity, automatic obedience, negativism or marked suggestibility, mannerisms, loss of affection, delusions that the body and mind are being influenced. The delusions are senseless and fantastic; the patient not trying to get at the motives. The idea of dementia in the sense of permanent impairment must be modified. It is, of course, a fundamental characteristic of dementia præcox to usually end in deterioration.

In the conflict between the reality motive and the phantasy motive, it is a good sign if the reality motive gains the upper hand. A partial recovery may result in an adjustment at a lower level. Where the patient passes the twenty-fifth year and remains well, we assume that there is less chance of an upset. Acute conditions and former recoveries are good signs. Patients in whom paranoid ideas develop after thirty are not so likely to deteriorate in their behavior. With the loss of the sense of potency, the logical tendency is toward inertia. Remissions show apparently restored compensations. There may be a so-called recovery with defect. An attack of dementia præcox does not mean that these patients could not have had a pre-existing hysteria.

However, even in manic depressive insanity abrupt idiopathic beginnings, with sudden changes, pseudohallucinations, impairment of associations, and pronounced hysteriform manifestations, all show a prognostically bad type. Likewise manic patients with frank and open reactions are better than the constitutional types. In conditions with stupor, nutrition does not suffer as much as with excitement and confusion.

TREATMENT.

In considering the treatment of this condition we approach it from two sides, the psychobiological and the biochemical; the former being the more important, we will take that up first. We know that simple and hebephrenic præcox patients are frequently treated in the beginning by various specialists—especially gastroenterologists and gynecolo-

gists—who fail to recognize the underlying psychic disorder. We will confine ourselves to those indications for treatment found in this syndrome. One of the most important aims in treatment is to prevent the episodic upset, i. e., the psychosis itself. You can do this in a large number of cases, if you approach the subject properly.

It is well to remember that high ideals are a biological evolution of more elemental instincts. The adjusting of the subtle influences of the home, social relations, general interests, recreations, and occupations are very important. Some patients cannot emancipate themselves from home either by marriage, or for business or other reasons, without having an upset. In many of these patients it is very necessary to instruct the families concerning certain factors present, in order that certain maladjustments may be corrected. For I have seen on numerous occasions cases in which conflicts arose in the families, the early adjustment of which would have prevented the attack in the patient. Unfortunately, however, the difficulties are usually subconscious, and cannot be elucidated by direct questioning of the patient. Study the types in whom a psychosis is likely to develop and protect them from stress and strain. Marriage may complicate matters, especially if any odd repressed sexual complexes exist. It is necessary that you harmonize any conflicts of the elemental tendencies of the patient's nature, with the ethical side of his personality.

You should inculcate normal healthy interests in those predisposed to this condition. The patient must not be allowed to isolate himself; to develop a feeling of inferiority; to become antisocial; nor to develop anomalies of behavior. A study of early character anomalies, and early sex conflicts is important to maintain mental equilibrium. Do not allow the patient to be slovenly, for this only disorganizes his habits further. Cultivate the patient's interests and attention. Teach him how to adjust himself to society, and to his own needs. Develop self-sufficiency in him; he should know his limits of strength. Do not permit the patient to show evasions in his tasks, for the spirit of work is important.

We often find intellectual or religious enthusiasm in these patients, before the onset of the psychosis. We frequently find attachments to queer cults (Christian Science, and other absurdities)—they affect a pseudophilosophy in certain matters. These tendencies must all be combated, if you want the patient to enjoy sound, mental health. He should not be permitted to practice self-deception.

Modify his distorted trends, and make him take more interest in life; try to make him fix his attention on something. It is also necessary for you to modify any unusual relations toward the parents. Correct any antagonism to any member of the household. It may be necessary to take the patient away from home for a while; this change of environment may be helpful. This also conforms with the rule to remove a patient from those who are objects of his delusions. The great superiority of home for most people is due to the manifold

interests that are there. Parents should not be too lavish in their attentions to young children.

Delusions and hallucinations should be brought into clear consciousness. The patient must be made to understand himself. This is truly more important even than that the physician should understand him. General or indifferent advice is quite useless. You will fail completely if all you can do is to "jolly" them.

One must be on the lookout to prevent suicide, the attempts at which are often theatrical. Self-inflicted injuries and mutilations are more common than genuine attempts at suicide. It might be added here that frequent interviews are necessary with these patients.

Psychoanalysis is quite impossible during the attack. To achieve the best results you must wait until the acute stage is over, to get the necessary cooperation with the patient; and even then, though good, it has not been as propitious in its results as it has been in the neuroses.

Hypnotism, needless to say, has no curative value in this condition, and is at best only an unsatisfactory means to an end.

Needless to say during the acute stage of the disorder, physical treatment according to the symptomatic requirements takes precedence over treatment at the psychic level. His diet, sleep, condition of his bowels, etc., all need careful watching. Physical therapy must be symptomatic, for there is no characteristic anatomicopathological brain condition present in this disorder, which can be treated directly by drugs, etc. In other words, at this time rational medical treatment is of greater importance than the psychobiological treatment.

Bromides should not be continuously exhibited and especially not to depressed or weak patients; for they may be made worse by the bromides and the bromides certainly will prevent your getting a hold on the patient. Of course, while hypnotics are objectionable, insomnia is more so. If it becomes necessary to use hypnotics for a while, after all other measures to produce sleep have failed, it may be said that the sulphonal-veronal group is preferable to the alcohol group, which latter includes paraldehyde—to induce sleep. The belladonna group of drugs may cause delirium, and thus interfere with the patient's adjustment to reality. Treat his physical condition in general. Have him live out of doors, if possible.

Very often routine life in the hospital helps to regulate conduct; and the change from a possible disagreeable environment is of therapeutic value. Unfortunately all homes are not beautiful havens of rest. A disturbance of the will being one of the most important evidences of dementia præcox, it can be seen why rest from work usually gives no results. Be sure that you do not indiscriminately recommend traveling as a panacea in mental cases. During the acute stage, it can do harm. Where introspection is overwhelming, and interest is practically absent, travel is valueless as a therapeutic measure. During convalescence, it may be of benefit in properly selected cases.

Remember that the præcox is more affected by alcohol than normal persons. Whereas the

precox exaggerates the amount he takes, the alcoholic minimizes the amount imbibed.

Kraepelin's biochemical attitude in treatment has not of itself achieved results. Meyer's idea of treating at a higher level is more rational. The view that the disorder is a toxemia or an endocrine disturbance, is not tenable at the present time. A toxemia may be present, but the question is whether it is a case of *post hoc* or *propter hoc*. Treatment on a metabolic basis is really treatment of the nutrition of the patient; and dementia præcox is not primarily a nutritional disease. Of course, if there is a concomitant endocrinopathy, treatment along the lines indicated by the glandular syndrome present—single or polyglandular—should be instituted. To this extent, endocrine therapy is a valuable adjuvant; but used alone it does not cure these cases.

It might be well to mention here that the truth about onanism should be taught to those individuals who need such instruction. They should be shown that it is entirely their attitude toward the habit, and not the act itself, which is disastrous. This topic is a dangerous one to discuss with many of these patients, unless you understand the relation of it to the individual patient. Bad or faulty instruction on this subject is a great deal worse than no instruction. It should not be spoken of at all to certain patients.

We need not go into the treatment of the old precox patients here. This is chiefly a custodial and reconstructive question, which necessitates prolonged hospital care. For them, productive occupations, manual training, and other forms of mechanotherapy are of great value in stimulating and keeping alive what interest they have left in the affairs of life.

CONCLUSIONS.

1. The prevalence of this condition and the seriousness of the prognosis in most cases make it necessary to study each patient carefully. In this way we can avoid diagnosing a case of dementia præcox as neurasthenia, or some other benign condition; and thus prevent much future trouble, and worry to the families of these patients.

2. Besides the patients in the hospitals there are numerous cases of this psychosis, especially incipient ones, walking about the streets. There are also thousands of potential precox patients in civil life who only need some stress, strain, or new conflict to develop a psychotic episode. It is well known that incipient dementia præcox is the cause of much crime and antisocial conduct.

3. It is impossible to fully understand a case of dementia præcox, without having a very clear idea of the patient's character and temperament. The episode may be only a transitory affair. But his constitutional makeup is permanent, and may need very careful attention, if he is to stay well and be a useful member of society. Certain addicts of alcohol, morphine, and other drugs should be classed where they really belong, as potential or incipient cases of dementia præcox. By classing them in this manner, the proper procedure can be followed for their care.

4. Besides the fact that a number of these cases recover, many others show but a slight deterioration, and these may be able to get along quite well in life, only at a reduced and less complex level.

5. An interpretative study as recommended by Meyer is not only more valuable than the descriptive and biochemical attitude of Kraepelin, but it gives better results; and incidentally it makes the study of the subject much more fascinating.

6. Whether one believes in what is commonly known as psychanalysis or not, should not prevent one from making a careful psychological study of the complexes and underlying conflicts in each case. This is necessary to achieve results.

7. Do not invariably take too pessimistic a view as to the prognosis. Many cases properly managed are curable; and many others can be made well enough to maintain themselves in society.

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220 BROOKLYN AVENUE.

APPLICATION AND INTERPRETATION OF THE WASSERMANN TEST AND OF SUPPLEMENTARY LABORATORY PROCEDURES.

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It is fortunate that we have definite and reliable laboratory procedures to corroborate a clinical diagnosis of syphilis and to exclude this disease in many obscure cases of illness. Otherwise many persons, through mistaken diagnoses, might be carried unnecessarily through the long, unpleasant, and expensive treatment recognized as essential to every individual so infected, and many conditions, basically due to syphilis, might go from bad to worse, if the luetic factor was not detected.

Without detracting from the necessity and value of clinical opinion in deciding the nature of a given case, this article aims to weigh the usefulness of important laboratory procedures in connection with the detection and treatment of syphilis in its various stages, and to present a short discussion on their application and interpretation.

PRIMARY STAGE.

As is well known, in a considerable proportion of cases the initial lesion is not seen by a physician, either because he is not consulted or because it is located so as to be readily overlooked. In such cases, of course, the patients usually fail to receive early treatment. When a patient with what is apparently a typical chancre comes to a physician for advice and treatment, no matter how experienced he may be as a clinician, he cannot afford to let his diagnosis rest on what at best can be but a shrewd guess, so long as such diagnoses are not (as they cannot be) 100 per cent. correct. In fact, the practice, previously so common, of permitting the infection to spread widely throughout the patient's body, in order that secondary manifestations might confirm the diagnosis, bears testimony that physicians have not been content with their judgment of the nature of the process from the character of the initial lesion. It was also previously believed that treatment was most effective in the secondary stage. Therefore, owing to the insidious nature of syphilis, the long course of treatment, and careful observation required of those found infected, from the viewpoint of both patient and physician it is very necessary to have a diagnosis, either positive or negative, confirmed by every available means.

Examination of Chancres for Spirochetes.—The most satisfactory evidence of the identity of a disease is the detection of the specific organism connected therewith, and, as the morphology of the *Spirocheta pallida* is as typical as that of the diphtheria bacillus, examinations of properly made smears from suspected chancres should be made in every case. There is much authority for the statement that chancre stage syphilis may often be cured by two or three injections of arsphenamine; and if the diagnosis is made before the disease has progressed sufficiently to have produced a posi-

tive complement fixation test, by even a single injection. Thus the great advantage of prompt diagnosis and immediate treatment is manifest.

While it is possible to make and examine a smear from a chancre without detecting the specific organisms, or even to confuse therewith other organisms, such as the spirilla bacillus of Vincent (1,) no one who has had a little practice in such work is at all likely to fail in making 100 per cent. of findings of the *Spirocheta pallida* in all primary lesions, as it is abundant therein. The same organism is also easily found in all early ulcerations and lesions of the mucous membranes; however, in lesions of the mouth and throat it could easily be confused with the common spirocheta microdentium. The dark field condenser method is the one of choice, but various staining methods are equally effective in detecting the specific spirochete.

Complement Fixation Test.—A patient infected with syphilis does not show a positive complement fixation (Wassermann) test until the organisms have spread widely in his system, so that we readily realize the great evil of purposely delaying final diagnosis and the beginning of treatment, until such confirmation can be obtained. It is usually from two weeks to two months after infection before an untreated person's blood will give a positive complement fixation (Wassermann) test. Craig (2) reported that 2,575 cases of primary syphilis gave positive tests as follows: First week, 34 per cent.; second week, 57 per cent.; third week, 67 per cent.; fourth week, 76 per cent.; fifth week, 80 per cent. This test should, however, be made from time to time, if for no other reason than to make sure that the disease is not progressing despite a course of early treatment.

SECONDARY STAGE.

Complement Fixation Test.—In this stage all untreated cases of syphilis give positive complement fixation (Wassermann) tests. It should be recollected that the Wassermann test is not for specific substances produced in response to the infection, but rather for antilipoid substances developed as a consequence of the large amount of such waste produced during active syphilis. This is why latent syphilis, including a few cases of congenital syphilis (in which the infection is sometimes inactive) frequently gives doubtful Wassermann tests. In cases where treatment has been given Wassermann tests are positive in proportion to the extent and activity of the remaining infection. If, for instance, the treatment has been sufficiently effective to destroy all organisms except those protected in an isolated portion of the body, such as the cerebrospinal system, we would expect the blood to react negatively, as it does. Should treatment be stopped on the strength of such a reaction, the remaining infection may either remain localized or become generalized again, as is so often the case where a relapse occurs after a short course of treatment not followed up by sufficient precautionary tests.

In mentioning the effect of treatment I cannot

refrain from commenting upon the number of cases I have seen, in making Wassermann and other laboratory tests, in which the patients have had mercurial treatment exclusively which signally failed to eradicate the disease. For example, a prosperous business man of fifty who had been treated by his physician with mercury for three years, some twenty years ago, and pronounced cured, returned to that physician two years ago for some slight sores on his tongue. He was sent to me for a Wassermann test, which came out four plus. His physician then gave him six weekly injections of arsphenamine and stopped. Since this he has given uniformly negative Wassermann tests and has had no signs of illness. I have seen many similar cases, some continuously under mercurial treatment, which seemed unable to affect their Wassermann test. Recently I performed a test on a man, who for four years had been under such intense mercurial medication as to have lost forty pounds in weight. When he began treatment his Wassermann was three plus, yesterday it was four plus. (A difference of one plus in these reactions has no clinical significance.) In the light of my present knowledge of the disease gained from laboratory experience, arsphenamine injections seem to be essential in the treatment.

TERTIARY STAGE.

Complement Fixation Test.—In late syphilis with active lesions most authorities have reported that about ninety per cent. of the patients show positive complement fixation (Wassermann) tests. Such reports depend, of course, upon the classification of the cases. Since it is well established that localized late syphilis, such as of the cardiovascular or central nervous systems or of the liver, may be present and the blood give a negative or a doubtful complement fixation test, the clinician must be prepared to correlate clinical and laboratory findings. Other cases of latent syphilis, as it has been termed, often occur among the inherited infections. It is with this class of case that repeated complement fixation test results of one plus and two plus are of great importance since they may be considered positive, if corroborated by clinical evidence. In this connection we should discuss the luetin test.

Luetin Test.—The value of the luetin test is dependent upon the amount of specific organism there is in the material employed. If this proportion is large, the test can be relied upon to give pathognomonic response in all cases of syphilis in which some degree of resistance (immunity) has developed. A positive reaction could not be expected before this, since such a phenomenon depends upon the presence in the individual of special substances (enzymes) capable of attacking and disintegrating the particular organisms injected; and such substances only appear (in appreciable amounts) with developing immunity. That such is the case in practice is proved by the practical unanimity of the reports in the literature to the effect that the luetin test is of value only in third stage, latent, and congenital syphilis.

In applying this test (and any other skin test) a control injection into the skin must always be made of whatever substance besides the germs the test material contains. In the case of the luetin test the control injection consists of some of the same medium as was used to grow the culture from which the luetin was made.

No one who, within a week, has been taking an iodide should be subjected to this test since it was discovered some time ago by Sherrick that the skin of persons taking potassium iodide reacted to injections of many substances in a way that would confuse the interpretation of the luetin test.

NERVE CENTRE SYPHILIS.

The most important localization of late syphilis is in the central nervous system, and it is in the diagnosis of this condition that laboratory methods have given the greatest assistance.

Complement Fixation Test.—While some authors assert that in distinct cases of paresis positive blood complement-fixation tests are obtained to the extent of 100 per cent., it is universally admitted that twenty-five per cent. of cases of tabes fail to do so, although giving a positive result when the spinal fluid is examined in at least seventy-five per cent. of the cases. In this connection it should be noted that although the facts in connection with syphilis of the nerve centres are generally known to the profession many men neglect the cardinal principle that in no case of syphilis (especially secondary or tertiary) should the patient be discharged, though apparently cured, until an examination of the spinal fluid has been made to show that the nerve centres are free from the infection. It should be mentioned here that examination of spinal fluids in cases of tertiary syphilis that have shown no nerve centre symptoms whatever gives positive Wassermann tests to the extent of approximately fifty per cent.

While there are some differences in the methods of various laboratories in performing the Wassermann test on the blood, these are even greater in the case of the spinal fluid, since the concentration of this fluid employed in making the test varies as much as five times in the hands of different workers. Where one unit of blood serum would be used, some employ two, and others as much as ten units of cerebrospinal fluid. I have had some experience with both methods and since I undoubtedly missed some positive reactions by the first method I now use a series of six concentrations which takes in both scales.

Spinal fluids for examination by the Wassermann test should, as in the case of blood, be as fresh as possible, since by keeping even sterile specimens on ice for three or four days, a positive reaction may be missed. This may not happen in the case of all specimens in so short a time, but I have seen it occur too often with specimens kept for controls to doubt the fact. Since blood serum is usually inactivated (heated) before being subjected to the Wassermann test, and since such treatment is not the rule with spinal fluid, specimens of the latter containing blood had better not be employed for the test.

LABORATORY DIAGNOSIS OF SYPHILIS.

Supposed stage of disease.	Procedures desirable.
First.	Examination for spirochetes. Possibly Wassermann test.
Second.	Examination of ulceration for spirochetes. Wassermann test—if negative or doubtful, repeated.
Third.	Wassermann test of both blood (if negative or doubtful, repeated) and spinal fluid. Luetin test.
Latent.	As for third stage.
Paresis—suspected to be developing in known syphilitic.	Colloidal gold test.

COLLOIDAL GOLD TEST.

The addition of a solution of sodium chloride to a solution of gold in colloidal form causes this latter to precipitate. However, if suitable amounts of a protein are added, the subsequent addition of the sodium chloride solution no longer causes precipitation. Quantitative considerations are, of course, involved, and different proteins have protective powers which vary in degree. Partial precipitation of the colloidal gold solution causes, beside progressive turbidity, color changes varying from the original red through violet, lilac, and blue. Complete precipitation, of course, results in a water clear supernatant fluid and the precipitate.

If instead of a protein we use spinal fluid the precipitation will likewise be prevented, entirely when the latter is normal but when abnormal as in connection with various disease processes of the central nervous system, the protection fails and various degrees of precipitation, with color changes, result.

In practice, dilutions of cerebrospinal fluid with 0.4 per cent. sodium chloride solution, from one in ten, one in twenty, and so on, in geometrical progression, to one in 5,120 (ten dilutions in all) are made in test tubes and to each of the tubes (and to one control tube of saline without cerebrospinal fluid) is added five c. c. of standardized colloidal gold solution. Within half an hour changes dependent upon the character of the cerebrospinal fluid will have developed which may be recorded as on the following form:

Changes Produced		COLLOIDAL GOLD TEST OF SPINAL FLUID.									
Color	Precipitation	1-10	1-20	1-40	1-80	1-160	1-320	1-640	1-1280	1-2560	1-5120
Red	None						S	P	P	P	P
Violet	Partial				S	S		S	S	S	S
Lilac	Partial										
Blue	Partial	S	S	S							
Pale Blue	Partial					P	P				
Colorless	Complete			P	P						

In this form the letter P has been placed in suitable columns to indicate a result such as would be obtained in a case of paresis; the letter S to indicate a result such as might be expected in cases of other forms of nerve centre syphilis.

If a complete precipitation in the first 4-8 dilutions develops the reaction is said to be of the paretic type since such a result is uniformly obtained in over ninety-five per cent. of all cases diagnosed clinically as paresis. If partial precipitation results the greatest degree of which is in the lower dilutions, the reaction is said to be of syphilitic type, as this is frequently given by cerebrospinal fluids from tabes and cerebrospinal syphilis. If partial precipitation is greatest in the higher di-

lutions the reaction is said to be of the nonsyphilitic inflammatory type common with fluids from cases of acute and tuberculous meningitis, poliomyelitis, etc.

If, in performing the gold sol test, a solution is used that is over sensitive (precipitates easily), or one that is of the opposite character, inaccurate results will be obtained. As a consequence, careful standardization of the solution employed is necessary. It must be gauged only to react positively with control spinal fluids (a normal and a paretic), the qualities of which have been predetermined. While colloidal gold solutions keep well and may be used as long as the color has not changed, their degree of sensitiveness is likely to vary after at least a few weeks. For this reason it is desirable to use the control tests mentioned above at frequent intervals, if such tests are not performed each day.

CLINICAL VALUE.

The colloidal gold (gold sol) test of the spinal fluid is well known to be of small use in detecting syphilitic infection, *per se*, yet since it has been found to give almost 100 per cent. characteristic reactions (complete precipitation in first 4-8 dilutions) in clinical cases of paresis it is of greatest value when one wishes to decide whether this condition is developing. As the prognosis is most serious in paresis, a positive gold sol reaction of the spinal fluid in a known syphilitic is to be regarded as indicating an unfavorable outcome.

It has been reported in the literature that chronic inflammatory processes of the central nervous system in general are likely to give similar reactions with this test. Among such processes are multiple sclerosis and, rarely, tuberculous meningitis and brain tumor. However, since these conditions may usually be differentiated by clinical means or other tests, whenever there is a question as to the presence of paresis the gold sol reaction is indispensable.

Some consider that this test can be relied upon

to give the only evidence of involvement of the central nervous system in some cases of latent syphilis. However, while reactions within the syphilitic zone are often taken as corroborative evidence of syphilitic disease, the caution given by Miller, one of our best authorities on this test, should be remembered. This was that since luetic zone reactions may occur in cases which after being tested by all other methods and upon clinical observation are not found to be syphilitic, definite deductions from such results in cases known to harbor syphilitic infection should not be made.

RELATIONSHIP TO OTHER TESTS.

A spinal fluid giving a four plus Wassermann test as a rule gives a gold sol reaction within the

syphilitic zone, but the converse is not true. Cerebrospinal fluids giving positive gold sol reactions (some degree of color change and precipitation) usually show positive globulin tests. Cell counts in such cases are quite variable. The following table will illustrate the relationship of the gold test to the others.

APPROXIMATE PERCENTAGES IN WHICH VARIOUS TESTS GIVE POSITIVE RESULTS IN SYPHILIS OF NERVE CENTRES.

Clinical Diagnosis	Wassermann Test			Gold Sol Test		
	Blood	Cerebro-spinal	Pleuro-cytosis	Globulin Increased	Parcetic Type	General Syphilitic Type
Paresis.....	90	95	75	100	0	0
Tabs.....	75	50	50	75	5(?)	95
Cerebrospinal Fluid.....	50	50	75	75	0	95

OBSERVATIONS ON TECHNIC OF THE WASSERMANN TEST.

In order that practitioners not familiar with the *modus operandi* of the Wassermann test may understand observations upon its technic and interpretation, a short summary follows:

If a regulated amount of blood serum from a case of well developed syphilis be mixed with a tissue extract (such as can be made by soaking human or guineapig heart, kidney, or liver tissue in alcohol—syphilitic tissue was formerly thought necessary) an invisible reaction takes place between substances in the extract and substances peculiarly abundant in the blood serum of syphilitics (syphilitic waste) which destroys a property common to all fresh blood serum, as a subsequent test will prove. This property, or substance as it has been regarded, is known as complement. In practice, as it has been found that quantitative as well as qualitative factors have to be considered, and as various specimens of human blood vary considerably in complement strength, it is usual to heat all human serum before examination in order to destroy the property mentioned, and then to reinforce the heated human serum with the fresh, previously tested and adjusted as to strength, blood serum of some convenient animal, such as the guineapig. The tissue extract is then added and any syphilitic waste substances which may be present will combine with it, using up in the process the fresh property of the animal serum (the complement) in proportion to their abundance. As stated, the result of this reaction is invisible, and in order to determine whether it has taken place another reaction is attempted, in which one of the elements employed is visible. For this purpose a rabbit may be injected four or five times with doses of sheep's red blood cells, as a consequence of which his blood serum develops the property of dissolving these cells. Adding a regulated amount of such antsheep cell rabbit serum (heated as was done with the human serum, so that for a reaction fresh serum will be necessary), together with an appropriate quantity of sheep's red blood cells to the mixture of patient's serum, tissue extract and fresh animal serum, we supply the potentialities of such a visible reaction; which will develop provided the invisible reaction has not taken place, since then the fresh animal serum would not be used up, and enables the special enzymes of the rabbit's blood to attack and dissolve the sheep red

cells, giving rise to a clear red solution. This negative reaction is easily distinguished from a positive one, which presents a colorless fluid, at the bottom of which the undissolved red cells appear—since the patient's serum has been so specifically active as to combine with the tissue extract and, in the process, use up some or all of the fresh element of the animal's serum employed, the complement.

Of the reagents used in the test, the sheep erythrocytes and the guineapig serum must be fresh (usually not over twenty-four hours old) and, immediately before testing sera for syphilis, the degree of activity of both guineapig serum (complement) and rabbit antsheep cell serum (amboceptor) must be tried in order that the combination may have just that degree of sensitiveness that will best distinguish between a negative and a positive serum.

Much care is required in all complement fixation work, since very slight inaccuracies in technic may cause much unnecessary labor and even error. Several years ago I started Wassermann test work in the laboratory of one of the medical colleges in this city and had the physiological salt solution prepared by a most reliable assistant, a man who had prepared solutions, etc., in the college for years. After working for several hours, testing for the greatest dilution of the amboceptor (rabbit serum) that would hemolyze the red cells, I found that the salt solution was considerably below strength and consequently caused hemolysis by itself. As the same man prepared a second solution which gave like results, after being told of the action of the first, the incident suffices to show how necessary it is to be certain of every item entering into the work, and how very easy it is for error to creep in. If a salt solution of too low concentration were used (even if not sufficiently low to cause hemolysis by itself) the tendency would be to make an otherwise positively reacting serum give a negative reaction.

There is not much difference in the value of the various standard modifications of the Wassermann test, since they are all necessarily regulated to detect a positive (four plus) and a negative (minus) serum, the sole requirement being that the balance of the reagents employed in the test be (as just explained) so adjusted that the interaction of the complement, amboceptor, and red cells are not the least interfered with by serum from nonsyphilitics, while that from average untreated, active, second stage cases should cause the maximum interference (total inhibition) with the said interaction. Any system by which this balance is obtained is accurate within all necessary limits. Methods by which the test is asserted to be rendered more delicate (i. e., result in a greater proportion of positives)—such as through the addition of cholesterol to the alcoholic tissue—extract—cause a greater proportion of doubtful and suspicious returns in nonsyphilitic cases. Such a result is anything but desirable.

Personally I prefer and always use the plain alcoholic tissue extract, and am convinced that this serves to detect all abnormality of a patient's serum due to syphilis within the scope of the Wasser-

mann test. One particularly important measure in Wassermann test work is the control (or verification) of every test by simultaneous tests of known positive and negative sera. While this is usually effected by the use of only a four plus and a minus serum I have used (I believe to good purpose) a set of control sera, one reacting to each degree of the Wassermann scale. The tendency of this precaution is to standardize the various degrees of positiveness, and to prevent the same serum from being reported one day as of one degree and another as of the next higher or lower in the scale. If one does not care to do this, the positive control should consist of a mixture of several four plus sera, and the negative control had best be made up in like manner. Personally I use several negative sera, separately, as negative controls.

In recording the results of tests, one should watch the tubes of control sera, and just so soon as the latter show the expected developments judgment should be passed on the tubes containing the sera under examination—this without regard to the time of final incubation.

It has been mentioned that there are apparently unavoidable differences in the delicacy of the reagents used from day to day; and since it is established that the blood sera of even untreated cases of syphilis in all stages sometimes vary within a few days to the extent of one or more degrees on the Wassermann scale (for example from four plus to three plus), such a difference in two reports should be interpreted accordingly, and not thought to necessarily indicate a definite change in the condition of the patient.

USE OF LABORATORY TESTS AS PROOF OF CURE.

After a patient has been proved syphilitic he should never be pronounced free from the disease until, for a period of two years after last treatment, he has failed to give a positive Wassermann test of the blood (made every three months) and of the spinal fluid (made at least once or twice). He may also be given a luetin test as a final precaution. In view of certain prevalent ideas of Wassermann fast cases, it should be distinctly stated that no person can be regarded as free from the *Spirochete pallida* as long as a positive Wassermann persists. While much has been written recommending, as a final proof of cure, the injection of a small dose of arsphenamine (.2 grams) and a Wassermann test of the blood within forty-eight hours thereafter—a "provocative" Wassermann test—evidence has been brought forward, recently, which throws doubt upon the value of the method, as it is claimed that any variation in the reaction given by the blood would have developed without the "provocative" injection, and that usually such reactions as are obtained are of the doubtful type, minus, plus-minus, or one-plus, and therefore meaningless under the circumstances.

CONDITIONS INTERFERING WITH THE WASSERMANN TEST.

Complement fixation tests for syphilis are stated to sometimes result positively in a few other conditions and diseases, such as immediately after chloroform or other narcosis, in yaws, leprosy, relapsing

fever, malaria and, occasionally, at the height of an attack of scarlet fever. Reports, however, are conflicting; for instance, in regard to malaria, some recently published observations apparently prove that no such case, unless complicated with syphilis, will give a positive Wassermann test. It is possible that anticomplementary properties developed by the blood in some cases of the above mentioned conditions may have led to erroneous observations.

It should always be remembered that the sooner a specimen of blood is examined after withdrawal the more accurate the result. I have seen some specimens kept at both room and icebox temperature that varied quite considerably in their reacting qualities, quantitatively especially, under such conditions. Of course, specimens in which bacteria have grown are not suitable for testing at all.

It is generally believed that the drinking within the last twenty-four hours, of the equivalent of three ounces of alcohol tends to invalidate results, as it is asserted that this amount is likely to make at least a weakly positive serum negative.

WASSERMANN TEST INTERPRETATION TABLE.

Amount of Hemolysis.	Represented by Sign.	Laboratory Diagnosis.
Approximately 100 per cent.	—	General syphilis not present.
Approximately 87.5 per cent.	+—	Doubtful, next test may give — or +, and diagnosis varies accordingly.
Approximately 75 per cent.	+	Suspicious, as such reactions are often given by early primary, latent, or treated syphilis.
Approximately 50 per cent.	++	Positive, if given during supposed primary stage, latent, or treated syphilis.
Approximately 25 per cent.	+++	Positive.
Approximately 0 per cent.	++++	Positive.

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140 CLINTON STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

SLEEPING SICKNESS.

With the resumption of the world's commerce, probably on a larger scale than before the war, it is probable that the profession of Europe and America will encounter more cases of tropical diseases than heretofore, and among them sleeping sickness, the prognosis and treatment of which deserve attention. It is only a few years ago that the nervous complications of sleeping sickness always ended in death and as soon as they appeared in the evolution of the affection the prognosis was death within the space of a few months. At present the prognosis has much improved, although this disease still offers an extreme gravity often ending fatally. The possibility of making an early diagnosis has shown that there are a number of mild or atypical forms of trypanosomiasis which appear often to end in recovery.

Modern treatment has been the main cause of improving the prognosis in this affection and it cannot be denied that the action exercised on the parasite of sleeping sickness by atoxyl, emetine and the new arsenical compounds is very efficient. What, therefore, is important is not the prognosis of cerebral accidents when left to their natural evolution, but rather how they behave when the patient is subjected to the therapeutics of today. Regarded from this point of view the prognosis of the psychic disturbances observed in trypanosomiasis vary considerably, according to whether one is dealing with the early or late nervous manifestations. The early complications are almost always recovered from under proper treatment and disappear with extreme rapidity—a few weeks or months—although at the onset they appear to be very serious. It can also be added that they leave no sequelæ and definitely disappear.

On the contrary, the late psychoses—and these are by far the most frequent—always have a bad prognosis, and it has been shown that in patients carefully treated from the onset of the infection it is essential from the viewpoint of prognosis to distinguish the forms of trypanosomiasis which undergo their evolution in a single attack and those which change in successive outbursts. In the former the patients, after having presented mild or severe complications for a time rarely exceeding one year, return to an apparently perfect state of health. The patients, when followed for several years, do not present morbid phenomena and by treatment the organism destroys the trypanosoma and appears to become definitely immunized.

In the second case the patient appears to triumph over the first manifestations, but in a few weeks or months the disease continues its evolution, proceeding by periods of latency and relapses which become more and more serious and prolonged. Finally the disease is no longer controlled by treatment and death ensues. In patients treated from the first few months of the disease, the major psychoses only occur in the relapsing forms, in the cases of virulent trypanosomiasis produced by strains of parasites which resist all therapeutic measures. This may explain the extreme gravity of these forms. Generally speaking, it can be said that the late nervous manifestations may be overcome in exceptional cases when the patient has not been treated previously, but in the vast majority of instances death ensues with or without a temporary amelioration.

Some writers are yet more stringent as to prognosis. The cerebral and mental disturbances of sleeping sickness are of bad prognosis, while acute delirium is the index of approaching death. Subjects presenting only a mild degree of intellectual cloudiness come out of their torpor under the influence of treatment, which also ameliorates the nervous excitation and moral weakness. In forms of the disease with serious cerebral manifestations therapeutic action is more limited and many patients remain violent, with hallucinations or fixed ideas up to the time of their death, in spite of regular injections of atoxyl. Improvement, if it takes

place, is only temporary. In some cases the mental manifestations disappear although the trypanosomæ remain. Early treatment may diminish the frequency of mental symptoms but does not prevent the explosion of severe cerebral accidents.

The duration of the affection is not the only factor governing the prognosis. Certain subjects present serious mental disturbances and although treated late in the course of the disease they recover. Others, on the contrary, who have been treated from the onset of the disease, present more or less serious complications for months or years and end by succumbing in spite of severe and prolonged treatment. Ehrlich's experiments may explain this fact. He showed that certain races of trypanosoma are quickly destroyed *in vitro* by arsenical or antimonial compounds while other races resist these bodies, either on account of a natural immunity, or what is still more likely, on account of their adaptation to the medium.

Martin and Darré record the following important fact. They noted that the manifestations persisted in some cases in spite of a prolonged treatment with atoxyl but quickly disappeared by treatment with emetine. It would, therefore, appear that the parasitic races in play could be regarded as atoxyl resistant, but Marie and Darré do not think that these experimental data are sufficient to explain the clinical data offered by human beings. Nevertheless, they are of the opinion that the virulence of the trypanosoma plays an important part in the gravity of the manifestations that it gives rise to. Unfortunately, it is yet a difficult matter to estimate the virulence of a parasite for man and, although the difference of virulence of the divers races of trypanosoma cannot be denied, it is nevertheless impossible to offer a scientific proof of it. In trypanosomiasis, as in the majority of other infectious and parasitic affections, the gravity of the process depends upon the virulence of the germ and the resistance of the soil. In regard to this point, Martin and Darré have noted that those of their patients who presented serious forms of trypanosomiasis were almost invariably subjects who had become physically weakened by a long sojourn in the colony, having almost always suffered from former morbid processes, such as severe forms of malaria and more especially hemoglobinuric fever, whose depressing action on the human organism is well known.

The trypanosomiasis psychoses differ considerably from one case to another and attempts have been made to formulate a fairly correct prognosis. As soon as the diagnosis of trypanosomiasis mental manifestations has been made, the time the disease commenced should be ascertained. The date of the arrival of the patient in the colony will be known and usually he will recall the advent of the fever which usually marks the onset of the disease. He will also be able to differentiate it distinctly from paludic fevers by its resistance to quinine and by its long duration. In other cases the adenopathy, erythemata, pain or shock, physical depression and emaciation will have attracted the patient's attention.

(To be concluded.)

Editorial Notes and Comments

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PROHIBITION.

Every upheaval acts as a causative factor for changes—changes for good and changes for evil. We may take the startling example of the great war when men wrote history lavishly with blood. Vainly we strive to forget it, seeking to direct our attention to more pleasant or so-called constructive things. During this war in addition to the records of victories and defeats, changes in boundaries and indemnities, we find in the obscure nooks the stories of great heroism and selfsacrifice staring at opposite pages inscribed with tales of barbarity and cowardice.

At present we are undergoing a national upheaval which will have far reaching effects—prohibition. Due to conflicting laws and the laxity in enforcing the existing laws the transition is taking place gradually, very gradually, and we can not generalize or come to definite conclusions. Many substitutes will be found to replace the effects of alcoholic beverages. The habitues will satisfy their cravings by an increase of sugar or coffee in the diet. Others will seek solace in drugs. This adjustment will bring its train of evil effects, many of which the physician will eventually be called upon to adjust. We have spoken of the dangers of drug addiction, of the upset to unstable nervous mechanisms from the added stimulation from caffeine. We have told of the dangers of the increase in the incidence of diabetes from sugar. Other complications will undoubtedly be revealed with the rigid enforcement of complete prohibition.

A word about the benefits. It has been found that the susceptibility to venereal infection is greatly increased when alcohol has been consumed. In addition to the lowered resistance, there is the added carelessness and promiscuity. No greater problem has ever confronted the medical profession than the ever present one of the control of venereal infections. We will not follow into the well known bypaths and windings through which the complications of venereal infection lead. Many crimes have been traced directly to alcohol. Under its influence the higher centres of cerebration are removed from the rather unstable mental mechanism of certain individuals, a rapid atavistic reversion takes place, the brakes are removed and acts of violence are committed.

Finally there is the economic factor. During the war the natural resources of the world have been drained and depleted, man power has been lessened. We are confronted by unstable economic conditions. Many adjustments must take place. Can we at present afford to consume our most valuable resources in the production of alcoholic beverages while there is a scarcity of bread and labor? Will the evils attending prohibition outweigh the benefits which will be gained? Will the incidence of prohibition increase or decrease the physical and mental illnesses of mankind? These and many other questions which will arise from the complexity of the situation cannot be definitely answered today.

A NEW THEORY OF FEVER.

One of the interesting, though extremely rare, symptoms of hysteria has been the occurrence of temperature for which no physical reason could be found. The most curious thing about this temperature has been that it has often been excessive. Temperatures of 110° and 112° have been reported. As these seem to be physiologically impossible and as it has been presumed that any such elevation of temperature would surely bring about such changes in the blood as to make the continuation of life processes out of the question, the rule has been to conclude that they must represent, as is so often true of the symptoms of hysteria, entirely fictitious or artificial elements in the case due to some mistake in the reading of the thermometer or some trick of the patient or some circumstance quite apart from any actual febrile temperature to such a degree.

Recent studies in fever, however, have raised the question as to whether there may not be some rea-

son to think of the possibility of these reported hysterical temperatures having some foundation in unusual bodily conditions. The studies of Wood-yatt (Harvey Lectures 1915-16 and with Balcarr and Sansum, *Archives Internal Medicine*, July, 1919) and others have shown apparently that a lack of free water in the body may bring about a rapid and high increase of temperature in the animal body. When sugar, for instance, and certain other substances are injected intravenously and water withheld, fever, followed by chills, was noted and sometimes this temperature mounted to a high degree. Fever above 110° F. can be rather readily produced by this method; temperatures above 120° F. have been noted and in one case the temperature of a dog experimented on in this way was elevated in the course of less than two hours to 125.6° F. The sugar produced diuresis, but no water was supplied and the result was a marked lack of fluid in the body.

The question has been discussed, then, whether all fever, or at least a large proportion of it, may not be due to some change in the fluids in the body which prevents water from being available as perspiration which by its evaporation serves to keep the body cool. It has been pointed out in connection with this that some of the fevers seem to present indications that water is being retained in the system, but under such conditions that it cannot be used for ordinary excretory purposes, and that as soon as it can the crisis occurs in which large amounts of water are given off in the sweat and urine. An abundance of water has been found beneficial in the fevers, and there are a good many clinicians who are decidedly of the opinion that cold water baths have much more than merely a direct and mechanical refrigerating purpose, for they are followed by rather free diuresis and often also by perspiration. Indeed, one of the great indications for bath in fever is that the skin is dry and hot, for it is under these conditions that the bath will do most good. Fever has been observed in persons who have had to do for a considerable time without water, and the term thirst fever has come to be recognized as having a rather definite significance.

It is noteworthy that in hysterical patients there is often in the midst of a hysterical crisis a very free diuresis, quite as when sugar is injected intravenously, and this is sometimes accompanied by vomiting to such an extent that even small amounts of water are not retained in the stomach. All of this points to the fact that these cases resemble, in some regards, those in which the lack of fluid in the body is now set down as bringing about a

febrile temperature, because the body's ordinary cooling processes are impossible. It may be then that the old clinical observations of high temperatures in some of these hysterical patients were not so unfounded in reality as we thought and, above all, were not merely either self-deceptions on the part of the physician or tricks of the patient. If it were so it would be only another instance where old time observation, rejected and distrusted, proved to be valuable as the advance of science made its significance clear.

In the meantime this new theory of fever deserves the most careful study and it is to be hoped that that study will be pursued by many observers without delay, for unlike many interesting theories this contains a germ of the most helpful yet simple therapeutics if it should prove to be correct.

EPIDEMIC LETHARGIC ENCEPHALITIS.

This morbid process, which is due to an infection as yet not clear, becomes localized on a limited area of the mesocephalon and for this reason St. Martin and Lhermitte have given it the name of primary poliomesocephalitis or narcolepsia. This denomination is too restrictive, because cases have been observed in which the symptoms indicated another localization of the morbid process. The affection is usually preceded by some indefinite symptoms indicating a mild involvement of the respiratory tract; there is lassitude, somnolence, headache, and vomiting. At the onset the sleep does not prevent the patient from distinctly replying to questions, to execute ordered movements, or even to walk, but as soon as he is left alone the patient falls asleep. At a more advanced phase of the process the subject remains inert upon the bed. Every second or third day he awakes to eat; in other cases the patient must be fed in his sleep. The sleep sometimes changes to a comatous state and this may last for weeks or months with paralysis of the sphincters, etc. There are intervals of delirium or convulsions.

The paralytic phenomena occurring in the ocular muscles are one of the characteristic signs of the affection. There is strabismus, unilateral or bilateral ptosis, external ophthalmoplegia of nuclear origin. Immobility of the eye is complete. The paralytic disturbances may involve the soft palate, tongue, larynx, or pharynx. Rarely is there paralysis of the limbs, but there may be simple paresis. The reflexes are exaggerated. Fever is variable and very irregular; usually of short duration, it may be continued as in typhoid. The meningeal streak is almost constant, but Kernig's sign and irregular

pulse are rarely found. The cerebrospinal fluid is normal, a most important diagnostic point.

The diversity of the symptomatology is embarrassing for the physician, especially when the onset occurs with an apoplectic ictus with more or less complete hemiplegia. The evolution of the affection is also capricious. Recovery may take place in a few days, but death may occur in a short lapse of time, preceded by bulbar paralysis. Generally the affection continues for several weeks or months and recovery takes place when all hope has been lost. The recovery is sudden but the sequelæ persist for a long time. No really specific lesion is found at autopsy. What changes there are are found in the locus niger and the gray areas near the third and fourth ventricles and lateral ventricles, but it must be remarked that these changes may be quite as marked in other areas of the cerebral substance. The lesion is a diffuse interstitial encephalitis whose specific agent, as yet unknown, follows the blood current.

In 1712, Jacob Camerorius described an epidemic which he called the sleeping sickness, and a similar disease was found in Italy in 1890 to which the denomination of nona was applied. In this same year similar cases were reported from Austria-Hungary, Denmark, Switzerland, Germany, England, and United States, but although the lethargy was noted, no mention was made of the ocular paralyzes. *Restitutio ad integrum* is more common in encephalitis than in poliomyelitis, where the paralyzes or atrophies are durable. Certain symptoms of influenza observed at the onset of encephalitis might have led to the supposition that the affection was an influenzal manifestation in the nervous centres, but as yet the bacillus of influenza has never been detected during life or postmortems in lethargic encephalitis. Therefore, until further study has revealed the causative factor, this affection must be regarded as a special morbid entity whose agent is unknown.

FOOD AND DISEASE IN INFANTS.

Preventive medicine is the medicine of the future and is gaining ground rapidly. Both the medical profession and the public recognize that it is better to prevent than to cure disease, and the majority of medical men realize that it is easier to prevent than to cure disease. In the successful prevention of disease, it is manifest that diet plays on the whole the most important part. Moreover, it is equally obvious that as the best time for preventing disease is in childhood, it is in childhood that the constitution should be so built up that the

vital resistance is such that immunity to disease is developed.

The Practitioner for July and August, 1919, is devoted to the diet question. The July number considers the matter from the viewpoint of health and the August issue from that of disease. In the latter number Dr. Eric Pritchard deals with the connection between food and disease in infants. He lays down the axiom that resistance to infective disease is a function of metabolism, and mainly of nitrogenous metabolism. A one sided carbohydrate diet develops habits of metabolism which are ill suited to deal successfully with the killing of bacteria or with the neutralization of their products. Carbohydrate or sugar fed infants are for this reason peculiarly susceptible to infective disease, and show feeble resistance.

Proceeding on the lines of the old adage that "as the twig is bent the tree will incline," the child must acquire the habit of eating that kind of food which will most surely render it immune to the attacks of disease. The hypothesis of Pritchard that the consumption of too much carbohydrate material makes for susceptibility to infective disease is worthy of close consideration and especially in America, where the ingestion of sugar in childhood, if not in infancy, is probably greater than in any other country in the world. There is another favorite custom in feeding infants at which Pritchard takes a tilt, that is of overfeeding. Some mothers, nurses, and even medical men appear to hold the view that it is impossible to give an infant too much to eat. While overfeeding is a fault on the right side, excess of food is harmful. Deficiency diseases are very much to the fore at the present time and rightly so, but at the same time it should not be forgotten that "excess diseases" are still more frequent, and, as Pritchard shows, these include not only those diseases which are associated with derangements of digestion but also those which are connected with disturbances of internal metabolism.

In regard to the diet diseases of infants he formulates the following proposition, that the great majority of the diet diseases of infants are due to excess in the total quantity of food, irrespective of the precise qualitative makeup. The injuries caused are in the main due either to intestinal toxemia or to incomplete combustion by the processes of internal metabolism. The organism bristles with protective mechanism to prevent these serious effects of overfeeding, but the calling into play of even the least harmful of them produces results which must be regarded as pathological.

Another very interesting matter with respect to

infant feeding referred to in *The Practitioner* article is the author's view as to fat soluble vitamins in the diet. He does not believe, judging from his own clinical experience, that vegetable fats can be substituted entirely for animal fats in infant feeding without impairment of nutrition. Neither does he believe that deprivation of the fat soluble vitamins is an important element in the production of rickets, as many of the worst cases of rickets which he has seen have been in infants overfed with cream, and in several cases codliver oil has been given in addition.

In the article by Pritchard there are three points to which the attention of our readers may be directed. That carbohydrate food is not indicated as the main diet of infants because it predisposes to infective disease; that excess of diet is worse, or at least as bad, for infants as a deficiency of food or of a food deficient in some of the indispensable nutritive properties, and lastly, that the absence or lack of the fat soluble vitamins is not responsible to any extent for the production of rickets.

American pediatricists are renowned throughout the world, and therefore the dicta of a British authority of the standing of Pritchard should not only arouse interest but discussion. Especially are his views on that much vexed and widely debated subject, the causation of rickets, likely to excite criticism on this side of the Atlantic.

CARDIAC TROUBLE AND INTESTINAL PARASITES IN EGYPT.

Recruiting officers in Egypt and the Sudan give tachycardia as one of the commonest reasons for rejection or invaliding out, ascribing it to intestinal and other parasites which infest the bowels of Egyptian fellahs, particularly ankylostoma, bilharzia and *Tenia nana*. Dr. J. B. Christopherson, (*The Journal of Tropical Medicine*, July 15, 1919) says they often had soldiers in the Khartoum Civil Hospital harboring at least six different kinds of intestinal parasites. It is easy to understand that such a man has a fatty or unsound heart, with a possible fatty infiltration of other organs, and his military exercises would cause hypertrophy and dilatation of the left ventricle and bring on tachycardia and cardiac pain. Antimony tartrate has been blamed for cardiac symptoms, but a record of seventy cases of bilharzia successfully treated is given. Before it is administered, parasites or other causes are eliminated by treatment. There is nothing an Egyptian understands or likes so well as a drastic purge. It eases him of his parasites and rids him of an accumulated intestinal sepsis which he instinctively knows is the cause of trouble, and he is delighted to see hematuria, of some five years' persistence, disappearing under treatment. The

commonest complicating infection in bilharzial patients is the *Tenia nana*, whose intermediate host is the rat, mouse and field mouse. It is easily overlooked except by expert workers, the ova being very small, the tapeworm one of the smallest and so light that it does not sink on the addition of water to the flask. The ova can only be detected under a strong microscope. It is small, globular, colorless, with a thick outer envelope, this separated by a narrow space of fluid from the yolk sac which contains an embryo with hooklets. From the relief gained from tachycardia by thin, anemic patients after the expulsion of several hundreds subsequent on a dose of *F. mas.* there seemed little doubt as to the cause, and when they also harbor *Ameba dysenteriae*, *Heterophyes heterophyes*, flagellates, etc., they certainly will be subject to tachycardia and other cardiac disorders.

News Items.

State Hospital.—Ground has been broken for the construction of the new State hospital six miles west of Utica, N. Y.

Typhoid at Tonawanda.—An epidemic of typhoid is reported at Tonawanda, N. Y. The situation is thought by health authorities to be improving.

American Child Hygiene Association.—The American Child Hygiene Association will hold its annual meeting November 11th-13th at Asheville, N. C., concurrently with that of the Southern Medical Association.

Hospital Amalgamation in Bristol.—A project for amalgamation of both the administrative and medical work of the leading hospitals of Bristol, England, is being considered by a committee consisting of representatives of these institutions.

College of Physicians and Surgeons.—Dr. William Darrach has succeeded Dr. Samuel Lambert as dean of the College of Physicians and Surgeons of Columbia University. The institution will have its first associate dean in the person of Dr. Sidney Y. Burnap.

War Against Tuberculosis.—A general union of organizations in Scandinavian countries to fight tuberculosis was formed recently at Stockholm, to be called *Nordisk Forening mod Tuberkulose*. The Iceland Medical Society has been invited to join in the movement.

French Students in America.—Fourteen young Frenchmen will study in American universities this year under scholarships provided by the American army students in France. One of the visiting students will attend the medical school of Johns Hopkins University.

Ninety-two Typhoid Cases in Georgia.—Ninety-two cases of typhoid, the highest figure for the year, were reported to the Georgia State Board of Health for the week ending September 13th. The board of health has been urging the people of the State to submit to typhoid inoculation, but according to the number of doses of vaccine supplied this warning went unheeded.

New Hospital for Chicago.—A new maternity hospital, to be known as the Misericordia Maternity Hospital, will be erected in Chicago at an initial cost of over \$100,000. The institution will be equipped to care for 100 mothers and 150 babies.

Graduate Intern Teaching.—With the view of establishing closer relations between the staff and the resident physicians in the institution, the Kansas City General Hospital is preparing a systematic course of instruction to be given the interns throughout the year.

Decrease in Births.—The number of births in the department of the Seine, France, has decreased from 73,599 in 1911 to 47,480 in 1918, according to a report to the general council of the department by M. Rabeillard. The number of abandoned infants in 1918 was 3,149, and the mortality of infants under one year was forty per cent.

Interallied Congress.—The third interallied conference for the study of questions pertaining to care for invalids, which is to meet at Rome from October 12th to 17th, will be divided into five sections considering the following topics: 1, cripples; 2, blind; 3, invalids with lesions of the nervous system; 4, invalids with lesions of the mouth, jaws, and ears; 5, tuberculous and other invalids with internal diseases. Preliminary sessions will be devoted to questions pertaining to all these classes of invalids.

New York Health Department Moves.—The headquarters of the Department of Health of New York will be moved by September 25th from Centre and Walker Streets, Manhattan, to Pearl and Park Streets, across the street from the Municipal Building. The removal was necessitated by the expiration of the lease on the former offices and the refusal of the city authorities to consider a greatly increased rental. Plans for a permanent structure to be built specially for the department on Thirtieth Street between Sixth and Seventh Avenues are now being prepared, and it is hoped that the new building will be ready for occupancy in about a year.

Personal.—Dr. William S. Thayer, professor of medicine in Johns Hopkins University, has returned to Baltimore after two months spent in France recuperating from strain induced by his efforts in the war.

Lieut. R. J. Lewler, Medical Corps, U. S. N., has relieved Lieut. George F. Eckle, Medical Corps, U. S. N., as examining physician of the Buffalo recruiting station. Lieutenant Lewler has recently returned from seventeen months' duty with the A. E. F. in France, where he was awarded the Croix de Guerre.

Dr. Homer E. Smith, formerly of Norwich, N. Y., has been appointed assistant surgeon in the Knapp Memorial Hospital. He has located at 276 Madison Avenue and will limit his practice to diseases of the eye.

Dr. Ernest Sachs, of St. Louis, has been appointed professor of clinical neurological surgery at Washington University.

Dr. Samuel Moskowitz, 193 Second Avenue, New York, has changed his name to Dr. Samuel Morse.

Americans to Take Part in Tuberculosis Conference.—Two American physicians, Dr. Hermann Biggs, of New York, and Professor William White, of the American Red Cross (Italy), will be among the foreign participants in the annual conference of the National Association for the Prevention of Consumption, England. The first conference since the outbreak of the war will be held October 16th-18th at Westminster.

Long Island College Hospital Report.—The Long Island College Hospital has issued its first year book reviewing the work of the institution during 1918 and outlining its aims and needs for 1919. It is stated that for the first time since the completion of the new buildings the receipts exceeded expenses, the books showing a profit of \$7.41. In 1917 there was a deficit of more than \$26,000. Attention is called to the need for more adequate facilities to care for cases in the department of obstetrics and gynecology.

Massachusetts Health Board Celebrated Anniversary.—The Massachusetts State Board of Health celebrated the fiftieth anniversary of its foundation on September 15th by a public meeting. Sir Arthur Newsholme, former chief medical officer of the Local Government Board of England; Dr. Henry P. Walcott, formerly chairman of the Massachusetts State Board of Health; Assistant Surgeon General Allan J. McLaughlin, of the United States Public Health Service, and Dr. William H. Welch, director of the School of Hygiene and Public Health, Johns Hopkins University, were to give addresses at the meeting.

Association of Military Surgeons of the United States.—The annual meeting of this organization will be held October 13th-15th in St. Louis. Headquarters will be at the Hotel Statler, where the various meetings will be held. The officers of the association are: President, Colonel Henry P. Birmingham, Washington, D. C.; first vice-president, Lieutenant Colonel Joseph A. Hall, Medical Corps, National Guards, United States; second vice-president, Assistant Surgeon General J. W. Kerr, United States Public Health Service; third vice-president, Captain Frank L. Pleadwell, Medical Corps, United States Navy; secretary and treasurer, Colonel James Robb Church, Washington, D. C.; assistant secretary, Lieutenant Colonel F. H. Garrison, Washington, D. C.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize of \$250 will be made on July 14, 1920, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be type-written and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the college on or before May 1, 1920. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. No prize was awarded in 1919.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

As shown in Deaderick's analysis of 100 cases of so-called "rheumatism," referred to in the first installment of this series, mistaking joint tuberculosis for true rheumatism is a distinct clinical possibility. This mistake was made in four of the 100 cases analyzed. Poynton, 1913, makes the direct statement that there exists an acute tuberculous arthritis which is indistinguishable from rheumatic arthritis. In a number of instances, proof that an apparent rheumatic joint process was actually tuberculous has been obtained by demonstrating tubercle bacilli in the affected joints.

In a case reported by Melchior, 1911, inoculation of animals, during the patient's life, with fluid from the affected joints had been negative, yet at the autopsy tuberculous nodules in the synovial membranes of these joints were found. This patient, a young girl of nineteen, had had tuberculous gland involvement as a child. When seen later she had a tuberculous process of the lower jaw, necessitating resection of this bone. Twelve days after the operation a multiple acute enlargement of the joints took place, accompanied by fever. Acute rheumatism was rather closely simulated except for the relatively moderate fever and joint pains and the absence of the typical rheumatic sweats. In the long run these joint involvements followed a comparatively sluggish course, which did not correspond to that of ordinary rheumatic fever, but in the earlier stages of the disturbance a mistake might easily have been made. In the course of three months the joint lesions passed off, leaving only a slight thickening of one knee. A few months later, however, the patient succumbed to amyloid disease. Definite evidence of the tuberculous nature of the acute multiple arthritis was thereupon found. Melchior refers to five other published cases in which the tuberculous origin of an articular rheumatism had been satisfactorily established. According to Poynton, the differential diagnosis in case of doubt between acute tuberculous arthritis and rheumatic fever generally turns upon the presence of tuberculosis elsewhere and the absence of any history of rheumatic fever. The tuberculin test, we may add, might also prove of some service.

That tuberculous rheumatism, sometimes simulating at its outset acute or subacute rheumatism, generally involves several joints was stated by Dieulafoy, 1912. According to Maillart, whom he quotes, the number of joints affected is usually two or three—seldom more. The disease is less mobile, i. e., shows much less tendency to pass from one joint to another; disappears more slowly,

and frequently leaves residual disturbances, either locally or elsewhere in the system. That the condition may undergo complete resolution was shown in one of Dieulafoy's cases, in which, although presence of tubercle bacilli in the joint was demonstrated, the condition was wholly recovered from. In some instances, according to Poncet, the joint involvements progress, with resulting fungous arthritis, white swelling, and perhaps ankylosis. Or the joint process becomes chronic and affects particularly the small joints of the hands and feet, simulating arthritis deformans. Or, again, the involvement may continue to be frankly inflammatory and follow the ordinary course of rheumatism. Still another alternative is that the joint disturbance may pass off, but the tuberculous process then invade visceral organs or the serous membranes. Indeed, tuberculosis of viscera or serous membranes may have preexisted and the joint involvements constituted a secondary tuberculous pseudorheumatism. Acute arthritis in a person known to harbor a tuberculous lesion elsewhere may legitimately bring to mind the suggestion that the arthritis is likewise tuberculous. Yet, as Bezançon warns, this idea, particularly in patients with pulmonary tuberculosis, should not be pushed too far. Even where there is primary tuberculous disease elsewhere, according to Dieulafoy, the acute joint involvement simulating rheumatism may pass off without leaving any permanent articular tuberculosis.

Schäffer, 1908, reporting thirteen cases, assisted in calling attention to a tuberculous arthralgia or acute or subacute arthritis simulating rheumatic fever, and emphasizes the necessity of differentiating such cases in order that time may not be wasted in treatment with salicylates, mercury, or antigonococcal measures.

In addition to the diagnostic features already referred to, including inoculation of guineapigs with fluid from the affected joints, mention may be made of examination of this fluid for lymphocytosis—suggesting tuberculous infection—and the application of the Arloing and Courmont method of sero-diagnosis.

Once successfully differentiated, what shall be the treatment of the acutely tuberculous joints? In the first place, the more acute the disturbance the more completely the joints must be put at rest. The patient should be kept in bed, and light splints may be used as in rheumatic fever. Evaporating lotions or an icebag are appropriate in the most acute stage. Salicylate treatment is of little or no service, but according to Dieulafoy cryogenin (metabenzaminocarbazide) in doses of one half to one gram a day has a beneficial effect on the joint lesions as well as on the pain. At a somewhat later stage a ten per cent. ichthyl ointment, an ointment of mercury or belladonna, or counterirritation, e. g., with iodine, may be availed of. Where there is

considerable joint effusion, aspiration with careful aseptic precautions may be performed. The joints may be firmly bandaged with flannel or rubber, or strapped with adhesive plaster. The morbid process being tuberculous, the hygienic dietetic treatment indicated in this type of infection should be brought to bear as soon as circumstances permit. Where the joint affection is persistent and progressive, injections of iodoform in glycerin or operative procedures may eventually be required. Before these are resorted to, however, it would seem advisable to make thorough trial, insofar as conditions allow, of the heliotherapeutic or direct sunlight treatment, from which excellent results have in recent years been reported in surgical tuberculosis.

(To be continued.)

Autogenous One Piece Epithelial Grafts for the Restoration of the Eyelids.—Edward B. Heckel (*Archives of Ophthalmology*, July, 1919) employs the following routine to restore eyelids deformed by burns: The patient is given a full bath, the head shampooed and the face is ordered to be carefully washed with warm water and soap three times daily for three days. The arm showing the cleanest skin, free from defects, is prepared for three consecutive days. The final or third bandage is allowed to remain until the graft is to be shaved off. On the fourth day the patient is ready for operation. At no time is the eye or face covered with a dressing; if the exposed conjunctiva is dry or irritable, bichloride vaseline 1-3000 is applied to keep it moist. A general anesthetic is used. The operation divides itself into four stages: 1. Dissection of the lid so as to expose and prepare the underlying muscles. 2. Fixing the lid in a stretched position by anchoring it with several guy sutures. 3. Excision of the graft. 4. Placing the graft in position, dressing and bandage.

The first incision is made parallel with and about three mm. from the lid margin, or, if this has been destroyed, from the conjunctival border, cutting along the entire length of the lid or at least well beyond the point of eversion. The lid margin is then grasped and pulled up if a lower lid, down if an upper, and the dissection carried on till the lid can easily be stretched to a point far beyond the requirements of the lid, so that the middle part of the lid margin can be placed as far above the normal line as it was below before operation. There is now a decided redundancy in the length of the lid margin, but nature takes care of this later.

A strong silk suture is used to stretch and anchor the lid. One needle is passed through the middle of the lid at the greatest width of the defect by passing the needle parallel with the plane of the lid from the raw surface at about the middle of the thickness of the lid margin; the other needle is passed about three mm. from the first. One needle is now removed and the other, after holding the suture taut and putting the lid on a stretch, is passed into the skin of either the forehead or the cheek, according as we are dealing with the lower or upper lid, and the ends are tied so as to hold the lid stretched.

A similar guy suture is inserted on each side. The surface is then covered temporarily with a wet pad of cotton.

The dressing is removed from the arm, which is washed again with hot water and ethereal soap, flushed with alcohol and then doused with warm normal salt solution. The arm is held by an assistant. To put the skin on a stretch and flatten it two pieces of wood, $2\frac{1}{2}$ by 5 by $\frac{1}{4}$ inches, previously sterilized by boiling, are used; one is held by the assistant, the other by the operator. The graft is shaved off with an ordinary, rather broad, sharp razor held parallel with the surface of the skin. With a little care a one piece graft of more than sufficient size to cover the defect is obtained. This is placed immediately in a warm normal salt solution. Some bichloride vaseline is smeared over the raw surface on the arm, this is covered by a sterilized piece of gauze and a roller bandage applied. This dressing is not disturbed for several days.

The graft is now spread carefully over the raw surface to be covered and pressed into place. It should overlap the edges everywhere and any redundancy is removed with small sharp scissors. It is then covered by a piece of gutta-percha tissue a little larger than the graft and perforated at a number of places. A bit of wet cotton is now molded into a shape as large as the gutta-percha tissue, about a quarter of an inch thick, with care to get it of an even thickness, and placed over the gutta-percha tissue. This is covered with a piece of gutta-percha tissue without perforation, this by a pad of sterile gauze held in place by a few adhesive strips. A pad of sterile gauze about $2\frac{1}{2}$ by 5 inches, over this a similar pad of cotton, and then a bandage. The bandage must be applied so that it will not slip. The dressing is to remain from four to seven days; if the patient is comfortable, the bandage nicely in place and there is no odor, it is better to let it remain the longer time. Then the dressing is removed and the surface washed off carefully with a warm normal salt solution. The second dressing is like the first, and this continued daily for three or four days, after which the bandage may be omitted, the graft thoroughly covered with bichloride vaseline, 1-3000, and the entire area protected by a wire gauze protector. The eye is flushed and cleansed daily for about a week when the protector may be omitted. The bichloride vaseline should be continued for several weeks.

Artificial Pneumothorax.—S. Vere Pearson (*Lancet*, July 26, 1919) bases his remarks upon the observation of a series of twenty-one patients treated with artificial pneumothorax after their condition had become so advanced that only a few months of serious invalidism could have been anticipated under the ordinary regime. Ten of the patients have died, but nearly all had their symptoms much relieved and their lives materially prolonged by the induction of pneumothorax. Most of the remaining eleven have had wonderfully complete restoration of health and activity. Of thirteen similar cases in which artificial pneumothorax could not be induced or could not be maintained, all but one are dead, and the one living does not enjoy any measure of good health. Fixed rules for

the conduct of pneumothorax treatment are very difficult to lay down, and each factor in every case must be carefully weighed on its merits before any step is taken. However, certain conclusions can be drawn which are useful. First, during the earlier stages of treatment—up to about eighteen months—there is greater likelihood of making a mistake by injecting gas too seldom and taking the pressures too high than by erring in the opposite direction. Second, the abandonment of the gas in a successful case after too short a period is a far worse error than the continuance of refills for too long. Third, it is by no means an invariable rule that the pleural surfaces become adherent after the injections have been discontinued. Fourth, every effort should be made to keep the pneumothorax cavity a closed one, and the only excuse for abandoning this rule seems to be the presence in the cavity of secondary organisms. Fifth, special care is demanded in watching those cases in which fluid develops at any time during the gas treatment. The visible deformity of the chest is surprisingly slight in these cases which have been under gas treatment for several years, but there is a decided coming together of the ribs, the inflated side gradually tends to become occupied with displaced mediastinal and abdominal organs, especially on the left side, and the parietal pleura generally becomes much thickened by about the third year of treatment. Fluid appears in the chest in about seventy per cent. of these cases during pneumothorax treatment and its occurrence makes the treatment rather more complicated than when it is absent. The presence of fluid generally tends to keep the intrapleural pressures up and its presence also increases the likelihood of subsequent thickening of the pleura and the formation of adhesions. For these reasons the pressures of gas should be kept rather higher than in cases without fluid. Fluid will often have to be withdrawn, and this is frequently a matter of difficulty on account of the presence in it of large flakes which occlude the needle. Great care must also be observed to avoid the formation of a sinus. If artificial pneumothorax is successful in a given case it should be continued for at least three years and it seems advisable to continue it for a year or more longer if the patient is over thirty-three years of age, if the compressed lung was fairly useless before the initial injection of gas, and if things are going well during the maintenance of the compression. In some cases compression may have to be maintained indefinitely. No definite rules can be laid down for the spacing of refills.

Prevention and Treatment of Eclampsia.—A. Laphorn Smith (*British Medical Journal*, July 26, 1919) holds the opinion that eclampsia, "is a preventable disease, and one which in a few years, like many others equally fatal, might be made entirely to disappear." He contends that the success of preventive measures depends entirely upon their early application, and urges that every pregnant woman should have her urine examined regularly every month after the sixth. Upon the discovery of a small amount of albumin the patient must at once abstain from meat, fish, and fowl until it disappears, after which very limited amounts may be

allowed if the albumin does not recur. If the case be more severe and the albumin be present in larger amount the preventive treatment will have to be more rigid, including an absolute milk diet with rest in bed and an abundance of fluids. In cases of moderate severity it is often sufficient to reduce the diet to one of cereals, vegetables and fruits, and to combine it with warmth, exercise, and the consumption of large amounts of fluids. The control of the patient should be made by the frequent determination of the amount of albumin in the urine. When a patient is seen for the first time in a condition in which the urine boils solid and the albumin does not very promptly diminish with strict milk diet, or when first seen after the appearance of definite symptoms of developed eclampsia, the only proper treatment is the prompt emptying of the uterus. No drugs, among those commonly recommended, are of any true value, and most of them actually do harm and increase the gravity of the patient's condition. Among these are veratrum viride, hydrated chloral, chloroform, and the therapeutic measure of venesection. To the above rule there is one exception, namely morphine, which is of great value in controlling the convulsions. This is best given in one hypodermic dose of 30 mgm. (gr. ss.) with 0.6 mgm. (gr. 1/100) of atropine. With this the patient should be confined to bed and a large amount of fluid given to flush out the kidneys. The fluid can be administered by mouth or by the slow drip method into the rectum, salt solution being used in the latter case. If the os is readily dilatable an attempt may be made to dilate it gently with the gloved hand, but the strictest asepsis must be observed during this, for if dilatation cannot be secured readily the uterus should be emptied at once by abdominal Caesarean section. In other words, while the uterus must be emptied as soon as possible, this must not be done by any means involving trauma to the mother. This therefore excludes all of the measures included under the term *accouchement forcé*.

Initiation of Wound Shock.—E. M. Cowell (*Lancet*, July 26, 1919) presents a résumé of the knowledge gained relative to the causation of wound shock and says that the factors which predominate in its pathogenesis are: The prewound factors of fatigue, exposure, lack of fluids, and presence of excitement; and the postwound factors of pain, hemorrhage, cold, and absorption of bacterial or tissue toxins. In addition to arterial hypotension the following definite facts may be demonstrated in an established case of shock: Capillary stasis and increased permeability of the vascular wall; reduction of blood volume as a result of the former, and through hemorrhage; absorption of toxic products from the damaged tissues, from bacteria, or from both combined; possibly toxemia from an increased secretion of epinephrin; diminution of intracellular oxidation, producing irrecoverable damage to the finer nerve cells; acidosis in the blood; profound lowering of body temperature; the toxic action of certain anesthetics, especially chloroform and ether; and the effects of hemorrhage. In the matter of the absorption of toxins from tissue destruction, the role of histamine must be further investigated,

for Dale has shown that this substance is capable of producing many of the manifestations of shock just enumerated. In the management of shock the psychic factors should be taken into consideration and all undue apprehension or excitement should be allayed by quiet persuasion, suggestion, or small doses of morphine if necessary. The loss of body heat should be counteracted at once and the loss of circulating fluids compensated by the free administration of fluids by mouth or rectum, or by the intravenous infusion of Bayliss' gum solution. When there has been an actual loss of much blood immediate transfusion of whole blood should be carried out as soon as possible. Gas and oxygen, alone or combined with regional anesthesia, should be employed for operative interference. Finally, the author states that there is no evidence of any permanent benefit from the injection of pituitrin, adrenalin, ergot preparations, atropine, caffeine, camphor, strychnine, or any of the numerous drugs recommended from time to time.

Milk Diet in Diabetes Mellitus.—P. Le Noir (*Bulletin de l'Académie de médecine*, July 1, 1919) has for some years been employing brief "milk cures" in diabetes, either to overcome complications or severe symptoms, or for purposes of alteration with the customary protein and fat diet. The author believes even a mitigated protein fat diet has various drawbacks and in the long run may lead to harmful results in diabetics predisposed to visceral disease, arteriosclerosis, and often already suffering from gout and obesity. For temporary detoxication, therefore, he subjects his patients to five day cures in which the food taken is restricted to from two to three litres of milk—usually two and a half litres—given at equal but rather short intervals. Slight diminution of the body weight occurs, but hunger and lassitude are not marked. The milk cure is repeated at intervals dependent upon the severity of the disease, the tendency to visceral lesions or arterial changes, and the patient's willingness to undergo it. In the periods between milk cures the ordinary antidiabetic diet is ordered, avoiding unnecessary strictness as well as any excess of total intake. Among seventeen cases of "arthritic" diabetes of intermediate severity, without emaciation, four showed complete disappearance of glycosuria after the first "cure," the sugar reappearing only in traces or not at all for several months. In nine cases the sugar was markedly reduced, often by two thirds or one half, after each milk cure, while in four the measure was unsuccessful. In one instance the sugar output, already reduced from eighty to twelve grams by strict antidiabetic diet, fell to four grams under the milk diet. In another patient passing forty-nine grams, glycosuria disappeared, and 100 grams of saccharose given in three litres of milk failed to cause its reappearance. The milk cure is formally indicated in cases with renal, cardiac, or hepatic disease or advanced arteriosclerosis, not only to dispel skin and gastro intestinal symptoms but to secure rapid reduction of glycosuria. Milk cures should also be used regularly as a corrective of the customary diet, and are especially advisable in obese, gouty, and bulimic cases.

Diagnosis and Treatment of Panniculitis.—Frank A. Cummings (*Boston Medical and Surgical Journal*, August 21, 1919) says that panniculitis is a common condition characterized by soreness, edema, and sclerosis of the superficial layer of fat. On palpation severe, sharp pain is produced by slight pressure and nodular masses are to be found in the skin. The three prominent signs on which the diagnosis may be made are: 1, Pain on light palpation; 2, swelling; 3, localized edema. The pain may best be found by gently grasping the superficial tissue as in pinching, but no pressure with the fingers is necessary. The pain is out of all proportion to the lightness of the pressure. The swelling is boggy in character and it is in these areas that the nodules are commonly found. The treatment consists of massage, regulation of the diet, and increase of elimination and oxidation. The massage should be given by a well trained Swedish graduate, one who understands major and minor petrissage, and not by a masseur who feels that he must abuse the patient in order to produce results. The time of massage should be limited to frequent, short periods, because it is painful and long treatments usually produce exhaustion. Thirty minute periods three times a week are usually sufficient. The best way to relieve the constipation is by high rectal injections of warm olive oil repeated every other night, and by regulation of the diet. The obese patient should have his weight reduced and the high percentage carbohydrates of the diet reduced to a minimum, while the low percentage carbohydrates, fruit and vegetables, should be increased. Gland products are valuable in many cases of poor oxidation. The prognosis is always good when the patient is treated properly.

Extirpation of the Lacrimal Gland for the Relief of Epiphora.—Christian R. Holmes (*Archives of Ophthalmology*, July, 1919) makes an incision from near the center of the upper orbital arch, following the bony margin, to a point three mm. below the outer canthus. The fascia is cut through along its attachment to the orbital margin. Fatty tissue, if present, is retracted, bleeding points controlled. The gland is usually two or three mm. upward and backward from the edge or the orbit. A thin layer of fascia between the superior and inferior glands hides the latter. The gland tissue is friable and in order to be positive that nothing is left to invalidate the success of the operation, much care must be used to dissect it out in its entirety. By means of a slender, blunt pointed pair of scissors, broad fixation forceps, small knife and a pair of tenotomy hooks, one can with patience dissect out the gland with little change of its shape, thereby assuring the operator that the extirpation is complete.

Cancellous Bone in Nutrition and Recalcification.—Berthier (*Bulletin de l'Académie de médecine*, July 1, 1919) calls attention to the marked value of fresh cancellous or spongy bone, particularly from veal, as a wholesome food and tuberculosis prophylactic. In tuberculous subjects and other patients suffering from decalcification, cooked spongy bone gave excellent results in restoring the body from its rundown condition. Cancellous bone consists about one half of ossein, which, in turn,

is laden with calcium salts. From the nutritive standpoint ossein is a substitute for muscle tissue, while the phosphates and carbonates of lime associated with it have already been elaborated in the animal system and are eminently suited for assimilation. The best method of preparing the fresh spongy bone for ingestion is to boil bones—short, spongy bones and epiphyses—in water, with salt, vegetables, and a piece of meat for about six hours. The veal bones used are first split in half to expose the cancellous surfaces. Sometimes these spongy bones are sufficiently soft throughout to be eaten entire, or the cancellous tissue can be detached with the knife. The food is not only appetizing, but demonstrably improves the condition of the teeth, supplying minerals for their nutrition. That the food may be serviceable as a tuberculosis prophylactic is indicated by the fact that marked loss of calcium from the body favors tuberculization. Dental caries is frequent among tuberculous subjects because they are suffering from decalcification.

Flavine in Treatment of Comminuted Fractures of the Jaws and Acute Septic Stomatitis.—H. Watson Turner (*Lancet*, August 2, 1919) found that where comminution was extensive it was impossible to decide which fragments were dead and which were viable, so he made it a rule to leave all the bony fragments undisturbed and to bathe and soak the whole fractured area for five to ten minutes with a 1-1000 solution of flavine, disturbing the parts as little as possible. This was done after the teeth in the line of the fracture and all septic teeth and roots had been removed. Then the external wound was cleansed with flavine solution and dressed with gauze soaked in flavine solution, which was also used to pack all sinuses. The remainder of the treatment followed the usual lines, cleanliness of the mouth being insured by frequent syringing. This plan gave highly favorable results in many cases with severe damage and infection provided the cases were seen not later than a week to ten days after the injury. Acute stomatitis, even amounting to gangrene, was frequent among soldiers, resulting from preceding chronic septic oral infection. Excellent and rapid results were secured in such cases by careful syringing out of the mouth, with special attention to all pockets, with 1-1000 flavine solution. Then gauze soaked in the flavine was lightly packed into the angle of the cheek and all around the gums and retained for twenty to thirty minutes. This treatment was repeated three times daily.

Malaria from the Surgeon's Standpoint.—Marguerite White (*Lancet*, July 26, 1919) emphasizes the fact that the parasite of the subtertian, or estivoautumnal, malaria sporulates almost wholly in the internal organs, attacking any organ and producing symptoms peculiar to disease of that organ, such as endocarditis, pneumonia, splenitis or perisplenitis, hepatitis, pancreatitis, and other diseases. After describing a number of cases showing symptoms suggesting surgical conditions of various organs the author says that it is doubtful that any of us realize sufficiently what a protean disease malaria is. An operation often brings on a very severe at-

tack of malaria, and acute dilatation of the heart during or after an operation is frequent in malarial persons. For this reason the anesthetic must be chosen with care, and ether, given by the Vernon Harcourt inhaler, seems the safest. A negative history and the absence of parasites from the peripheral blood are often of no account in the diagnosis of a positive malaria. Finally the subtertian malaria may simulate almost any disease, medical, surgical, or mental, and may be so insidious that when the patient feels ill enough to consult a physician it is too late for treatment to be of much avail.

Cervical Sympathectomy in the Cure of Facial Neuralgia.—V. Pleth (*American Journal of Surgery*, May, 1919) states that in the treatment for facial neuralgia deep infection of alcohol had given him the best results though pain returned in from nine to twelve months. In a few cases keratitis or even the loss of an eye had been observed. In performing the operation of cervical sympathectomy alcohol had been injected at all points of exit of the trigeminal from the skull; the inside of the foramen ovale had been avoided. It usually takes about three months before any definite relief is manifested. In one case where the injection had been made for facial neuralgia a previous neuralgia of the radial and ulnar disappeared.

Treatment of Obstinate Hiccough.—D. Francisco Venegas (*Revista de Medicina y Cirugía Practicas*, July 28, 1919) describes his method of treatment of persistent hiccough. This consists in flexing the legs on the thighs, then the thighs on the abdomen, exerting considerable pressure for a period of at least several minutes. The action is that of pushing the abdominal organs upwards so that they in turn exert pressure on the diaphragm. This method was first advocated by Jodicke, and the essential point in the technic is the sustaining of the maximum flexion for a sufficient time to assure a disappearance of the diaphragmatic spasm.

Treatment of the Sac in Herniorrhaphy.—A. Merrill Miller (*Surgery, Gynecology, and Obstetrics*, August, 1919) states that high ligation and amputation of the hernial sac is a point in technic on which most surgeons are agreed. Various procedures have been devised to accomplish this. In order to make sure that the sac does not contain a tag of omentum or a loop of intestine, it is usually opened widely and the ligation made under the guidance of the eye. Any mechanical appliance which would add to the certainty and safety of high ligation would be welcome. The Allis pickup forceps should prove of service in accomplishing this. After it is applied around the sac the smooth spring blades are approximated until the peritoneal surfaces are in opposition.

Ankylostomiasis in London.—Charles Horne Warner (*British Medical Journal*, July 26, 1919) records the discovery of a case of ankylostomiasis in a boy fifteen years old who had never been out of England, or in any of the mining districts. In fact, he had never been very far from the city of London. The author believes that the boy may have acquired his infection through a considerable association with soldiers who had been abroad.

Miscellany from Home and Foreign Journals

Acute Necrotic Parotitis.—V. Zachary Cope (*British Journal of Surgery*, July, 1919) states that while staphylococci or streptococci were always the immediate exciting agent, yet the more important element in causation was the excessive heat or debilitating diseases. The majority of cases occurred during the hot months. The invasion of the parotid by septic organisms traveling along Stenson's duct was the most likely mode of infection, though a pyemic origin from some small septic focus elsewhere might have been possible. Though the mouth was seldom dirty it was, as a rule, drier than usual. Streptococci and staphylococci were the only organisms recovered. The increased tension on the capsule led to gangrene. At times the entire gland became gangrenous or both glands were involved at the same time. After incision sloughs came away for some days, and when the dead tissues had escaped the anatomical structures on the deep aspect of the parotid were exposed as if by dissection. The thrombosed temperomaxillary vein was seen in the space, the external carotid was felt pulsating, and styloid process was easily palpated at the bottom of the wound. If the gland was incised during the early stage of the inflammation, little or no discharge came away from the gangrenous tissue. Later as the sloughs separated a copious purulent discharge escaped. If the gland was not discharged early enough, the discharge found a weak spot in the capsule and burst into the external auditory meatus at the juncture of the bony and cartilaginous portions. The swelling in the parotid developed in men who had been weakened by suffering or who was in a debilitated condition. This would be accompanied by fever and general symptoms of malaise.

After a few days an incision would be made into the swellings, but as a rule no improvement took place, for the initial incisions were always too small. By the time the patients were seen they had already received several insufficient incisions and it was realized that the only satisfactory treatment was incisions on a much freer scale. If the gland was freely incised, recovery usually followed after the substance of the gland had come away by sloughing.

In cases of severe toxemic type, unless incisions were freely made or if they had not been made early enough death resulted from septic absorption. After the gland had sloughed away the wound granulated slowly or quickly according to the vitality of the patient. In spite of the free incisions made evidences of facial palsy were not seen, though it was thought that scar tissue formation might eventually involve some of the branches. Most of the patients left before the wound had healed.

In the early stages of the disease it was impossible to say how serious the pathological process would be and usually fermentations were applied. When the condition was seen to be of a serious nature it was necessary to make free incisions into the affected gland at the earliest moment. In this

way the tension inside the gland was relieved, absorption of the toxic products prevented, the dead gland material allowed to come away, and the gangrene was more limited in extent. At the same time pain was relieved. Hilton's procedure for opening a parotid abscess, using a small incision with a director and sinus forceps, was always futile for the gangrenous forms, and at times it may prove fatal. In planning incisions it was to be remembered that the main mass of the gland swelling was around the angle of the jaw and that separate openings were needed for the upper part of the gland and for the portion which lay against the mastoid process. The incisions which had been found useful were a large **⊥** shaped cut at the angle of the jaw over the maximum swelling, a subsidiary incision straight or **⊥** shaped in front of the auricle, and a straight cut behind the auricle over the mastoid process. If the mastoid incision was not made at first it was always needed later. Through these incisions the gland could be thoroughly explored and opened up and rubber drains inserted in order to prevent the deep parts from closing together and so preventing drainage. The necrotic gland substance bleeds very little but occasionally vessels in the surrounding tissues need ligature. The following conclusions were reached:

1. There is an acute inflammatory infection of the parotid which may be called acute necrotic parotitis.
2. The condition may be unilateral or bilateral.
3. The predisposing causes are debilitating conditions such as the severe effects of heat, dysentery, or other severe illness. The exciting cause is infection with septic organisms.
4. The condition leads to severe general toxemia which may terminate fatally unless there is prompt surgical intervention.
5. Treatment by free incision and drainage of the affected parotid gland is imperative.

Chronic Intestinal Stasis (Arbuthnot Lane's Disease) and Its Surgical Treatment.—Victor Pauchet (*Bulletin de l'Académie de médecine*, July 1, 1919) states that chronic intestinal stasis is frequently a direct or indirect cause of chronic appendicitis, gastric ulcer, diverticulus, enteritis, gall bladder and liver affections, migraine, deforming rheumatism, tuberculosis, neurasthenia, early arteriosclerosis, and general weakness. Many of these patients are finally abandoned to their fate after being subjected to appendectomy, nephropexy, hysteropexy, gastroenterostomy, etc. The causes of the stasis are functional disturbance at Keith's contractile segments of the intestine, followed by organic changes in the intestinal walls and covering serosa, and Lane kinks at some joint or other of the bowel. The resulting symptoms are digestive or toxic and include gastralgia, enteralgia, headache, insomnia, nervousness, general depression, skin pigmentation, loss of weight, cold hands and feet, dysmenorrhea, amenorrhea, and sterility. The so-

cial value of the individual is reduced, and premature aging and serious diseases of all kinds invited. The stomach is generally ptotic and elongated, empties slowly, and the duodenum is dilated. Many of these patients go to stool regularly and even have diarrhea. The diagnosis is confirmed by giving a bismuth meal and barium enema and securing three to five x ray negatives at intervals of twelve to twenty-four hours. The treatment during the first stage, in which permanent kinks are not yet established, consists of general hygienic measures, mineral oil, massage, and opotherapy. If stasis, as shown by the x rays, persists in spite of medical treatment, surgical intervention is indicated: Ileosigmoidostomy, right hemicolectomy, or complete colectomy, the latter being done in one or in two stages, i. e., six months after ileosigmoidostomy. Pauchet, in the last fifteen years, has done fifty-six ileosigmoidostomies, with two operative deaths; eighteen total colectomies in one stage, with three deaths; thirty-six right hemicolectomies, with one death, and eleven two stage colectomies, without mortality. Whereas one stage total colectomy in a rundown patient is a severe operation, two stage colectomy is a benign procedure. Postoperative benefit was slow but sure, especially when aided by physical culture, good hygiene, and psychotherapy. Anemia and organic changes due to chronic stercorremia reduced the benefit from operation.

Tolerance of Freshly Delivered Women to Excessive Loss of Blood.—J. Whitridge Williams (*American Journal of Obstetrics*, July, 1919) reports a study of this question in 1,000 cases. In 973 of these the placenta was merely expressed from the vagina. Routine massage of the uterus only tends to disturb and prolong the process of separation of the placenta, and premature attempts to express it with the original Credé method frequently lead to retention of placental fragments and greatly increase the amount of bleeding. After delivery of the child, Williams merely determines the location of the fundus by palpation or inspection from time to time and when—usually after five to thirty minutes—it has risen four to six centimetres above its original location, an indistinct swelling sometimes also appearing above the symphysis, the placenta is known to have become separated and is expressed by gentle pressure upon the fundus. Among 1,000 cases of spontaneous labor, the average loss of blood was 343.7 mls; 527 cases, however, lost less than 300 mls. The author arbitrarily selects 600 mls as the limit between physiological bleeding and postpartum hemorrhage. No less than 130 women lost 600 mls of blood or more, seventy-one lost 800 mls or more, forty-one 1,000 mls or more, eight 1,500 mls or more, and four 2,000 mls or more. The average pulse rates during the first forty-eight hours after delivery were 91.66 and 96.45 respectively in cases without and with hemorrhage. The hemoglobin percentage was not markedly lowered unless the hemorrhage exceeded 1,250 mls, but beyond that several marked reductions were noted, e. g., forty per cent. hemoglobin in two patients who had lost 1,350 and 1,400 mls, respectively. Apparently, some freshly delivered women may lose 1,250 to 2,400 mls of blood with compara-

tive impunity, even though, computing the blood as one thirteenth of the body weight, such losses would represent one quarter to one half of the total blood. This the author accounts for on the supposition that the pregnant woman conducts her body on a "low gear" metabolism, so that the energy expended is scarcely increased in spite of the increased work incident to labor. Although average normal women, however, can lose 1,250 to 1,500 mls of blood with little or no ill effect, an observation in private practice showed that a loss of 1,800 mls may place life in great jeopardy.

New Growths in the Abdominal Wall after Laparotomy.—W. C. Danforth (*Surgery, Gynecology, and Obstetrics*, August, 1919), asserts that during the past year he has had two cases of new growths in laparotomy scars; one a true desmoid and the other a fibrosarcoma. The diagnosis is not difficult in these tumors. They occur most frequently in the sheath of the rectus and upon the aponeurosis of the oblique muscles. They are usually irregularly round with rather sharply defined borders and when being grasped are not movable on the underlying tissue. Upon being forcibly moved the underlying abdominal wall moves with them. The most characteristic point is that when the abdominal wall is under tension they disappear, while when it is relaxed they become easily noticeable. They are usually small but have been known to attain the size of a fetal head. They must be distinguished from sarcoma hernias of the muscle, lipomata, and from inflammatory growths in scars following laparotomies. The time between the operation and the appearance varies from some months to five and a half years. The growth is slow and not accompanied by any functional sign. The tumors are usually globular or ovoid, with a smooth, irregular surface. They are subcutaneous and the skin over them shows no signs of edema. Upon incision a small abscess is found in the centre of the growth containing a piece of silk suture. When this is removed the growth disappears. The treatment consists of the excision of the mass, including the portion of the aponeurosis forming the base of the tumor. This means that a considerable area of the underlying aponeurosis must be sacrificed. The excised portion should be examined microscopically in order that the possibility of the occurrence of a malignant growth may be excluded.

Injection of Air after Therapeutic Puncture in Serofibrinous Pleurisy.—P. Emile-Weil (*Bulletin de l'Académie de médecine*, June 24, 1919) recommends injection of air into the pleural cavity after every puncture for serofibrinous pleurisy. The main benefit is that of preventing subsequent adhesions and the secondary difficulties that may follow. Of eighty-six cases of serofibrinous pleurisy subjected to puncture alone, seventy-two, or eighty-four per cent., showed marked secondary trouble a few months or weeks later. Of fifty cases, on the other hand, in which puncture was followed by air injection, forty-one, or eighty-two per cent., recovered without adhesions; in each of the nine cases which did show adhesions the pleural trouble was of long standing. Seventeen cases out of the fifty with air injection recovered completely in

from two to three months after one air injection. Fever and other signs of infection rapidly disappeared, and most of the patients gained four to six kilograms in weight. In a few, recovery occurred in less than one month. Thirty-three cases required more than one injection. Recovery was as complete in these as in the cases receiving but one injection, but the time was longer—three to six months. Even in cases with recurring effusion recovery is a possibility with this method; one such case recovered in a year, after ten air injections. Additional effects of the air injection are that where active tuberculous lung lesions coexist, the injection may check their progress, and that where localized mediastinal pleurisy complicates the general pleurisy, air injection permits recognition of the mediastinal pocket with the x rays and its evacuation. All the author's observations were controlled with the x rays. The air injection requires only a Potain apparatus with manometre attached. The pressure of the fluid is noted before evacuation, and after the evacuation air is introduced until the preexisting pressure is restored. All steps of the procedure should be carried out under radioscropy.

Pregnancy and Labor Following Amputation of Cervix Uteri.—O. S. Pavlik (*Surgery, Gynecology, and Obstetrics*, August, 1919) states that there should be no hesitancy in operating when the women are approaching the climacteric, but there seems to be some doubt as to the advisability of advocating operation when the patients are likely to conceive. The question resolves itself upon the functional importance of the cervix. The cervix acts as a puckering string to a bag or as a stopper to a bottle, insofar as it relates to a gestating uterus, and its removal subjects the patient to the theoretical and, as the cases seem to show, to an actual danger of uterine evacuation at all stages of pregnancy. The danger of premature delivery, which affects at least fifty per cent. of the cases, is seriously added to by those tissue changes which take place in the amputation stump. It is thought that serious dystocia will arise from the cicatricial rigidity that follows the operation and that the operation should not be performed on women during the childbearing period unless more conservative measures have failed, and further, if the operation should be done during the childbearing period, the patient should be sterilized.

The Risk in Vaginal Examinations in Obstetrics and Its Replacement by Other Procedures.—Ernst Jegge (*Correspondenz-Blatt fuer Schweizer Aerzte*, July 10, 1919) demonstrated that even when rubber gloves were worn and all precautions observed there was a higher morbidity among parturients who had had a vaginal examination. This was done by comparing the results in 500 women thus examined with those in 500 women who were not subjected to such an examination. He claims to be able to learn nearly as much by other methods. He says that with the patient lying on her side, the physician's hand on the perineum, the palm on the lowest part of the sacrum, the finger tips between the coccyx and anus, pressing inward and upward between the labor contractions, and then pressing up hard, the head can be palpated if it is in the pel-

vic cavity or outlet. The dilatation of the os can be learned through the rectum. The diameter of the external os can be learned by palpation of the contraction ring. He claims that this method proved reliable in 91 per cent. of his cases, failed in 4 per cent. and was incorrect in 5 per cent.

Treatment of Fracture of the Neck of the Femur.—Walter D. Wise (*Surgery, Gynecology, and Obstetrics*, August, 1919) calls attention to the fact that formerly it was the custom in treating fracture of the neck of the femur in the aged and feeble to treat the patient's general condition and neglect the fracture. About five years ago surgeons began to treat impacted fractures of the femoral neck in these cases by putting the patient on a Gatch bed in a modified Fowler position, supporting the thigh in the desired position, in regard to abduction and rotation, by sandbags. Later extension was applied by adhesive to the flexed thigh, making a pull in the line of the thigh, leaving the flexed leg free. The extremity was abducted as much as the bed would allow and the patient could stand. If there was any difficulty in maintaining the abduction a modified Rainey splint or a simple rod spreader was used. The advantages of this treatment are:

1. It can be applied immediately after the injury, even while the patient is in shock.
2. The patient is comfortable and is not burdened by splints or casts.
3. Continuous extension is provided, no matter what position the patient assumes.
4. The immobilization is not complete enough to cause entire disuse of muscles.
5. It is easy to get the patient on and off the bedpan.
6. It is easy to apply and can be used in private homes.
7. It keeps the patient in a sitting position and guards against hypostatic congestion of the lungs and pneumonia.

Thymol as an Anthelmintic.—X. Arnozan (*Journal de médecine de Bordeaux*, May 25, 1919) reports favorable experiences with thymol in two cases of teniasis. The remedy was originally recommended for this purpose in 1913 by Artault de Vevey. The patient takes every morning on an empty stomach for six days a cachet containing 0.25 gram of thymol, and is warned to abstain from alcohol in any form during that time. The worm is usually expelled on the third or fourth day. The first case treated by the author was in a boy of ten, who had already been given several teniafuges without complete success and had had several fainting spells under the treatment. On the third day of thymol administration, a considerable length of worm in a shrivelled condition was expelled. The scolex was not secured, but two years after treatment no recurrence had taken place. The second case was that of a little girl four and a half years old who had been harboring *Taenia saginata* for over eighteen months and had been treated unsuccessfully with areca nut, pumpkin seed, pelletierine, strontium lactate, and male fern. The child was given 0.15 gram of thymol for six days, and fats and oils forbidden. On the second day a great

many segments were discharged, together with a large amount of shapeless magma. From that time on, no further trace of a worm was passed. Four months later pumpkin seed was given for provocative purposes, but the result was negative. Ten months have elapsed since the thymol was given, and recurrence has not taken place. Artault has himself admitted that the thymol treatment is not infallible, but the fact that it is usually successful and causes no lassitude in patients who take it renders it the anthelmintic of choice. Further trial is required to find out whether it is specific against any single variety of tenia or is effectual against all species.

Further Report on Focal Infections of the Eye from the Intestinal Tract.—J. G. Dwyer (*Archives of Ophthalmology*, July, 1919) says that the big majority of these cases comprised such diseases as iritis, iridocyclitis, cyclitis, rheumatism of the eye; keratitis of special forms; retinitis, choroiditis, and other disorders of the types usually associated with metabolism; optic neuritis of the same type, and edema of the optic nerve; sympathetic ophthalmia. His directions for the treatment of highly acid stools are as follows: Strict adherence to the diet list. Commence treatment with a small dose of castor oil or citrate of magnesia one half hour before breakfast; no further purges. Irrigation of colon: two quarts of warm water, temperature 108 F., containing one teaspoonful of sodium carbonate to the quart, each night before retiring for three nights. The bag containing the solution should not be elevated over eighteen inches above rectum. Do not use high rectal tube. The small tube about four inches long generally sold with fountain syringes answers the purpose. The warmth of the solution and slowness of injection permit reverse peristalsis. At the end of the irrigation treatment three or four tablespoonfuls of sugar of milk are added to the diet for each meal. Live cultures of colon bacilli, approximately six ounces at room temperature, are now injected into the colon once every three days until we have an almost pure culture of colon bacilli in the fecal examination. These cultures are injected very slowly, either by catheter or rectal tube. Half an hour to one hour previous to plantation of colon bacilli three to four ounces of a strong solution of common sugar are injected into the colon, the object being to furnish a growing medium for the bacilli.

Preparation of the Patient for Rectal Operation.—Charles J. Drucek (*Medical Summary*, September, 1919) advises a few days in the hospital before operation, especially in patients who are greatly depressed physically from prolonged infection or loss of blood, or who are very nervous. The need of emptying the colon by catharsis before operating upon the pelvic bowel varies widely, sometimes being quite unnecessary and again essential. Its main purpose is to cleanse the bowel of gas or feces which might interfere with the best results of operative work. Another purpose is to have a comparatively empty colon in those cases where it may be desirable to keep the patient constipated for a few days after the operation. As to the drug used, it is sometimes well to have the person take that

laxative to which he is accustomed, although in most cases either half an ounce of compound licorice powder or one ounce of castor oil acts well. Salines are contraindicated in the presence of hemorrhoids, fissures or ulcers. If a preoperative laxative is given it may have to be given three or four days before and the alimentary canal allowed to function for a couple of days. The last food which the patient takes before the laxative is given should have time to leave the duodenum and to be absorbed before the rapid peristalsis connected with purgation begins. After the purgation has ceased, nothing but easily digested food in properly regulated quantities should be given, such as the quickly absorbable forms of sugar, meat extracts or light wines; if the patient is very weak, predigested food should be given until the upper intestine has sufficiently recovered from its fatigue to assume normal function. Liquid diet usually increases gas in the intestine, while fruits, sweets, vegetables and milk are prohibited. Because of the danger of tetanus, all raw food should be forbidden for three days before operation. A glass of water is given every hour up to three hours before operation, when an enema is given; one hour before the anesthetic a hypodermic injection is given of morphine, one quarter grain with hyoscine hydrobromate 1/100 grain, with usually a cup of tea or coffee.

Indications for Surgical Treatment of the Thyroid Gland.—George Earle (*Minnesota Medicine*, August, 1919) believes that complete rest in bed, with irradiation, should be continued until the metabolism reaches a level. If rest and the röntgen ray fail to restore the metabolism to within twenty per cent. of the normal, it is proper to resort to surgery unless there is some definite contraindication. Following operation, if the metabolism again increases, further active treatment should be carried out, and these patients should be kept under observation for months or years.

Eczematoid Epidermophyton Infection in China.—Hermann Dold (*China Medical Journal*, March, 1919) says that infections of this nature are frequently encountered in China, though seldom in Europe or North America. The favorite seat of infection is the foot, the interspaces of the toes, especially the fourth interspace, but it may also occur on the hands, the genitocrural region and other parts of the skin. Four main types are encountered: the vesicular, the chronic intertriginous, the chronic hyperkeratotic, and the pyodermic. The so-called Hongkong foot, the dermatitis rimosa of the toes (Castellani), and the dermatitis plantaris bullosa (Cantlie), are in all probability identical diseases. They, as well as many cases of eczema of a dyshidrotic and intertriginous type, appear to be manifestations of infection with epidermophyton. Out of ninety-eight cases of so-called Hongkong foot which were examined microscopically, a fungus was found more or less abundantly on and within the layers of the epidermis in ninety-five. On the other hand, out of thirty persons examined in a similar manner, whose skin was either healthy or affected by some similar disease, a fungus was encountered twice only and then the spores and threads were few. In thirty-one cases of so-called

Hongkong foot cultivation of the fungus was attempted; in fourteen this was successful and yielded a growth more or less characteristic of epidermophyton inguinale (Sabouraud). In two cases the characteristic symptoms of the disease were produced by placing pure culture material of epidermophyton into close and prolonged contact with the skin between the toes.

The Insidious Aspect of Rheumatic Fever in Childhood.—Arthur G. Helmick (*Ohio State Medical Journal*, September, 1919) brings out the fact that in the child rheumatic fever differs from the disease in the adult in that it is characterized by inflammation in the heart or joints or both, with its more essential symptoms referable to the heart and with a tendency to articular symptoms of comparatively slight clinical significance. Rosenow's work proves that the disease is due to a streptococcus with many strains included in the group. Further, there can be little doubt that the tonsils are the portal of entry for the infecting bacteria. Before the second year rheumatic fever is practically unknown, and up to the fifth year the probable incidence of the disease is slight. An important fact is that heart symptoms are always accompanied by higher fever than joint symptoms and that the fever is higher in pericarditis than in endocarditis. Chorea should always be looked upon as a manifestation of rheumatism. The development of a murmur is almost always accompanied by cardiac symptoms, as a change in rate and rhythm of the heart, followed by a harsh first sound and dyspnea.

Treatment of Epidemic Cerebrospinal Meningitis.—Luigi Nelli (*Gazzetta degli Ospedali e delle Cliniche*, May 15, 1919) has found that simple lumbar puncture even without serum therapy has lowered the mortality almost one half. The serum seems to have an especially beneficial effect on paresis and paralysis of both spinal and cranial nerves, strabismus, diplopia, delirium, and mentality. The space used was always that between the third and fourth lumbar vertebrae, and the quantity of serum given was always less than that of the cerebrospinal fluid withdrawn. The anaphylactic phenomena were more rare than with antidyenteric serum, and consisted in urticaria, urinary disturbances, and mild joint swellings. The foot of the bed was raised for twelve hours after the injection of the serum.

Bosch-Yaws.—E. Bonne (*Journal of Tropical Medicine and Hygiene*, July 1, 1919) reports clinical observations of this disease, prevalent in Dutch Guiana and described in 1911 by Flu, who showed that it is really a leishmanial skin infection and is unrelated to yaws or frambesia. Bonne observed cases with ulcers on the back of the hand and simultaneous skin infiltration and small nodules along the lymphatics of the arm. Leishmaniae were found in these nodules as well as in the ulcers. Nasal complications were seen in some cases, and in two cases large verrucous patches covered a lower extremity and created a pseudoelephantiasis. The author succeeded in cultivating the parasites. The natives hold certain thorny lianas responsible for the disease, and Flu thinks ticks may hide on these plants and act as transmitters of the disease.

Nervous Disturbances Following Parachute Descents from Captive Balloons.—G. Ferry (*Bulletin de l'Académie de médecine*, July 1, 1919) mentions as predisposing causes of these disturbances the prolonged duration of the aerial watches in balloons under war conditions, the exposure to cold and the relative immobility of the subject, the pitching movements of the balloon, and especially the continuous tense application to observation duties and fear that an enemy airplane will destroy the balloon. When a jump with the parachute actually becomes necessary inhibition in pneumogastric distribution seems to occur and the sympathetic gets the upper hand, not only temporarily but more permanently, so that when the subject again ascends unconsciousness and manifestations resembling hyperthyroidism may occur. The adrenal or thyroid functions are, perhaps concerned in this condition. Such an event nearly always necessitates permanent cessation of balloon ascensions and complete physical and mental rest, with a wholesome, roborant diet and sometimes suggestion to improve or dispel the functional disturbances which have occurred.

Impetigo Contagiosa in Infancy.—J. L. Murray (*Ohio State Medical Journal*, September, 1919) emphasizes certain points regarding this serious disease of the newborn. First, in the beginning, the flaccid bulla or vesicle seen in the impetigo of older children is present; second, the lesions are autoinoculable; third, the breast of the mother or the hands of the nurse or attendant are readily inoculated. The mortality varies from ten to thirty per cent. with the higher rate during the first four or five days of life. No microorganism but a staphylococcus was found, and the removal of the undermined skin with the application of a ten per cent. silver nitrate solution immediately arrested the disease. The ammoniated mercury ointment, which is almost a specific in older children, has very little value in the newborn.

Complications of Tonsil and Adenoid Operations.—H. L. Baum (*Annals of Otology, Rhinology, and Laryngology*, March, 1919) in discussing the prevention and management of tonsil and adenoid operations strongly recommends the application to the fossæ of a solution of fifteen grains each of cocaine, menthol, and phenol in one dram of alcohol, in order to relieve the postoperative pain. Occasionally, when the throat distress is marked, it may be necessary to repeat the application in an hour or more, but as a rule one or two applications are usually sufficient to control entirely the pain that ordinarily follows these operations.

Sand Fly Fever and Its Relationship to Dengue.—J. W. D. Megaw (*Indian Medical Gazette*, July, 1919) says of sand fly fever that it is a disease which is either one of the modifications of dengue or is closely related. Those who consider it different say it can be distinguished by the absence of a rash and of a secondary rise in temperature, though in many outbreaks of undoubted dengue numbers of cases show neither rash nor secondary fever. There is a possibility that dengue is conveyed by a mosquito, while sand fly fever is conveyed by a phlebotomus.

Proceedings of National and Local Societies

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-sixth Annual Meeting, Held at Atlantic City,
June 14, 16, 17, 1910.*

The President, Dr. GUY HINSDALE, of Hot Springs, Va.,
in the Chair.

(Continued from page 538.)

Differential Diagnosis in Pulmonary Abscess, Bronchiectasis, and Pulmonary Tuberculosis.—

Dr. FRANCIS MARION POTTENGER, of Monrovia, Cal., believed the clinical history should be carefully studied as it would often aid in the differentiation of these processes. Pulmonary abscess was a disease caused by those microorganisms which produced acute infections. They were often found in the air passages, as was also the case during epidemics of acute respiratory disease. If the abscess followed operation on the upper respiratory tract it was probable that the bacteria were lodged in large numbers and aspirated directly into the trachea and bronchi. It had been proven that they were capable of ready implantation and rapid multiplication. They followed the direction of the strongest air currents with greatest ease and usually produced their infection in the lower lobes, being less often found in the upper lobes. Observation had shown that cavity formation in tuberculosis was more apt to be preceded by repeated attacks of toxemia, sometimes months apart, while pulmonary abscess usually came on promptly following an acute infection in a patient who was previously in good health. There were few cases of tuberculous abscess in which the patient had complained of acute illness for only a short time. The patient with tuberculosis as compared with the one suffering from pulmonary abscess or bronchiectasis was more apt to display nervous irritability and a greater degree of nutritional disturbance when the acute process came on. Repeated attacks of bronchitis were common in bronchiectasis and in tuberculosis, but not in pulmonary abscess. Blood metastases should be taken into consideration. Bronchiectasis, being a disease of the bronchi in which dilatation and distortion occurred as a result of pathological changes in their walls, often followed fibrosis and contraction of pulmonary tissue. It was most commonly found near the hilus although it might involve the bronchi in all parts of the lungs. Pulmonary tuberculosis, being a chronic infection resulting from microorganisms not commonly found in the air passages of the nontuberculous and which required time for multiplication, was not a disease which resulted immediately after the bacteria gained access to the air passages. The tubercle bacilli, after entering the tissues, passed to and settled in the lymphatic glands and later traveled through the lymph stream to the capillaries or lymph spaces of the pulmonary tissue. Active tuberculosis with cavity formation was located near the apices, while pulmonary abscess was usually present in the lower lobes, and bronchiectasis might

be found in any portion, but more often affecting the large bronchi near the hilus. Careful inspection would reveal a diminution of motion nearly always to be noted on the side of the involvement in all these affections. This might be difficult to ascertain in pulmonary tuberculosis in those cases where there was a lesion in both lungs. The lung involved in bronchiectasis was usually contracted and the mediastinum shifted toward that side. Contraction with shifting of the diaphragm might or might not take place in pulmonary abscess, although it usually did if the process was a chronic one. This was also true in tuberculosis. Chronic tuberculosis of the lung might be suspected whenever the neck muscles and the subcutaneous tissue and skin of the neck and chest above the second rib anteriorly and the spine of the scapula posteriorly were markedly degenerated. Reflex changes in muscles and degeneration of the skin, subcutaneous tissue, and muscle, were as a rule not so marked in pulmonary abscess and bronchiectasis as in pulmonary tuberculosis. Pulmonary abscess and bronchiectasis produced degeneration in these same tissues, but generally it was not so extensive, and in some instances practically no reflex trophic changes occurred. In reference to the signs elicited by auscultation, it was true that pulmonary tuberculosis might be suspected in cases giving a definite history of cough and expectoration, usually a fairly large quantity, and comparatively few signs of moisture on auscultation. If, however, the examiner could understand why there were marked changes on auscultation in pulmonary tuberculosis, and why with even larger quantities of sputum, as was often the case, there was such an absence of changes on auscultation in pulmonary abscess and bronchiectasis, then the differentiation of these affections would be easier. The explanation was based on the difference in pathology. Conditions which favor the production of the most constant and greatest quantity of pulmonary râles were not found in the cavity itself but in the surrounding tissue as noted in pulmonary tuberculosis. Pulmonary abscess or bronchiectasis was indicated where there was a history of persistent expectoration of moderate or large quantities of sputum, with a diminished expiratory excursion on one side of the chest, accompanied by an absence or paucity of crepitations or mucous râles on auscultation over the affected side.

Enlarged Thymus Gland.—Dr. RICHARD COLE NEWTON, of Montclair, N. J., presented a report of this case, a young man. He stated that the patient was twenty years of age. He had always been in good health, weighed 145 pounds, and had an entirely negative personal and family history. Two weeks after a long swim in cold water following exhausting labor he began to complain of lassitude and loss of muscular vigor with some shortness of breath. A little later his neck, upper chest and shoulders, especially the right, began to swell with a soft edema. A number of maculae appeared, in clusters over the upper sternal region.

They were a dark purple in color, and about the circumference of a dime. The loss of muscular tone as well as the dyspnea gradually increased. A loud double heart murmur developed and the patient appeared very ill. Two stereoscopic roentgenograms were taken and the thymus gland was found enlarged to such an extent that it covered all or nearly all of the anterior surface of the pericardium. X ray treatments were begun and after the patient had received six at weekly intervals, he apparently recovered and resumed his normal life. A year later a second attack occurred which was preceded by a rapid run to catch a train and it was believed that this exertion induced the recurrence. The edema and dyspnea returned and the x ray treatment was resumed, the patient being again free from edema after nine exposures. The heart murmur was again present, although milder than formerly. The improvement after a second series of x ray exposures was only temporary. Two new stereoscopic plates of the chest showed a thymus still very large although possibly not so much so as in the first pictures. There was, however, in addition, considerable evidence that there had been an involvement of the lobe with tuberculosis. Nothing abnormal was found in his urine. The patient gradually became worse and an aneurysm of the aortic arch developed with protrusion of the upper sternal region and a distinct tracheal tug. Edema of the feet, ankles, hands and wrists became marked and the patient suffered excruciating pain in the right arm and shoulder. He gradually became helpless and died March 31, 1919. Dr. Newton commented on the fact that following many sudden deaths for which there was no apparent cause, an enlarged persistent thymus had been observed post mortem either alone or co-existing with certain pathological conditions in the lymphatic system and other bodily organs. These abnormal changes as a whole were originally grouped together under the title of status lymphaticus, but recent observers had divided this syndrome into the three subdivisions of status thymicus, status thymicolymphaticus, and status lymphaticus. These three divisions were named according to the size and the apparent activity of the thymus. In status thymicus the size of the thymus was usually larger than in status thymicolymphaticus and was accompanied by marked changes in the lymphatic system. In the status thymicolymphaticus there was a general hyperplasia of the lymphatic tissues throughout the body especially the tonsils and the lingual, pharyngeal and cervical glands. In status lymphaticus the thymus was not enlarged and might even be subnormal in size; nevertheless the size of this organ was probably not of itself a criterion of the systemic lesions present in these three allied conditions. Most of the cases of so-called thymic death occurred in adults, but some had happened in infancy and early life and undoubtedly many of them were not attributed to the right cause. Among the diseases having a more or less close relation to the thymic and general bodily conditions under discussion were exophthalmic goitre, Addison's disease, diphtheria, tetanus, eclampsia, eczema in children, myasthenia, osteomalacia, etc.

A practical conclusion that might be drawn from the study of thymic conditions was that the x ray was useful in removing at least some of the uncertainties of the diagnosis and was apparently a favorable therapeutic factor. Operation was successful in a few reported cases. These, however, were all in infants. That adults with enlarged thymus could safely submit to the risks of operation was still a debatable question. A more strenuous effort should be made to ascertain whether something definite could not be done to generally benefit these cases by hygiene and diet rather than by medication, for it was quite likely that anomalies in the structure and size of the thymus were due to a constitutional condition rather than to primary disease of the organ itself. There were stages of hyperplasia of the thymus and the lymphatic system. These stages seemed to be normal to the growth and development of the human body. Interference with or undue activation of these processes, however, appeared to cause or at least to accompany the condition which was known as status lymphaticus, and this was characterized by some permanent bodily defects such as arterial lesions, a small heart and an excess of lymphoid tissue might or might not be characterized by the *typus feminis*, in the conformation of the body. The patient who was the subject of this report did not show any of these outward physical characteristics but he had the tendency to edema and to aneurysm so well marked in many of these cases. The fairly large thymus in this case would probably have atrophied in time, and had the aneurysm probably caused by overexertion in a person with congenitally weak and attenuated arterial walls, not occurred as a complication, he might have enjoyed a number of years of useful life. That the x rays were so efficient the first time and so ineffectual the second was undoubtedly because the aneurysm had not developed until during the interval before the recurrence of the condition.

AMERICAN PEDIATRIC SOCIETY.

Thirty-first Annual Meeting, Held in Atlantic City, N. J., June 16, 17, and 18, 1919.

The President, Dr. EDWIN E. GRAHAM, of Philadelphia, in the Chair.

PRESIDENT'S ADDRESS.

Foreign Bodies in the Air and Food Passages.

—Dr. EDWIN E. GRAHAM, of Philadelphia, based his conclusions on a comparatively large number of personal observations, illustrating with the histories and bronchoscopic charts of some of the most interesting cases. He had found it true that foreign bodies in the air and food passages in children were of common occurrence. As a matter of fact, statistics showed that about sixty-six per cent. of all cases of foreign bodies in air passages occurred in children although often overlooked. A period of latency of symptoms often followed the first violent dyspnea of the choking attack and this, together with the later gradual onset and chronic character of the symptoms, might lead to a failure to suspect the presence of a foreign body. The presence of a foreign body should be suspected in

the case of an unexplained leucocytosis, localized symptoms in one lung that did not clear up under treatment, absence of tubercle bacilli in the sputum, and a gradual failure in weight and strength.

Röntgenograms should, of course, be made of every patient giving a history of having swallowed a foreign body, but there were some foreign bodies that did not cast a shadow in the röntgenogram. It was possible to locate such a foreign body in the esophagus by the aid of a bismuth filled capsule, as after this was swallowed the x ray would show its location, held in position by the foreign body in the esophagus. The nature of the foreign body influenced the physical signs and symptoms, which varied greatly. The asthmatoïd wheeze was a symptom of considerable importance. A peanut kernel would produce immediate and severe laryngitis, trachitis, and bronchitis. A fatal outcome was not inevitable, but the development of pneumonia usually was fatal. Metal objects in the lung did comparatively little damage. It was useless to expect the patient to expel by coughing a foreign body inspired into the lungs. Foreign bodies were rarely coughed up. Bronchoscopy should be performed as soon as possible after the entrance of the foreign body. There were no contraindications unless the patient was very weak, but a little time would overcome this. Bronchoscopy was more readily performed in children as it was not necessary to give an anesthetic.

The Lactose, Fat, and Protein Content of Women's Milk.—Dr. FRITZ B. TALBOT and Dr. W. DENNIS, of Boston. Doctor Talbot gave the results of a special study of variations in the fat, sugar, and protein of human milk under normal circumstances. New chemical methods were used which made it possible to accurately estimate the fat, lactose, and protein from small samples of milk. Investigation of the composition of milk at different stages of lactation showed that the average amount of lactose in sixty samples of breast milk was 7.19 per cent., with a general tendency for the strength of the lactose to increase throughout the period of lactation. The proportion of fat in the milk varied within wide limits in different women, the lowest mixed milk being 1.5 per cent., the highest 9.9 per cent., and the average three per cent. The average amount of fat in thirty-five samples taken only from wetnurses was 4.18 per cent. It seemed probable that the proportion of fat depended more upon how completely the breasts were drained and the amount of late milk included in the sample than upon the state of lactation. The amount of protein showed a general tendency to diminish as lactation progressed. A study of the variation of the milk from the beginning to the end of nursing showed that the difference in the proportion of lactose rarely exceeded one per cent. There was a greater variation in the proportion of fat but as a rule this was less than four per cent. The proportion of protein rarely varied more than a few tenths per cent.; it was sometimes lower after nursing and sometimes higher. The milk taken from the right and left breasts of the same woman at about the same time tended to have the same composition, but occasionally a wide variation was found. In study-

ing the variations in the composition of milk taken at three hour periods during the course of a single day, the volume of milk was shown to have a tendency to diminish as the hours advanced. The proportion of fat was found to be higher, as a rule, after midday. The variation in the amount of lactose and protein, however, was very slight.

Discussion.—Dr. L. EMMETT HOLT, of New York, considered that the figure Doctor Talbot had given for sugar was confirmatory of what had been found in his laboratory. Many disturbances of digestion attributed to fat were really due to sugar. A baby might be gaining in weight and yet have eight or ten thin, sour, green stools per day, and this diarrhea would be caused by volatile fatty acids produced by the sugar. In these cases the milk should be diluted and the frequency of feeding changed. An examination of the feces would reveal the presence of fat, but this should not led to the erroneous assumption that the fat in the diet was responsible for the trouble. Fat was present because the fermentation of the sugar interfered with fat digestion and absorption. It was an error to believe that breast milk always contained only seven per cent. or less of sugar, for many disturbances of digestion might be due to sugar. A clue to a correct diagnosis was the absence of vomiting. Sugar fermentation produced fatty acids so strong as sometimes to give the stools a sour odor; they might even be so acrid as to cause excoriation of the skin of the buttocks.

Dr. DE WITT H. SHERMAN, of Buffalo, thought that if the protein content of the milk bore no relation to the high carbohydrate content, it might be possible to counteract the effect of the large amount of sugar by changing the ratio of the food elements. This could be done by the addition of some powdered protein preparation.

Dr. Talbot explained that all the figures given were normal. He thought that Dr. Sherman's suggestion as to diminishing sugar fermentation by changing the relative proportions of the food elements by overbalancing the high carbohydrate with more protein less advisable than reducing the sugar, which would stop the diarrhea.

The Pathogenesis of Certain Nutritional Disorders.—Dr. W. MCKIM MARRIOTT, of St. Louis, deplored the lack of a satisfactory classification of nutritional disorders. There were two nutritional disorders which frequently resulted from diarrhea and the physiological basis of the symptoms was not always clear. The first was the acute toxic state following severe watery diarrhea. This had been called by the Finkelstein school an alimentary intoxication, a fundamental misconception because there was an increase of all the symptoms when food was taken. The term anhydremia or anhydremic intoxication accurately described the condition and was preferable to the term, alimentary intoxication. Food, especially easily fermentable carbohydrate, brought about an increased water loss from the body by way of the intestine and the symptoms might be entirely referred to this dehydration. Laboratory studies invariably showed the blood plasma to be greatly concentrated, as was easily demonstrated by means of the refractometer,

which determined accurately the protein percentage. In normal infants the protein of the serum averaged six per cent.; in those desiccated as the result of diarrhea the protein might amount to nine or ten per cent. This desiccation explained the great loss of weight in these children and the decrease in blood volume led to a greatly diminished volume flow of the blood. Measured by the calorimetric system of Stewart the flow had been found to be as low as fifteen per cent. of the normal. It had been demonstrated experimentally in animals by Gesell and Almroth Wright that a decreased volume flow of blood resulted in acidosis, following the decreased alkaline reserve of the blood or sub-oxidation in the tissues. Renal activity was greatly decreased by concentration of the blood and poor volume flow and consequently there was a retention of acids in the body through failure of excretion by the kidneys. The "air hunger" type of respiration, observed in some of these infants, was caused by acidosis. When blood volume was diminished, constriction of the arterioles occurred as a compensatory mechanism to maintain blood pressure, and red corpuscles accumulated in the capillaries. This explained the peculiar gray color of these infants. The heat regulatory mechanism being disturbed as a result of the dehydration of the blood, the temperature rose, but it fell again when normal conditions in the blood were restored. Vomiting was a frequent symptom but ceased in most instances when sufficient fluid was introduced into the body. Conditions in the intestinal tract were unfavorable for the digestion and the absorption of food, as a result of the diminished flow of blood.

Identical anhydrema sometimes occurred in infants who had not suffered from diarrhea, as diminished fluid intake or vomiting from any cause might bring about this condition. In addition, fever and high atmospheric temperature greatly increased the loss of fluid from the body, and, unless this loss were made up, anhydrema would result. The symptomatology, however, of anhydrema was always the same, no matter what the original etiological factor. The treatment was also identical and consisted in administering fluid in large amounts. The usual methods were sometimes ineffectual, and in this event intraperitoneal injections of normal saline should be given and repeated at frequent intervals. As much as 1,500 c.cm. of fluid could be received in this way by a small infant in the course of twenty-four hours before the blood was restored to its normal concentration. It was impossible in some instances to restore normal conditions and then death invariably ensued. In the majority of instances, when sufficient fluid could be introduced, retained, and absorbed, a rapid cessation of all the symptoms occurred. A frequently valuable adjunct to the saline injections was an intravenous injection of ten per cent. glucose solutions at frequent intervals.

The second nutritional disturbance resulting from severe diarrhea, although it might result from any cause which prevented the ingestion and absorption of sufficient food necessary to maintain activity and growth, was the one known as maras-

mus. The term atrepsia was accurately descriptive. This condition was analogous to anhydrema, although it was the result of insufficient food and anhydrema was the result of insufficient water. Its physiological basis was a diminution of the protein of the blood plasma. Bayliss had shown that the blood lost its power to retain water when the colloids were diminished. Partial starvation caused a diminution of blood protein and led to a decreased blood volume, although rarely as great as in anhydrema. There was the same constriction of the arteries, the same color of the skin. It would seem obvious that the administration of considerable amounts of food was indicated but unfortunately the tolerance to food was usually low, probably on account of the poor circulation of the atrophied blood in the mesenteric vessels. It was often necessary to feed over 200 calories to the kilo of body weight. If food could be tolerated the blood gradually became normal. The process, however, might be a long one and it might be advisable to shorten the period of repair by artificially increasing the colloids of the blood. Transfusion or frequently repeated injections of gum acacia as an adjunct to sufficient food might accomplish this. In feeding with artificial food, the best results had been obtained with whole lactic acid milk to which a mixture of carbohydrates, such as dextrin, and glucose or maltose, was added.

Discussion.—Dr. OSCAR M. SCHLOSS, of New York, referred to the paucity in pediatric literature of references to the importance of water. A proper proportion of water was most important, as Marriott's paper had illustrated. The toxic condition of these children should be more generally recognized as being due to dehydration. He had frequently seen marked acidosis disappear without the administration of sodium bicarbonate, the explanation being, as Doctor Marriott had shown, that in acidosis there was a decrease in the urinary secretion due to lack of water and that this had the effect of reducing the volume flow of blood.

Doctor ISAAC ABT, of Chicago, asked if Doctor Marriott had any suggestion concerning the use of foods in disease prevention. This paper was an important contribution to chemistry and pathology, but the important problem was how to prevent disease. Although many attempts had been made by clinicians and bacteriologists to classify intestinal disorders, such attempts had been futile. The most valuable classification they had was based on food disturbance. It seemed that the most important basis for the classification of nutritional disturbances would be furnished by noting the effects of certain foods in various conditions of health and disease.

Doctor MARRIOTT replied that the prophylaxis of these conditions was the prophylaxis of diarrhea, which he regarded as a local condition in the intestinal tract and merely the end result produced by any etiological factor.

A Study of the Relationship of Convulsions in Infancy and Childhood to Epilepsy.—Dr. JOHN LOVETT MORSE, of Boston, had conducted a study primarily to determine what proportion of the children who suffered from convulsions, although

otherwise apparently normal, had epilepsy or developed it later; and secondly, to discover if possible if there was anything in the history or in the character of the convulsions to indicate epilepsy or that epilepsy would develop later. The selection was made of 107 cases of convulsions in which there were no evidences of acute or chronic cerebral disease.

Ten of the cases showed evidences of spasmophilia; in all of them the convulsions eventually ceased, but one of the babies eventually showed evidence of feeble-mindedness. In this instance the convulsions were possibly due to some other cause than the spasmophilia. It was concluded that convulsions which occurred in babies with spasmophilia and which were presumably a manifestation of spasmophilia were probably not likely to lead later to the development of epilepsy. In three of the cases the convulsions occurred in the course of whooping cough and in one epilepsy developed.

Convulsions occurring in the course of whooping cough should, therefore, be regarded seriously. In thirty-nine of the cases there was a single convulsion or a series of convulsions at the onset of some acute disease or accompanying an attack of acute indigestion. Thirty-five children recovered, two became epileptic and feeble-minded, another had petit mal, and the fourth might or might not be an epileptic. In fifty-five cases there had been repeated convulsions suggesting petit mal. Only twenty-one of these cases could be considered normal at present. Regarding the attempt to determine if there was anything in the history or character of the convulsions which would aid in the prognosis as to the possibility of the development of epilepsy, the results had been rather unsatisfactory.

The nature of the early attacks gave no real indication that epilepsy would develop later. It was, however, determined that the longer the attacks had persisted the more probable was the later diagnosis of epilepsy. In those cases without a definite etiology, or when the cause of the convulsions was apparently traumatic or followed severe labor, epilepsy developed in more cases than in those cases where the convulsions accompanied a disturbed condition of the digestive tract.

Discussion.—Dr. HENRY KOPLIK, of New York, agreed with Dr. Morse that in the vast majority of spasmophilics true epilepsy did not occur later in life. Spasmophilia could usually be diagnosed if one applied the electrical test to these babies. A diagnosis of epilepsy should not be made during the early years of a child's life simply because a few convulsions occurred if it was otherwise normal, particularly if there was no family history of epilepsy.

Dr. L. R. DE BUYS, of New Orleans, asked Dr. Morse if those children who had spells of holding the breath were grouped with the spasmophilics, and if any of these had epilepsy later.

Dr. J. P. CROZER GRIFFITH, of Philadelphia, believed that it was practically impossible early in life to make a diagnosis of epilepsy.

Dr. HENRY HEIMAN, of New York, thought that the early treatment of spasmophilia might prevent the later development of epilepsy.

Dr. L. EMMETT HOLT confirmed Dr. Morse's conclusions by his own experience. A large number of cases suspected of latent epilepsy by the general practitioner and the neurologist cleared up. The pediatricist was more optimistic because he often saw convulsions, the great majority of which did not develop into epilepsy. Hemorrhage and convulsions might ensue upon great head pressure or even a moderate amount of pressure at time of birth, and the child might become feeble-minded and later epileptic. If a sharp rise of temperature accompanied recurring convulsions, even if there was not much indigestion present, epilepsy was not indicated, but where convulsions developed without rise of temperature and without assignable cause, they should be regarded with suspicion.

Dr. ROWLAND G. FREEMAN, of New York, called attention to a prognostic point considered of value by some: children under two years of age who had marked evidence of rickets were less likely to develop epilepsy.

Dr. SAMUEL S. ADAMS, of Washington, endorsed the conclusions of Dr. Morse. He thought one should be careful to avoid casting the stigma of epilepsy on a child, especially in cases where convulsions occurred during whooping cough. Nothing was to be gained by a premature and often mistaken diagnosis of epilepsy. In some children convulsions ushered in infectious disease and ceased when the infectious condition cleared up.

Dr. HENRY L. K. SHAW, of Albany, N. Y., declared that he had known of cases of undoubted epilepsy which sometimes, to all intents and purposes, recovered.

Dr. HENRY F. HELMHOLTZ, of Evanston, considered acute conditions, particularly gastrointestinal disturbances, to be a frequent factor in changing a latent spasmophilia into an active one. He regarded Dr. Holt's point regarding the insignificance of convulsions when associated with a sharp rise of temperature, so far as the diagnosis of epilepsy was concerned, to be very important.

Dr. FRITZ B. TALBOT, of Boston, drew attention to the fact that convulsions were a symptom and not a disease. If this symptom was due to spasmophilia the blood calcium would be found to be lowered.

Dr. Morse, in closing the discussion, replied to the question regarding breath holding that he had not considered it a symptom of spasmophilia. As to the birth hemorrhages, he had not included in his series any cases in which there was any sign of injury to the brain, but he could not be sure that such injury had not occurred without leaving any indication. In those patients having had convulsions over a long period of time, if epilepsy was suspected a lumbar puncture was done to determine if there was pressure, a Wassermann test was made, the stools and urine were examined, and the child was given a thorough physical examination. If nothing was found to account for the convulsions the case was followed up and the various tests made.

Vertigo in Aortic Insufficiency.—Jean Heitz (*Paris médical*, July 5, 1919) notes that vertigo is commonly referred to in textbooks as a symptom of aortic insufficiency. The author conducted a systematic inquiry among seventy patients in order to ascertain how often the sensations actually experienced by them could be precisely termed dizziness or vertigo. Sixty of the patients described their sensations in a manner which did not correspond at all to true vertigo. The remaining ten complained chiefly of a sense of general weakness, beginning with a feeling of emptiness or of weight in the head, which compelled them to stop and hold on to something or sit down in order to keep themselves from falling. Only one patient described a rotatory sensation which seemed to recur frequently. Another experienced such a sensation only once, in an attack more severe than usual. A third had typical vertigo, with nausea, and tinnitus, but this patient had an ear lesion and gave markedly abnormal reactions to rotatory tests. On the whole, it may be said that the so-called vertigo of aortic cases seldom resembles true vertigo. There are no objective signs of labyrinth disturbance, and the sensations experienced are probably due to impaired brain circulation.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Principles of Nursing. By CHARLOTTE A. BROWN, R.N., Superintendent of Nurses in the New England Hospital for Women and Children; Late Instructor in the Boston City Hospital Training School for Nurses; Late Superintendent of Nurses in the Hartford Hospital Training School for Nurses, Hartford, Conn. Illustrated. Philadelphia: Lea & Febiger, 1919. Pp. iv-262.

Throughout the text the material is set forth in a clear and concise manner, so that a good deal of information is presented in a relatively brief form. In the first few chapters considerable space is devoted to the qualifications of a nurse, personal hygiene, her relation to the patients and to the hospital staff, and other matters. A particularly full section is the one on medicines, in which are explained the abbreviations commonly in use and the method of calculating the dose from stock tablets and solutions, and examples for reducing apothecaries' quantities to metric equivalents, with similar problems, are described in detail. The chapter on bandaging, splints, and strapping is very clearly written, and excellent photographs and drawings illustrate the various modes of bandaging. A convenient feature of the volume is the inclusion of a glossary which will save the time of the student nurse in ascertaining the meaning of unfamiliar words. The directions for treatment are throughout simply outlined, emphasis always being placed on the nurse's dependence on the doctor's orders. The book fulfills the purpose for which it was written in an entirely satisfactory manner.

Diabetes and Its Dietetic Treatment. By B. D. BASU, Major, I. M. S. (Retired). Ninth Edition, Revised and Enlarged. Bahadurganj, Allahabad: The Panini Office, 1918. Pp. vii-104.

This small volume, now in its ninth edition, seems in many ways out of place at the present time when our knowledge of the treatment of diabetes has undergone revolutionary changes as a result of painstaking scientific investigations. Basu discusses the disease from a purely clinical standpoint and makes many of his statements without adducing any adequate evidence for their support. His main contention rests upon what he conceives to be the chief etiological factor—intestinal toxemia. Quite contrary to modern views, he sees no harm in allowing diabetics to have both sugar and starch, so long as the amounts are sufficiently restricted to avoid the aggravation of the intestinal toxemia. He approves of the introduction of fasts, but for the purpose of relieving the intestinal toxemia rather than of controlling the hyperglycemia and acidosis. He also advocates the use of oils and fats in rather large proportions in the dietary and would make the dietary almost wholly vegetarian. Considerable space is devoted to a consideration of suitable foods and their preparation for the use of Indian peoples, and many suggestions are made which can have little or no place in the dietaries of western peoples. The volume is not without interest as being the product of one who has done some deep thinking, but who has not been in a position to approach his problem from a scientific point of view. It can, however, have no place among the commonly consulted works on the very important subject of diabetes insipidus.

Births, Marriages, and Deaths.

Married.

WINKELMAN-GABEL.—In Philadelphia, Pa., on Tuesday, September 16th, Dr. N. W. Winkelman and Miss Lillie Celia Gabel.

Died.

ALEXANDER.—In Greensburg, Ind., on Wednesday, September 3rd, Dr. J. H. Alexander, aged ninety years.

BARNEY.—In Elkhart, Ind., on Friday, September 5th, Dr. Lee M. Barney, aged fifty-three years.

CHRISTIANSEN.—In LaCrosse, Wis., on Monday, September 8th, Dr. Christian Christensen, aged sixty years.

CHURCH.—In Los Angeles, Cal., on Wednesday, September 3rd, Dr. B. F. Church, aged sixty-one years.

CONGDON.—In San Francisco, Cal., on Sunday, September 7th, Dr. Charles E. Congdon, aged fifty-four years.

COOMES.—In Louisville, Ky., on Friday, September 5th, Dr. Martin F. Coomes, aged seventy-two years.

DICKEY.—In Bristol, Tenn., on Monday, September 1st, Dr. J. A. Dickey, aged seventy years.

HILL.—In Philadelphia, Pa., on Thursday, September 11th, Dr. Howard K. Hill, aged forty years.

HOPE.—In Memphis, Tenn., on Thursday, August 28th, Dr. F. L. Hope, aged sixty-two years.

HOWARD.—In Farmington, Me., on Saturday, September 6th, Dr. Albert G. Howard, aged seventy-three years.

LACIAR.—In Bethlehem, Pa., on Wednesday, September 10th, Dr. Charles W. Laciard, aged sixty-two years.

LEWIS.—In Chattanooga, Tenn., on Monday, September 9th, Dr. Manuel J. Lewis, aged eighty years.

THOMPSON.—In Carlisle, Pa., on Tuesday, September 16th, Dr. A. A. Thompson, aged seventy-eight years.

WOLFE.—In New Orleans, La., on Friday, September 5th, Dr. James G. Wolfe, aged forty-two years.

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Original Communications

"THE JEST": THE DESTRUCTION WROUGHT BY HATE.

By SMITH ELY JELLIFFE, M. D., AND
LOUISE BRINK, A. B.

New York

Each drama has a particular value in its content and structure as a whole. The author conceives a certain situation or continuity of events which is utilized to develop the psychological thought for which the drama internally stands. In so doing he makes, as it were, a cross section of human life as he throws a certain grouping of factors into high relief. "The Jest", coming as it does out of the fifteenth century, represents a section through the development of human civilization at a period remote enough from the present to reveal a brusqueness of manner, a frank coarseness of language, as well as an openness of impulsive action according to the freedom of individual desire, whether in brutal violence or in more refined spiritual aims, which culture does not so directly permit today. It snows, therefore, another glimpse into the unconscious, a portion of the development of the race which has been more or less covered over by the intervening five centuries of cultural repression.

There is, however, a still more profound psychological interest in such a production. The drama represents a grouping of the factors at work setting the conflicts at all times in human lives, the warring elements working for good or for evil, the activity of hate opposed to that of love. In this story of the fifteenth century the destructiveness of hate predominates, but this makes "The Jest" no less a drama of truth and of mental and moral stimulus than it might otherwise be. Health lies, as has been seen, in facing life as it exists, and that more deeply than in a mere presentation of external results and wielding these perhaps dramatically according to desirable ideals. Mental strength is not engendered by mere idealizing but by the courageous facing first of the working of internal forces, watching them even as they lose in the conflict through the strength of the primeval emotions. These latter blind individuals to the choice of a reasonable adjustment, which considers social relations and mutual adaptations. They drive so violently along the path of sheer feeling and desire that even reason is swept to their service and changed to the cunning which aids in the precipitation of disastrous ends.

Love has as many definitions as the phases in which it manifests itself in the kaleidoscope of

human desires, longing, and pleasure. Yet it may be comprehended also in a definition whose simple dynamic force contains all the variety with which it might otherwise be defined. Thus practically and forcefully considered love is union in feeling and action for constructiveness or creativeness. If this is so then its reverse side, hate, is disunion, the same force in all its might, clashing element against element, hindering and checking all productivity and driving to destruction. The bitter jest of life this, a joke that lies not only in the keen irony of the plot by which the artist in the play overcomes the fleshly monster of cruelty and torment and reaches in the end his own spiritual destruction as well. It is the cruel jest also of human psychology that good and evil lie so close, that the same power, its course altered over such a narrow threshold, flows mightily and effectively to all creation, up-building on the one hand, rushing to pain and destruction and downfall on the other.

All this is epitomized in the woman of the play. She is the centre and inspiration of either course. Trite is the utterance of this fact and yet it will always be repeated, whether in the offensive doting brutality of a Neri, in the gentler love making of the sensitive Giannetto, or in the more eloquent pathos of the humble but devoted Lisabetta who visits Neri in prison and whose truth flies straight to the good in Neri and knows none of the evil. It must always be so for woman must represent in herself the creative source and stimulating goal for creative desire. Biologically this is undeniable and spiritually it is even more broadly and immeasurably true. And this truth is figured in all nature and all thought. Literally and figuratively, therefore, love is summed up in woman and the conflict surges about her.

Ginevra, the fishmonger's daughter, has apparently all the natural charm which makes a rich feminine appeal. Giannetto, the spiritual youth, has dreamed his dreams of beauty and inspiration, "We loved each other. She was good and beautiful. I painted her as the Madonna in my 'Annunciation'. We were to marry." And Ginevra herself, though seduced through money and power to the lower levels of her nature, where she can stoop to mock those sacred hours, reveals still in her mockery regret for the holier influence she exercised in those days. "Do you remember a poor child kneeling in a cloister garden? She wears a long blue robe and holds a lily stalk in her two hands. She does not move. She kneels and dreams and listens and the hours go by . . ." But Giannetto says of the

power of those days, in contrast to the effect of the hatred which has long been nurtured by his enemies and then deepened fearfully when they stole her from him and brought her to the present level: "Compare the 'Entombment' I am working at with my 'Last Judgment' done two years ago. Why even a child could note the falling-off. My heart is not the only thing that died beneath their torments. My soul died, too."

It is not, alas, merely passive loss of power that has come to the artist through the cruelty of these enemies, encouraged and applauded by the narrow selfabsorbed exercise of supremacy on the part of the woman. Love or its opposite is the representation of energetic force, which does not remain quiescent. The artist is driven also along the path of destruction. "But oh! sir!", he says to his aged friend, "I have one thing left—my wits! tempered like the blade of a fine sword, turned by my suffering into gleaming steel! And these wits of mine set me now to lure my enemies with flowers and feasting and with silver flutes to their eternal ruin. . . . I was so good until these two brothers changed me to a devil."

Giannetto has been the victim of brute force, malicious, overmastering in its lustful sadistic fleshliness, since his boyhood. At twelve years of age he was compelled to submit to the vile torments of his enemies as they imposed upon his physical weakness the one form of power which they were capable of comprehending. Their treatment exaggerated this weakness of his to a timid cowardice, overwhelming the greater spiritual strength and nobility which they could only taunt. The savage and childish baseness of superiority based upon physical strength and lust alone is cleverly suggested in the petty forms of torment to which they submitted the youth, even if allowance is made for the ruder humor of the age which the drama represents. With the uncultured barbarity of childhood they "spat on me and made me catch twelve big blue flies and eat them, one by one And from that day to this we never met but they fell upon me with their fangs and claws."

They were two huge brothers, hired soldiers from Pisa, Neri and Gabriello Chiaramentesi. At last they add to their coarser sports this crushing evil. They seize Ginevra in her home just before the bans are to be published for her marriage to Giannetto, buy her from her father for fifty ducats, and Neri, claiming her, seduces her soul as well as her body. Then, at the feast with which the play opens, he returns her to Giannetto's sight only to mock and lacerate him with the revelation of the shallowness and corruption of her nature.

At this banquet the "jest" begins its work. Giannetto's sharpened wits have prepared a final and deep revenge after a night of insult more deliberate, more elaborate, than any cruelty yet perpetrated, aided also by the connivance of the faithless Ginevra. She had falsely acquiesced in a final leave taking tryst, which gave occasion for the seizure of the artist. He was apprehended by the powerful buffoons, stripped, tattooed with their dagger points, with which derisive devices were

pricked upon his skin, and finally thrown fainting into the black river water. Rescued from this by some fisherman he has arranged, with the aid of the great Lorenzo, a feast to which his enemies are invited. The two brothers appear in all the glory of their brute strength, filled with scorn of Lorenzo the Magnificent and all his associates and with their contempt of the artist in no wise abated. They further inflame his desire for revenge by bringing with them the tempting though false and mocking Ginevra to goad the artist's pain. The fact that his old suffering for her is roused to a keenness and sensitiveness which they are incapable of knowing and which necessitates a strong control and suppression on the part of Giannetto, serves to feed the flame of vengeance more hotly and to give to it a subtlety and an abandon which at first even his own sharpened wits had scarcely conceived.

There is but little in this drama of the pure glow of the force of love. Here and there are remnants of it, some of the steady redeeming power which has not yet been transformed to the devouring flame of hate. Giannetto still loves Ginevra. Her shallowness and treachery have not destroyed the sincere and holy respect with which his early desire had gone out to her. Yet lurid passion and revenge soon darken the love that remains. He loves the dwarf, his faithful servant and the physical counterpart of his own timidity and inner consciousness of weakness. But the dwarf becomes only his reliance to support and aid him in his design for revenge. Neri in his boisterous way loves his brother Gabriello and there is a rough attempt at fairness between them in regard to the girl, but the hatred of Giannetto stirs up the unconscious slumbering jealousy and at the last tricks Neri into destroying his brother, as it first tricks Gabriello into playing the traitor to his brother's possession of the girl.

The devilish hate engendered in this once gentle artist leads him to plot a jest which shall be one indeed. "And these wits of mine set me to lure my enemies with flowers and feasting and with silver flutes to their eternal ruin." Through soft speech, a humble mien, compliance with their noisy insults, he plies Neri with wine of Cypress "that is liquid fire". The brother has already departed, urged away from the city by the conflict between desire for the girl and loyalty to Neri, which the artist has taken care to rouse into his consciousness. Firing Neri then to a vindication of his boasted prowess and courage, the artist goads him forth in his drunken condition to a more than foolhardy attack upon the adherents of Lorenzo the Magnificent. It is an adventure that no one but a madman would undertake and the toils are laid that this strong soldier, temporarily maddened by wine, should be apprehended and treated as a veritable dement, all protests and assertions of his sanity being of no avail. As they increase in violence, according to the nature of the man and his habit of violent speech, they mount up in the sum of appearances which are against him. This is the jest. Thus is he in the power of the feeble artist.

The artist meanwhile has secured the key of the house where Neri has earlier sent Ginevra to await his coming and his pleasure. There is a poisoned

sweetness to Giannetto's revenge without which his plans would be incomplete and which he loses no opportunity to bring before his enemy's notice as the latter stands bound in the dungeon where they have confined him. It is Giannetto who uses the key and gains access to the woman, but even here revenge must reach its utmost and she must yield of her own will to the superiority of her former lover. So the vengeful plot is slowly protracted and Giannetto is ready the next day to confront Neri writhing and foaming with helpless rage, lashed to the underground pillar. In a still deeper dungeon the latter is also submitted to all the horrors of a medieval test as to his possession by the demons of madness. Most galling, however, is the bland mockery of Giannetto as he cleverly disguises from all around, through an assumed pity, his participation in the sufferings of Neri and his actual instigation of them all. All this is too painfully known to Neri himself, who must be goaded also by the consciousness of the mockery of Giannetto's bearing, the helpless realization that he and his enemy know between them the trickery and fraud of the whole proceeding, which so excites the pity of the onlookers. Thus deeply bites the jest as it proceeds.

Then comes the sudden news that the brother Gabriello has returned from Pisa, and a fearful thought takes shape in Giannetto's breast. His dwarf first utters it that the love of women "goads . . . the brother to commit the crime of Cain." But a better moment, albeit mixed with fear, first comes over Giannetto. He is at the point of releasing Neri. Once for all he offers him absolute freedom, to cease his joke if Neri will give his word never again to torment and torture the poor young artist. He pleads with Neri, "There! I have said it, Neri. I have stripped my soul. You see me as I really am—in all my weakness and my vanity. Your joke had lasted for so many years and I had suffered so, was it strange that when the moment came I struck at you? If I went too far, remember that I am not used to triumph. But now—please God! the dreadful game is ended. Give me your word and I shall set you free. . . . Speak, lest both of us be lost."

Neri however is obdurate. The suggestion of fear and of yielding in his enemy, who had been so long his helpless prey, only serves to rouse afresh the contemptuous triumph with which Neri had always hitherto approached the artist. Half in mockery, half in the rôle of the doting type of madman, which by this time he has assumed, Neri renews his derisive insults. Giannetto's terror grows not of the loathsome brute before him, but of the hideous plot forming in his own breast, the consummation of hate which is bound to bring destruction upon destruction. "Oh, Neri, keep me from this mortal sin! I am so young! I want so to be good—all good and clean, the way I used to be! Oh, I would rather never pray again than ask forgiveness for such wickedness! Now help me, Neri—no, you must—you shall—"

Neri, mockingly deaf to the last to Giannetto's entreaties, goes forth freed, unheeding the artist's dark threat as to the vengeance which will be

awaiting the soldier when he again crosses his own threshold. Giannetto, alone with his dwarf, faces now the hot breath of deepest hate; "Oh, Fazio, now how my plans, my pretty plans, how they wriggle and squirm to get away, to swish along the floor, to coil themselves around your hot, brown throat, my enemy. Oh, Fazio, I stand at the edge of a pit—. . . My horror of it grows and I love life the more. Fazio, the thread I have spun so fine, I must now tie into a knot of death! . . . Fazio, to-night, to-night, I must damn my own soul to hell! . . . Pray for me, Fazio, for I shall never pray again."

As in a happier drama of life all the determining forces work toward the full fruition of some great purpose, so here do the many currents of hatred which have been roused and inflamed meet to a blasting destruction which includes all of life. Just as body, mind and the sum of individualism which we call soul are all united in the love which informs them and inspires them to the fullness of creative life, so here body, mind and soul burn with the flame which can only blight and disintegrate in utter ruin. In the woman the sacredness of love has been absorbed into the gross selfishness and the seeking of advantages which feed merely her own gratification and vanity. There is no further goal in her thoughts and desires. The tenderness and inspiration which the "painter of madonnas" had succeeded in partially awakening were quickly spoiled by the allurements that lay in the trinkets which money could buy, the passing domination exercised over the brute force that kept her, the fleeting conquest won over any chance lover and the brief pleasure seized with him.

The heartless Ginevra, whose love Giannetto had easily won back from its allegiance to Neri, is even then responding to a love message sent her through her tire woman and is awaiting the song of the new lover from the garden when Neri once more appears in her room. He has precipitated the final execution of Giannetto's plan, for he has hastened to Ginevra's house to intercept the artist when he shall return to Ginevra. It is then that Neri, in his own ferocious way, puts the woman to the test and proves the utter lack of true love within her, the complete prostitution to her own advantage and welfare of all that makes her woman's nature. There is with her no thought of the sacrifice or the service of love. The ordeal to be sure is a severe one, but no glimmer of response of a love that is true is manifested toward any one of the men.

Neri makes known his scheme for revenge. Ginevra as usual must hang the small alabaster lamp in the window to announce to the approaching lover that all is well and then upon his entrance into the darkened room Neri will meet him with death; either that or Ginevra herself must forfeit her life. Ginevra can only begin by throwing all blame on the absent lover, her one thought to clear and save herself. Neri: "Well, do you throw him overboard?" Ginevra: "Yes! Kill him if you must! But let me live—" Neri, contemptuously. "You love him, then, as much as you loved me. What a rag you are!"

For just such an act of attempted vengeance and ultimate cruelty on the part of Neri was Giannetto

prepared. His own plan had been quickly laid with the knowledge that the brother had returned from Pisa as his last plea to Neri failed. As soon as Neri was released Giannetto had hastened to Gabriello and arranged with him that the latter should visit Ginevra, disguised in Giannetto's own white cloak. This is the figure, therefore, that steals into Ginevra's bedroom under the watchful eye of Neri, concealed there in the darkness. He has first compelled the trembling woman to enter, that the deed performed in her presence shall lose none of its horror.

There is no delay in the hideous succession of events which mark the final cataclysm of destruction. Hate rushes unchecked to its several ends. The brief struggle in the bedroom is succeeded by the rushing out of Ginevra, wild, disheveled, the embodiment of the ultimate bitterness and death of a love that has lost its nature in self and the nothingness to which such utter prostitution must lead. Neri stands at the threshold for a moment triumphant in his bloody deed, gloating over it in a savage burst of hate, only to be confronted by the slender figure of the artist, pale, with a quiet triumph which contrasts with that of the baser brute before him and Neri learns the horrid truth. He has slain his brother, the one being toward whom he was capable of any real love. Because this is so, he has slain his better self, the self that saved him from complete absorption in hate and violence. It is not only this better nature, it is also in fact the brother he has slain, the warm, brave, living body, not the materialistic nature alone, but the body as instrument of true love and its force and power for life. Nothing is left for Neri, the man whose life was summed up in the forceful use or abuse of that body. He plunges now actually into the abyss of madness, where before he had been merely the plaything of the artist and his jest. All reason is gone. There is nothing more for him but the blindest yielding to every foolish and ungoverned whim, except as he shall fall into the care or the maltreatment, the humanity or the inhumanity of the control of others, in whose hands he is now forever powerless.

This is more than even Giannetto's wildest dreams of revenge had planned. "Now God forgive me! He is mad! Stark mad!" And the artist falls on his knees and tries to pray for his enemy. But what prayer is of avail when all is dead? Self, with the power of love in its hands had sought only its own. It had turned away from the pathway in which love lives and infuses all that it finds there with power. Self turned back upon itself and hate arose. All the force of self but went to feed hate. Power remained on every hand but it burned destructively and its end was death. Body, mind, and soul were destroyed.

"The Jest" owes its importance and its value upon the stage in part to its skilful representation of the life of an earlier time, a period when the newly awakening intellectual life of the world flourished in an era of political power and of beauty and pleasure. Its language is that of an earlier century—as is its setting. Its lesson of dramatized truth

is, however, changeless. It lies in the same play of human passions which exists in us today and which sweep on with the same inevitableness to destruction if turned into the pathways of hate. This may not be so easily recognized in the present in the ordinary walks of life for five centuries have brought much restraint and much external emolument of the outward expression of such passions. As language has become more softly veiled, so also has a certain gentleness of manner and of self control come, to pass in outward behavior. Yet the passions have not changed. And the fact that they lie more deeply beneath the covering of a progressive culture, though this serves to hold them to a certain extent in wholesome restraint, is also accountable for the lamentable degree in which society has lost sight of the force for which they stand.

Energy is one and the same. There is no difference in the inner essence of a brutal, blustering Neri or of the gentle artist, whose soul burns itself into a holy religious zeal in his painting, and turns to the deepest poison of hate in the end, nor yet of the shallow and faithless Ginevra, whose power of love, devoted only to her selfish gratification, becomes the source of strife and hurt. All are containers of the energy which moves on to one goal or the other, to love and more life or to hatred and death. Individual personality and circumstances have determined for them different forms of expression or it may be have blocked the expression of such life force. As each personality has thus continued its way or altered it for better or for worse, success or disaster has been the result. And this is the sum and substance of human life today as well as then. No one is a blind and unwilling victim of an inherited personality nor of circumstances but, as with these dramatic characters, choice is always within each personality to be exercised every moment, consciously or unconsciously, for the use of the dynamic force of life. Therefore attention cannot be too often fixed upon these fundamental facts of this power which makes up the moving passions of life for good or for ill. The world grows sick from lack of clear knowledge of them and the possibilities in their outpouring to create and construct or the inevitable results when they rush unchecked to destroy.

It is the same today as in the fifteenth century. Beneath the restraints which serve, now as aids to conduct, now as hindrances, the same forces still play, divisions of the one great force, which is the movement of life. In some it moves with the domination of overmastering cruelty, although of a more modern and refined type than in the mercenary soldiers, Neri and Gabriello. In another it burns with the steady glow of success and achievement until it is diverted by disappointment, injustice, or cruelty into a no less forceful activity, though now an unproductive one, as with the frail artist Giannetto. With another it is blocked by stupidity, by adverse circumstances which have not been overcome, perhaps simply by never having found its way to a satisfactory productiveness in spite of waiting avenues of interest, to which the race is sorely blind. Or is choked by selfishness as

that of Ginerva. Even the many lives which seem undisturbed by such expression of force harbor it no less, too often unaware of its existence within themselves and still more unaware of its possibility.

Yet such power is never really still. Its ways of exercise may be surreptitious, roundabout, disguised, often distorted far from their original source in the deep desires and passions of human lives. The unacknowledged, or even unrecognized activity may be manifest in symptoms of unhappiness or of actual neurotic suffering. The power may be expressed by restlessness and dissatisfaction. At the same time it may creep forth in a more active but still unsatisfactory form. Love seldom or never has its perfect work. The poisons of hate, flowing in many directions, are ever at hand. They are not necessarily directed to those to whom one might, even if only in the depths of the unconscious, call one's enemies. As with the artist they can never be active without involving also the self.

The lesson of this drama written in heavy lines cannot be overlooked in its relation to this diversion of the force of life in these universally prevalent ways. Yet its theme is also more clearly definite. It moves in the more fundamental pathways in which man and woman find themselves, in which they meet. It pictures the evil that may be wrought by a selfseeking that forgets all but its own gratification, its own selfish establishment, to which it also prostitutes itself. It is this which creates the offensive brutality of a Neri and the brother who duplicates him. Power becomes rampant in its overweening might. Without the will to power life could not proceed but when this has no vision which relates it to one's fellows for mutual welfare but serves only itself, then it gives no place on the earth to one whose service to mankind follows some other pathway. Such a one, if weaker in the physical force to withstand, becomes only the despised prey of the latter, which, inflamed by its own boastfulness, as Neri was heated with the hot wine of Cypress, rushes heedless also to its own destruction. The love of a woman is only its own unreasoning gratification. There is no social purpose in such power nor in such love, nor is there any true self-realization, only blundering selfglorification and in the end failure. Like Neri and Gabriello, such are only mercenaries, moved by no impulse of patriotism or other higher motives, but soldiers for hire, for personal gain.

Giannetto's will to power also, directed at first happily to a high and noble service, when it becomes embittered by long oppression and the multiplication of wrong, turns upon the losing path of selfseeking. His goal in his well planned jest is not the actual reestablishment of his power, such a true assertion of himself that even his enemies shall be compelled to give him place. Even if such a desire is present to some degree in his first turning to revenge, it is soon stifled in the poisoned satisfaction of outwitting his arch enemy and stealing back from him also the pleasures of which he has been robbed. Though the better feeling asserts itself once more, as his triumph grows supreme, and urges him to prevent the last great crime, in the end he but proceeds to the final consummation of revenge which destroys all. Satisfaction, yes, he wins that

in large measure if complete triumph over his enemy can bring it. But the price is a costly one. Destruction to his enemies in body and mind, while he has dared to damn his own soul. If his painting had fallen off earlier because hatred and desire for vengeance had begun their work in his mind, what can be expected of his work henceforth with the curse of accomplished destruction resting upon him?

The power which Ginevra exercises is of a subtler sort but it lacks the dignity even of a well directed hate. She is indeed a bauble for the last bidder. She boasts that perhaps she was born "to drive with reins of silk two roaring lions" or to win the poet dreamer to herself. Yet she knows as little of the satisfaction that comes of a well used power as she does of any real contentment from the trinkets which all too easily win her love. "Oh, these, I'm tired of them already. (Eagerly) There is a pearl necklace on the Ponte Vecchio." What power her unstained purity may have exercised upon Giannetto's work yields all too quickly to a petulant form of triumph in the trifles with which her favor is bought. These only breed fresh dissatisfaction and stimulus to the wish which craves merely for itself and creates nothing.

Love inspired through the true nature of a charming woman, who realizes herself in a selfforgetful outpouring of the strength which is hers, or more fundamentally the sex love which this typifies, is the source of social life. This fundamental element in society, as well as every form of energy striving, or pathway of the will to power which it inspires, belong to a mutual social adjustment and mutual recognition of each individual's right and particular form of mastery and service. This mutual adaptation forms and cements and continues to evolve society. It requires some sacrifice, some acknowledgement of the weaker by the stronger and of the stronger by the weaker. All this was lacking in the catastrophe to body, mind and soul which this drama represents. Wherever also they failed in the Florence of the fifteenth century the destructive work of hate disturbed and disrupted and hindered the harmonious constructive work of that newly awakened world. Love in its most fundamental sense and in its broadest developments has its way to win in the constructive need with which society is confronted today, individually and collectively in the world tasks newly set. Nevertheless hate may work just as forcefully but destructively, hindering and destroying in the divisions caused by individual seeking set over against such mutual concession and adjustment. Selfseeking prostitutes as it seeks only its own, and falsely thinks to content itself with those narrow ends which belong to such seeking. Union of feeling and action is lost sight of in the desperate effort to establish one self or hold one's lonely individual place against the might with which one dares not unite. Such disunion, whether abroad in wider social events or whether serving narrowly to cut off the individual life to its own pleasures and bitter pains, ends in death. Body, mind and soul fail of their great social birthright of life and are dead.

PNEUMONIA AND EMPYEMA AT CAMP DIX*

A Résumé of the Cases which Occurred at the Base Hospital During the Year 1918.

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The material which forms the basis of this communication was compiled during the year 1918 at the base hospital at Camp Dix, N. J. The subject is almost limitless in its scope, therefore, for purposes of brevity and conciseness, I shall consider the cases of pneumonia and empyema in three very distinct clinical groups. It so happened that these three groups occurred, broadly speaking, in the chronological order in which they are described.

Group I comprises those cases which occurred chiefly during the spring of 1918. These may be considered under the general heading of pneumonia and empyema due chiefly to the *Streptococcus hemolyticus*, either alone or in combination with other organisms.

Group II comprises the usual pneumococcus pneumonia, embracing Types I, II, III and IV. These cases occurred mostly during June, July and August, although of course there were cases of true pneumonia in the hospital at all times.

Group III comprises the so-called influenzal bronchopneumonia, which occurred as a tremendously virulent epidemic during September, October, and early November, and with which, diagnostically at least, we are all entirely too familiar.

GROUP I—PNEUMONIA AND EMPYEMA DUE TO *STREPTOCOCCUS HEMOLYTICUS*.

This group comprises cases of pneumonia associated usually with empyema, the causative agent being the *Streptococcus hemolyticus* either alone or in combination with other organisms. A somewhat detailed consideration will be given these cases. This was a disease for the most part peculiar to the army, comparatively little of it appearing in civilian practice. It appeared in epidemic form in many of the national army cantonments, often as a sequela of measles.

At Camp Dix, during the spring of 1918, there were forty-eight cases of pneumonia due wholly or in part to *Streptococcus hemolyticus*; twenty-six patients died, a mortality of fifty-four per cent.; forty-one of the forty-eight patients had empyema, or eighty-five per cent. In other words we were confronted with a type of pneumonia or, more properly speaking, interstitial bronchopneumonia, in which empyema was detected in eighty-five per cent. of the cases. It is safe to say of the remaining fifteen per cent. that in a certain number empyema was present but was not diagnosed, and in a few cases it was indicated at autopsy that pus unquestionably would have formed had the patients survived and had sufficient resistance to have developed it. This type of pneumonia therefore, is totally and entirely different from the classical lobar pneumonia which I shall consider as Group II and

also different from the influenzal pneumonias, which I shall refer to as Group III.

The clinical picture of the hemolytic streptococcus cases was that of an overwhelming toxemia. Intense dyspnea, cyanosis, and the obvious indications of profound sepsis were the chief symptoms. These patients never had a lobar pneumonia. They always had a bronchopneumonia, which Cole and MacCallum (1) describe as an interstitial bronchopneumonia or purulent bronchiolitis. The outstanding feature of the disease was the rapidity of development of empyema. The presence of pus in the chest, as determined by exploratory puncture, within twenty-four or forty-eight hours after the initial onset of the disease, was the rule. The pus was a thin, dirty, turbid fluid containing flakes of fibrin and, microscopically, enormous numbers of hemolytic streptococci. It is incorrect to call empyema a complication of this disease. It is an integral part of it. Beginning as a suppurative peribronchiolitis, the pleura was involved by direct downward extension of the process, and therefore, empyema was part and parcel of the disease.

There are only three conceivable explanations for the absence of pus in the small number of patients who did not have it, viz., a mild infection, which in our series of cases was rare, an infection so violent that death ensued before the process involved the pleura, or pus present but not detected by exploration. The latter supposition was several times confirmed by autopsy.

Autopsies were obtained in nearly all the fatal cases, and the impression at the autopsy table among the medical officers was one of doubt as to whether any patient with such pathology could possibly have survived. In these fatal cases, the lungs were extensively involved by a purulent bronchopneumonia, so that in many cases one or both lungs were riddled by multiple small abscesses. There was a thick pyogenic membrane adherent to the lungs and parietal pleurae, which, upon being separated, contained a thin, dirty, purulent, flaky fluid. There was usually a phlegmonous infiltration of the mediastinal structures, with pockets of pus honeycombed between the mediastinum and the under surface of the sternum. Frequently pus pockets were found around the roots of the lungs and adjacent to and actually invaginating the pericardium. In several cases, pus was present in both pleural cavities. Purulent pericarditis was not very uncommon.

An interesting and unusual complication, which was found postmortem in two cases, was a symmetrical bilateral rupture of the rectus abdominis muscles. Cole and MacCallum (1) reported one such case in their study. In our cases microscopic study revealed Zenker's hyaline degeneration of the muscle fibres, and from the torn ends of the muscles, streptococci were grown in culture.

In the great majority of these cases, and they ran very true to type, there were walled off, inaccessible pus pockets. There were phlegmonous infiltrations from which thin, turbid fluid was expressed by pressure just as fluid from a sponge. Therefore, apart from the overwhelming toxicity, the high mortality

* Authority to publish granted by the Surgeon General, U. S. Army.

in these cases was due to the absolute failure of any method of surgical procedure, which could insure adequate complete drainage.

GROUP II.—PNEUMOCOCCUS PNEUMONIA.

There is little to say about this group, which comprises the usual cases of true lobar pneumonia, which were in no way peculiar and differed in no important respects from the pneumonias of Types I, II, III and IV met with in civilian practice. From November 1, 1917, to June 1, 1918, there were 139 cases of true lobar pneumonia with twelve deaths, a mortality of 8.6 per cent. There were thirty-four cases of Type I with three deaths, thirty-nine of Type II with five deaths, twelve of Type III with one death, thirty-one of Type IV with one death, and twenty-three cases clinically lobar pneumonia which were not typed, with two deaths.

The sputum was collected as promptly as possible, and typed by mouse inoculation and Avery media following the method published in the Rockefeller monograph. The sputum was examined for tubercle bacilli in all cases. A blood culture and urine precipitin were done immediately in every case, and as often thereafter as was deemed necessary. The usual blood and urine examinations were of course included. In the cases which proved to be Type I, the patients were given antipneumococcic serum immediately upon receipt of the laboratory report. In this group twenty-four patients were given serum. There were two deaths, a mortality of 8.3 per cent. This figure about represented our total figure of mortality in the group which comprises the true lobar pneumonias. Regarding the use of serum our number of cases has been too small to warrant deductions. In twenty per cent. of our cases there was a positive blood culture. Generally speaking a positive culture, especially if the culture was profuse, denoted a very severe infection. It is interesting to note that one patient with a positive blood culture of Type III, recovered. In the 139 cases of true lobar pneumonia, there were five cases of empyema, 3.5 per cent., with one death in the empyema group. I wish to lay special emphasis on this fact, because this group is the usual pneumonia, with the usual incidence of empyema, so totally different in every way from the cases of pneumonia and empyema due to *Streptococcus hemolyticus*, to which I have previously alluded.

GROUP III.—INFLUENZAL BRONCHOPNEUMONIA

In this group I have included those cases which occurred during the recent epidemic, the mental picture of which is still so clearly before you. From September 15 to November 15, 1918, there were admitted to the base hospital, 4704 cases of influenza and 1745 cases of pneumonia. There were 841 deaths, a mortality of thirteen per cent. It is probably true that in almost all of the fatal cases there was pneumonia. It is also believed to be true that many mild cases of bronchopneumonia were diagnosed simply as influenza. For this and many other reasons, it is impossible to draw deductions from these statistics.

The clinical picture is too well in mind to warrant detailed account. Any patient with influenza who was obviously too ill to be considered an uncomplicated case, was believed to have bronchopneumonia. Persistently high temperature, great prostration, delirium, cyanosis, bloody sputum, any of these symptoms were considered indicative of bronchopneumonia, even if physical examination failed to reveal areas of consolidation. Many cases came to autopsy with bronchopneumonia where consolidation was not detected clinically. We were fortunate in having bedside x ray apparatus in several of the wards and an average of forty pictures were taken in each of these wards each day. In this way, early consolidations were often detected. Regarding cases of bronchopneumonia, a commonly observed fact was the line of demarcation between the mild and the severe cases. It was possible to walk through the wards and predict with a fair degree of accuracy the cases which would terminate fatally. Profound toxicity, as evidenced by delirium, hyperesthesia, and cyanosis, was the outstanding feature of the disease. This, together with the rapidity with which these symptoms developed, stamped the disease a veritable plague.

There was noted in many cases, a decided disproportion between pulse and temperature. I recall one patient with a temperature of 106 and a pulse of 66, and it is not uncommon to note a pulse full, regular, and under 100 in rate even a short time before death. The usual blood picture was a polymorphonuclear leucopenia. This, and the curious relation of pulse to temperature, are strong points in differential diagnosis between these influenzal bronchopneumonias and true pneumococcus lobar pneumonia.

Cyanosis was most intense, involving especially the lips, ears, fingers, cheeks, and tongue. It was not purely of cardiac origin, and was not influenced in the slightest degree by bleeding. Neither was it altogether pulmonary. In some of the worst cases of cyanosis there was no demonstrable edema. It is possible that the cyanosis was a part of the extraordinary toxicity, due to a direct effect on the medullary centres. Apart from cyanosis, hemorrhage was the most important symptom. It was not the blood streaked sputum of lobar pneumonia, but frequently profuse hemoptysis as in tuberculosis. Nasal hemorrhage was present in over half the cases. Bleeding from the bowels, petechial hemorrhages in the skin, and bleeding from the ears were observed. Hemolytic jaundice was not uncommon.

Empyema was detected in forty-two cases, with one death to date. It was found postmortem in only one case. This relatively small incidence of empyema contrasts strongly with the occurrence of empyema in Group I (those due to *Streptococcus hemolyticus*).

There were many unusual cases. One in particular is worthy of description.

CASE.—Patient was admitted September 21, 1918, with a diagnosis of influenzal bronchopneumonia. He did fairly well until October 7th when precordial pain and dyspnea developed. On examination October 10th, the following findings were noted: Over

the left upper lobe there was flatness; fremitus absent, and voice and breath sounds absent. The heart was displaced to the right and the sounds were almost inaudible. There were no physical signs suggestive of fluid posteriorly. Aspiration was done high up in the anterior portion of the axilla and 520 c.c. of pus was removed. A few days later, by inserting the needle under the anterior axillary fold and directing it upward obliquely toward the clavicle, pus was again obtained. Costatectomy was done high up in the axilla, and a walled off pocket directly under the clavicle was opened. Carrel-Dakin treatment was used, the tubes being removed on the nineteenth day. A facial erysipelas developed which delayed convalescence, but the patient recovered without any chest complication.

This case is cited to show that pus can be walled off anywhere in the chest. It does not always occur posteriorly at the base.

The x ray, although of considerable value in most cases, by no means always clears up the difficulty. Quite frequently it is impossible to differentiate small quantities of fluid from thickened pleura. Thirteen cases of empyema were found in thirteen suspected cases in one day. Exploration yielded pus in every case in which it was attempted. In no two cases was it found in exactly the same place. Exploratory puncture with a Luer needle and a little local anesthetic is simple, practically painless, and often life saving.

In a series of five cases, with inconclusive physical signs and doubtful x ray, where pus was suspected and no definite area could be localized for exploration, previous explorations having been dry, pus was obtained by taking arbitrarily a point in the ninth interspace, about one inch from the vertebral column. Perhaps small quantities, if not walled off, will tend to gravitate toward the costovertebral angle. This observation is cited with due reservation, but may have some value in a puzzling case.

TREATMENT

I shall not consider the treatment of pneumonia in this résumé. Our only attempts at specific therapy was with Type I serum, to which I have referred.

A great deal may be said about the treatment of empyema, especially on determining the time of operation in these cases. In the cases in Group I, (those due to *Streptococcus hemolyticus*), the patients were operated upon immediately upon finding microorganisms in the pleural fluid. The operations were all done under local anesthesia, usually in the ward, without lifting the patient from the bed. The mortality in this group of cases was fifty-four per cent. The average mortality in this group of cases in the national army cantonments, was 30.2 per cent. The highest mortality reported was eighty-four per cent. in a series of eighty-five cases.

One hundred and forty cases of empyema, due to *Streptococcus hemolyticus* were reported from Camp Lee (3). Of these, the Empyema Commission directed the treatment in twenty-three consecutive cases, with one

death. The mortality in this selected group of cases, therefore, was 4.3 per cent. Briefly summarized, the commission believed that early operation, carrying with it inevitable surgical shock, sudden pneumothorax and cardiac embarrassment, was not the best procedure. They concluded, after very painstaking work, that repeated aspiration during the acute pneumonia course and subsequent costatectomy gave the best results.

In the small number of empyemas which have occurred since the early hemolytic streptococci cases, our method of treatment has been similar and our conclusions identical.

Virulence of infection, plays a tremendous rôle in the final computing of mortality statistics. No one who has seen a great deal of streptococcus empyema, and has followed the literature, can doubt that there must have been encountered many different strains of streptococci, hemolytic and nonhemolytic, of greatly varying degrees of virulence. The significant fact that in some of the cantonments the disease was practically always a sequela of measles, and in others occurred almost always as an independent infection, is evidence of the variability of the strain of the infecting organism. Considering all these variables, it may still be concluded that aspiration done as clinically indicated and late costatectomy have given the best results.

A few patients with frank pus have been treated simply by repeated aspiration, without thoracotomy or costatectomy; five such patients were discharged, presumably cured. But there is danger in the pendulum swinging too far, as it does not seem likely that any large number of patients can recover completely without open drainage. Leaving out of consideration the classical empyema following true lobar pneumonia, the most favorable time for open drainage is after the patient and the lungs have recovered from the acute pneumonia process.

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Prophylactic Quinine in Malaria.—A. H. Gosse (*Lancet*, September 6, 1919) records three sets of observations made in Mesopotamia which showed very clearly and conclusively the prophylactic value of small doses of quinine in a district in which malaria was present, but not very widespread. In each series those who regularly took the quinine escaped infection, while in a large proportion of those who lived under precisely the same conditions and did not take the quinine malaria developed. The author calls attention to the divergence in the results reported in connection with the prophylactic value of quinine by different observers and suggests that the failure of the drug was due in many instances to the administration of doses relatively too small, or to exposure to very heavy infecting doses of the malarial parasites.

MULTIPLE NEURITIS OF TOXIINFECTIOUS ORIGIN

With especial reference to a Hepatic Pathogenesis.

By ALFRED GORDON, M. D.

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The causative agents of multiple neuritis are manifold. Infectious and toxic processes in general are most frequently associated with this affection in a direct manner. Alcoholism, syphilis, carcinoma, malaria, and diabetes, occupy, in the order named, a secondary etiological place. Finally, there is a group of polyneuritides which belong in the category of the so-called spontaneous cases, in which we may include acute febrile polyneuritis, and Landry's paralysis.

Although the term acute febrile polyneuritis implies an infectious process, nevertheless in the cases observed recently in England and France during the war, the etiology was not clear. The rapid onset, with elevation of temperature in all cases and diarrhoea and vomiting in some reports, justifies this nomenclature. A careful analysis of the reports published, such as those of G. Holmes (1), shows that while in the main the clinical picture does not differ from that of the classical polyneuritis, there are certain features distinguishing it from polyneuritic phenomena which develop in the course of infectious diseases and intoxications. The peculiarities are specially noticeable in the domain of cranial nerves. It has been observed that the facial nerve is bilaterally involved. The facies is characterized by inability to wrinkle the forehead, whistling, and blowing, flatness of the cheeks, and difficulty in speech articulation because of a paretic state of the lips. The palate is also not infrequently affected. There is some difficulty in swallowing. The ocular muscles have been found paralyzed in some cases.

Another peculiarity observed is in the domain of sensations, the subjective as well as the objective sensibilities being decidedly less pronounced than in the classical polyneuritis. While the patients complain of pain in the legs, suffering is evident only upon active or passive movements. Pressure of the musculature does not provoke intense pain. The objective superficial sensations to touch, pain, and temperature are intact or very slightly altered. The deep sensations, such as position and vibrations of the tuning fork, are decidedly modified. There is also hyperesthesia to objects when the latter are in a state of motion. Disturbance of the sphincters is characteristically constant. Delay and incomplete micturition and rectal incontinence are the peculiarities observed.

The course of the affection also differs from that in other forms of multiple neuritis. In eight to ten days the symptoms have reached the maximum of development. They subside rapidly, the paralysis disappearing in the upper extremities before the lower, and recovery follows. The difficulty in swallowing and the sphincter disturbance disappear first. The facial paralysis persists for a long time.

To sum up, the special features of acute febrile

polyneuritis are found in the rapidity of development and improvement of the symptoms, in the bilateral paralysis of the seventh nerve, in paralysis of the ninth nerve, in the involvement of the sphincters, finally in the existence of slight subjective and objective sensory disturbances.

The seventeen cases of polyneuritis studied here followed infectious diseases and are distributed as follows: three in pneumonia, five in typhoid fever, two in measles, two in influenza, three in puerperal states. In the pneumonia and typhoid cases there were distinct evidences of hepatic disorder with enlargement of the liver. The question naturally arose as to whether the original infectious elements, the hepatic lesion, or both were etiological factors in the process of invasion of the peripheral nerve trunks. The uniformity of the morbid neuritic manifestations was so striking in these cases that the same question presented itself in the remaining nine cases, although no enlargement of the liver was in evidence in them. In the latter group there was a history of periodical urobilinuria, occasional yellowish tint of the cutaneous surface and conjunctivæ with generalized pruritus, gastrointestinal manifestation (poor appetite, epigastric distress, nausea, hematemesis, constipation), and tenderness in the hepatic region, all denoting disturbances of the function of the liver or of the portal circulation.

Multiple neuritis in icterus and cirrhosis of the liver, without an infectious process, has been observed by Roux, Larrier, Gouget, Gerhardt, and others. Some writers observed it also in functional disturbances of the hepatic parenchyma, as demonstrated by the presence of leucosuria, galactosuria, increased output of aminoacids and urobilinuria. In all these cases no other factor could account for the neuritis but the functional disturbance of the liver alone was so strongly in evidence that a hepatic insufficiency could be considered as an important etiological factor. In this connection it is well to recall the experimental work of Iodlbauer and Tappeines, who established the fact that fluorescent substances were capable of hastening or arresting certain biological processes. Erythrocytes, for example, in the presence of fluorescent coloring matter, are destroyed in light, but remain unaltered in darkness. Hausman (2) has shown that white mice injected with small amounts of fluorescent substances perish when kept in light, but remain intact when placed in darkness. The latter is applicable also to animals with dark skin. Eppinger in collaboration with Arnstein have arrived at identical results in their observations on dogs while experimenting with hematoporphyrin. The symptoms will vary according to the intensity and duration of the exposure to light. They noticed that their animals which were sprinkled with hematoporphyrin and continuously exposed to light, showed anatomical changes in the peripheral nerves. As is well known, urobilin is a fluorescent substance. Individuals suffering from urobilinemia present symptoms of intoxication. It is therefore logical to assume that there is a relationship between neuritis and urobilinemia. It is consequently evident that disturbances of hepatic function play a more important rôle than is generally admitted.

In the cases of the present study there were present as mentioned above evidences of hepatic disturbances without manifest increase in volume of the liver. The influence of the liver upon the excretion of urobilin is beyond question and urobilinuria is quite common in hepatic disease. Not only urobilinuria but also hematuria were present in some of the cases. The latter element, although it was apparent at intervals, was nevertheless present. The specimens of urine assumed a deep red, port wine color, or sometimes nearly black; the pigment was precipitated by the addition of calcium chloride and lime water, and then extracted with alcohol to which sulphuric acid had been added. Beside the urobilinuria and hematuria other manifestations were equally indicative of hepatic insufficiency. The neuritic phenomena, therefore, in the series of seventeen cases of infectious diseases find their explanation not only in the direct effect of the special microbic agents or their toxins, but also and exclusively in the accompanying hepatic disturbances which resulted in abnormal metabolic substances thus producing intoxication. The same remarks are applicable to the three puerperal cases. It is interesting to note that in everyone of the latter the polyneuritic manifestations occurred in the course of very frequent vomiting. The patients were, respectively five, eight, and nine months pregnant. Beside the vomiting, they presented a yellowish tint of the skin and intestinal disturbances. The hepatic region was tender to touch. The opinion mentioned above concerning hepatic insufficiency as a factor in the causation of neuritis finds here a legitimate place.

From the records collected in the literature and from the cases in the present series it appears that however plausible be the infectious theory of multiple neuritis may be, hepatic insufficiency seems to form a strong basis even if the disease develops in the course of infectious processes. Moreover, the clinical picture in such cases presents certain special features and with such a uniformity that polyneuritis with a hepatic etiology may be considered as a special entity.

As it appeared in my cases, the symptomatology was mildly pronounced. At the same time the morbid process extended rapidly; instead of remaining confined to the lower limbs it rapidly reached the upper. Commencing in the fingers the paralysis spread over the arm. In one case, in addition to the paralysis of the limbs, there was also bilateral ptosis and in two cases there were evidences of rapidity of the heart beat and shortness of respiration indicating an involvement of the pneumogastric nerve. Pain in the limbs was present but not intense. The sphincters were frequently affected. In two cases in which there was no history of alcoholism delirium made its appearance; one of them ended fatally and in the other convulsions developed. These two facts show that delirium in polyneuritis with hepatic disorders presents a grave outlook. In three cases there were evidences of mild dementia.

The course of the polyneuritis presented also special features, the onset giving the impression of seriousness. Paralytic phenomena and trophic dis-

turbances run a progressive course. While amelioration is possible, nevertheless in the majority of cases the condition promptly reaches a serious phase because of the extension of the pathological process to the nerves of vegetative life. The gravity of polyneuritis which develops on a soil with hepatic insufficiency is in direct relationship with the intensity of the latter. It seems that in early stages the nerve disorder is largely due to the suppression or to a considerable decrease in the antitoxic function of the liver. In advanced stages of hepatic disturbances, when there is added an element of low general nutrition due to a cachectic state, the symptoms of neuritis are more discreet. This is borne out by the pathological condition of the nerve trunks as revealed by the few autopsies on record. Gouget (3), among others, reports a case in point: The nerve trunks did not present the typical lesions of inflammatory neuritis, but degenerative changes of a discreet character, namely: the largest majority of the fibres were normal but separated from each other by a serious infiltration which distended the connective tissue; here and there some nerve fibres were found in a state of degeneration.

DIABETIC POLYNEURITIS

The six cases kept under observation during a period of several years are distributed as follows: One patient presented paralysis of the crural nerve on one side and the external peroneal on the other. He could walk but was unable to climb the stairs, to cross one leg over the other, and to get off a chair without assistance. Evidently the psoas and quadriceps muscles (crural nerves) were paralyzed on one side. On the other side there was foot drop because of the paralysis of the extensor group of muscles (external popliteal nerve).

The second patient had a quadriplegia with irregular and a symmetrical distribution of paralysis; the ulnar and facial nerve on one side, the musculospiral nerve on the other; the crural on one side, the external popliteal on the other. The patient therefore had a unilateral foot and wrist drop, also unilateral paralysis of the psoas and quadriceps. Finally the face was deviated to one side.

The third patient presented a unilateral paralysis of the muscles supplied by the obturator nerve and a unilateral palsy of the external popliteal nerve. Therefore the anterointernal group of muscles of one lower limb was affected, namely the adductors of the thigh, and the extensor muscles of the other leg.

The fourth patient presented a bilateral facial and a bilateral brachial paralysis. Motionless features of the face with an inability to smile, to speak distinctly, to blow the nose, to retain food in the mouth, to wrinkle the forehead, to close the eyes, finally an inability to raise the arms were all in evidence.

The fifth patient presented a case of pseudotabes. He had difficulty of walking (steppage gait), Romberg sign, marked diminution of the patellar tendon reflex on both sides, but preservation of Achilles tendon reflex. There was incomplete bilateral paralysis of the extensor group of muscles, asymmetrically distributed.

The sixth patient presented a unilateral facial palsy and a bilateral palsy of the extensor group of muscles in the lower extremities. The seventh nerve and both external peroneal nerves were involved.

All the patients were diabetic, with the typical characteristics of glycosuria. The neuritic symptoms speaking generally were those ordinarily encountered in polyneuritis of other origin. The special features, however, were as follows: Spontaneous sharp lancinating pain, cramps in the muscles of great severity and extreme tenderness of the musculature involved; cutaneous anesthesia or hypesthesia of the distal portions of the affected limbs. In those cases in which the seventh nerve was involved pain was absent in the face, but present in the paralyzed limbs.

There were also vasomotor and trophic disturbances, viz., erythematous, pruritus, falling of the nails. During the period of full development the symptomatology of diabetic polyneuritis does not differ from other forms of polyneuritis; we find then muscular atrophy with reactions of degeneration.

Another interesting feature is the great diversity of distribution of the paralysis, its incompleteness and the mode of its development. In the second case of quadriplegia the palsy of the upper extremities developed several days after that of the lower limbs. In the fourth patient the bilateral facial palsy appeared first and brachial palsy one week later. In the other four cases the invasion was simultaneous in all the nerve trunks. In none of the cases was the paralysis entirely complete. Some function of the affected muscles remained intact even in the phase of full development.

The course of the polyneuritis was in close relation to the fluctuation of the sugar content of the urine. This circumstance appeared to be highly important and instructive. When under the influence of intensive treatment for diabetic manifestations glucose would be greatly diminished, considerable amelioration would be observed in the neuritic phenomena: the paroxysms of pain, the character of the latter, the cramps, the tenderness of the nerve trunks and the corresponding muscles, the various vasomotor disturbances—all showed manifest improvement. Eventually the neuritic disorder greatly improved in all cases and in two cases complete recovery was obtained with no recurrence after a lapse of two years. The infirmity in the other four patients was so slight that they could be considered practically cured.

One may therefore consider diabetic polyneuritis as a benign affection and the prognosis quite favorable in spite of extensive involvement of multiple nerve trunks, as it occurs in some cases. At no time and in not one of the six cases have I observed rigidity of muscles and tendons or joints which is frequently so pronounced in cases of multiple neuritis of long standing and of alcoholic or arsenical origin. Neither have there been present psychic disturbances such as are observed in Korsakoff's polyneuritic psychosis.

The pathogenesis of diabetic polyneuritis finds its explanation in the existence of toxic products in the economy. They act on the peripheral nerves

in the same manner as toxins in infectious diseases. This view finds its strongest support in the observation mentioned above, namely, that the intensity of neuritic manifestations is dependent upon and is in close relationship to the fluctuating contents of glucose. The parallelism between the diabetic symptoms and the evolution of the neuritic phenomena, also their amelioration and eventual disappearance are all indications of a causal relationship between diabetes and polyneuritis.

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1812 SPRUCE STREET

CLINICAL NOTES FROM FRANCE

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PLEURAL SYMPHYSIS IN CHILDREN

Much attention has been given in France to the subject of pleural symphysis in children. In rare instances the symphysis may undergo retrogression and a more or less perfect recovery result. This happy outcome is more prone to occur when hygienic conditions combined with local treatment have placed the organism in a condition favorable to overcoming the process of sclerosis. In other circumstances the symphysis remains latent; this is when the lung itself is not involved in the process, and although thickened, the pleural layers slide over each other in spite of the adhesions uniting them, all this taking place without any perceptible friction sounds. It has been long known that in many cases even generalized pleural adhesions in no way interfere with the respiration, and this may continue during the entire life of the subject. But too much optimism must not be indulged in because beside these benign cases there are others in which the adhesions, by their extent and the lesions which they produce in the lung, assume an extreme gravity. The process of sclerosis, instead of remaining limited, extends to the pericardium and the structures in the mediastinum, and forms around the thoracic organs a sclerotic mass which compresses them and by the functional disturbances which ensue seriously compromises the life of the patient.

The gravity of the prognosis of pleural symphysis does not depend alone on the cause, extent, and site, but also on its tendency to involve the lung it surrounds and the neighboring organs. This tendency of the sclerosing process to extend depends on general causes as well as upon the various diatheses; syphilis, alcoholism, tuberculosis and rheumatism. All these should be searched for in the patient's antecedents because they influence prognosis unfavorably.

If only the extent and site of the symphysis are taken into consideration, the prognosis will be different according to its location at the apex or base.

While an extensive symphysis may cover the entire pulmonary dome with an inextensible cap without causing any marked disturbance, even limited adhesions between the parietal pleura and diaphragm will give rise to alarming symptoms. In the act of respiration the base of the pulmonary cone reaches the greatest distention, while the apex, the region of the hilum and the posterior border of the lung are displaced very little. Defective pulmonary expansion is far more serious in children than in adults because a much more active hemostasis is necessary for the child's development and growth. If the pulmonary ventilation is low the aspiration of the blood is much less active; pulmonary congestion ensues, followed by a sort of asphyxia or rather an anoxemia. This is made evident by general symptoms, such as dry, rough skin, cold extremities, and cyanosis of the fingers. Hypertrophic osteopathies arise, the epiphyses enlarge, and the ends of the digits become shaped like a drum stick. As the affection progresses congestion of the various viscera occurs which is particularly appreciable when the process becomes complicated by mediastinitis. This condition does not often result fatally until a long period of time has passed. The child remains pale and sickly, incapable of any exertion, puberty is reached badly, and in most instances the adult age is never attained.

If the causal factor of the symphysis is considered by itself, tuberculosis and rheumatism must be placed aside, because both processes have a very reserved prognosis. Tuberculosis is certainly to be feared, but nevertheless the prognosis is not of necessity a fatal one. In reality the thickening of the pleura plays the part of cicatricial tissue which walls off and has a tendency to choke the tuberculous granulations, so that however imperfect and weak the respiration in a lung thus compressed, the narrowing of the thoracic wall is none the less a curative factor. Although rheumatism is a most infrequent causal factor of pleural symphysis, it has a decided tendency to extend to the pericardium and mediastinum; the symptoms of mediastinitis then overshadow all others. Usually they are those of compression of the trachea, bronchi, or veins of the region. Edema of the face and limbs then ensues, the radial pulse is rapid and small and becomes weaker during inspiration. If to all these are added the valvular cardiac lesions common to rheumatism, the prognosis must evidently be very reserved.

If the prognosis is viewed from the evolution of acute diseases which may occur in a child with pleural symphysis, it is evident that no matter what the disease may be it assumes a peculiar gravity because it undergoes its evolution in a subject with lowered vitality. Any acute or chronic affection which involves the respiratory apparatus of one of these subjects will become localized preferably in the lung, already the seat of a morbid process; this is often seen in tuberculosis even when that disease was not the causal factor of the pleural symphysis.

The differential diagnosis of pleural symphysis is, to say the least, delicate. There is not a single pleural or pulmonary affection that it may not simulate. I shall, therefore, briefly review the question as viewed by the French medical profession. Pleur-

isy can be diagnosed by its evolution with a rise in temperature, with pain in the side more distinct than in a pleural symphysis. The local signs are of little import, as they are often the same in both morbid processes, at least when the fluid collection is small in amount. Exploratory puncture and radioscopy will give much diagnostic data and in some cases they are invaluable. Pneumonia and bronchopneumonia can be differentiated by the temperature charts, but the breathing sounds of both these processes may simulate the respiratory soufflé of a sclerous lung. The differential diagnosis with subcrepitant râles is likewise delicate, but it is necessary only to recall that in pleural symphysis the sounds heard always seem to lie directly under the ear of the examiner and they do not change when the patient coughs. It is useless to refer to expectoration, as this is usually absent in young children.

The differential diagnosis from tuberculosis is the most difficult of all. At the onset pulmonary infiltration is always accompanied by a dry pleuritis, the signs of which, subdullness, obscurity of the breath sounds, small dry crepitant râles, and a respiration which becomes jerky, would favor the diagnosis of bacillary infection. A localization at the apex is also in favor of the latter hypothesis. At the phase of softening subcrepitant and moist râles become added to the above thoracic signs, but they are more deeply situated than those due to pleural lesions. The phase of cavities need not be considered as the nature of the morbid process is only too evident. In the two latter phases the sputum should be examined for the tuberculous bacillus, but if the child does not expectorate mucus from the pharynx will take the place of sputum. Radioscopic examination should always be resorted to, as it is very useful in the diagnosis.

The problem will be still more delicate when tuberculous infection is suspected in a child who already has a pleural symphysis. Here the physical signs are very complex, all the more so because the dilatation of the bronchi is capable of giving rise to a symptomatology identical with that of the two latter phases of tuberculosis. These children should be given the tuberculin intradermic reaction which if negative absolutely excludes tuberculosis. When it is positive the diagnosis is still doubtful, and if other diagnostic measures are insufficient to settle the question, all that can be done is to wait for the evolution of the morbid process. The treatment is the more likely to be successful the earlier it is undertaken. When the symphysis is of long standing there is, unfortunately, little to be expected. Prophylactic treatment consists in the removal of fluid in the pleural cavity by aspiration, thus preventing compression of the lungs for too long a time. When the pleural collection has disappeared, little superficial cautery points should be made in order to produce a prudent revulsion. Dry and alcoholic frictions are also of value. Massage and electrization of the atrophied muscles with the faradic or galvanic current give incomplete results at the time but are useful for the future.

Children with a pleural symphysis should be ordered respiratory gymnastics in a moderate and

methodical way. At the beginning they should be done carefully, especially if tuberculosis is the underlying cause, because in such cases the gymnastics may give rise to accidents of extreme gravity. If the first few seances are well supported their duration may be progressively increased and there is every likelihood that a satisfactory result will be obtained from the viewpoint of the correction of the deformities, as well increased pulmonary expansion.

These treatments, which have a purely local action, should be combined with general treatment. All study should be discarded and the child sent to the country. Young children with a pleural symphysis and tuberculosis do not do well at the seashore and for them a high altitude is better. In the mountains they can be treated by heliotherapy, usually with the greatest benefit. If tuberculosis is present arsenical preparations, codliver oil, and preparations with calcium phosphate as a basis should be exhibited. When hereditary syphilis leads one to fear an extension of the sclerous tissue, antisyphilitic treatment is actually called for. If later on, regardless of the therapeutic measures resorted to, a fragile condition of the respiratory tract persists, these children should be sent to spas, such as the sulphurated calcium and sodium waters of Allevard or Cauteret, or to the arsenical waters of Bourboule and Mont-Dore.

When the physician is dealing with young subjects who have had a pleural symphysis for several years, there is far less likelihood of obtaining any results from treatment. If the child bears his condition fairly well, all that can be done is to place him in the most healthful surroundings. If the thorax is greatly deformed an attempt to remedy the condition by an orthopedic apparatus may be essayed, while resection of the ribs has been proposed in certain cases. Finally, if the child has serious respiratory and circulatory disturbances edema, visceral congestion, subasthymia and other symptoms—rest, milk diet, and digitalis may for a time ward off accidents. Decortication of the lung has been suggested, especially by Delorme, I believe, but the results obtained have not been what one might wish.

Etiology of War Tachycardia.—J. Gaillard (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, May 15, 1919) found that among thirty-four cases of persistent "war" tachycardia, in twenty the patients had had palpitations with precordial discomfort and breathlessness before the war. In only five of these twenty cases could the condition be traced to some definite cause, such as rheumatism, pleurisy, or emotion. On the other hand, among the fourteen cases beginning during the war, ten were referable to definite etiological factors. Grouping all the cases with definite causes, four were due to rheumatism, two to typhoid fever, one to malaria, one to infection following anti-typhoid vaccination, one to pleurisy, two to mild gas intoxication, and four to violent emotion or commotion. These various factors seem unrelated, and no uniform pathogenesis of the condition is demonstrated.

LONDON LETTER

(From Our Own Correspondent)

Sir Thomas Barlow on Venereal Disease in Great Britain—The London Post-Graduate Course—The American Hospital for Great Britain—Increased Medical Fees in Prospect—Sanitary Survey of Great Britain Suggested—Deaths Among Medical Men.

London, September 30, 1919.

The veteran Sir Thomas Barlow, physician extraordinary to the King, spoke on Brotherhood and the Fight against Venereal Disease at the International Brotherhood Congress, which held meetings at the City Temple, London, during the first week of September. He said in part that statistics with regard to the fatality of syphilis in different classes of people were admittedly unsatisfactory. Medical men out of consideration for relatives, often stated only the immediate cause of death, although there was every reason to believe that the numbers in the Registrar General's reports were understated, yet the groups indicated were significant. The lowest class of all, the casual laborers, considering their poor habitations and the difficulties of maintaining sexual decency, gave the largest mortality figures for syphilis and its results. Next in rate of mortality came the group just above the lowest class of casual labor. The third highest rate was that of the well-to-do and upper classes. Then came in diminishing mortality the skilled artisans, the textile workers, the miners, and, last of all, the agricultural class. Big cities were worse than small country towns, and large seaports were worst of all. The last British Royal Commission estimated that the incidence of venereal diseases in the large towns for all classes was about twenty per cent. As for the salient conclusions suggested by the figures, density of population and bad housing were no doubt important factors. It must not be forgotten that the third group showed excess of leisure as a probable important factor, and also emphasized the conclusion that general education was no guarantee against venereal disease. The groups showed that putting aside the lowest casuals and those socially immediately above them, the leisured class had a higher mortality than skilled artisans and other workers.

The most telling part of Sir Thomas Barlow's address was that which dealt with the question of responsibility. In considering the unit of responsibility, he remarked that the matter was surely one of responsibility of parent to child, of father to son, of mother to daughter, and, indeed, of mother to son also. The fight must not be delayed until the beginning of adult life. Sons and daughters must be acquainted with sexual risks from childhood onwards. The first necessary equipment was knowledge and it was far better that simple knowledge should be given by the mother to her child than that it should be given by older children. With regard to the difficulties of sexual development and early sexual abuse, that was where the help of a good family doctor was most useful. He looked forward to teachers and medical inspectors of schools giving informal lectures and conferences to parents, and trying to get parental cooperation so

as to remove the prejudices which came from prudery and half knowledge. As to how much should be taught about physiology in the primary schools, he would stop at nature study and defer the teaching of physiology to the continuation classes. However, let it never be forgotten, when declaiming against prudery that there was something to be said for a wise and respectful reticence. The true antidote to unprofitable curiosity was the determination to utilize our knowledge in safeguarding our children.

Sir Thomas pointed out that during the past four years enormous progress had been made in the diagnosis and treatment of syphilis and he did not hesitate to say that the most beneficial results of the new treatment concerned both mother and child. There was still a great deal to be done in perfecting our methods and in securing continuity of treatment and repeated regular tests of safety from relapse. The considered and well balanced judgment of their working brethren was especially desired as to how far the arm of the State should be invoked if men and women would not persevere with necessary treatment. It should be realized that it was a civic obligation that every man or woman exposed to sexual infection should be treated at the earliest possible moment and for as long as was necessary. It had been recommended that places under municipal control should be established where antiseptic packets would be obtainable before exposure; also that such packets should be obtainable without medical prescription from chemists. Even a penny-in-the-slot arrangement had been advocated. To all these plans he strongly demurred. They lent themselves to repeated employment of measures which were inadequate if the disease had gained a definite footing. Methods of selftreatment gave a false security and such facilities fostered a regular habit which no sane man would defend. The employment of prophylactic packets was strongly deprecated and it was urged if once that provision received State or municipal sanction, with the approval of medical men, there was no limit that could be placed on its employment. The speaker was ready to adopt every measure for the earliest possible treatment after a man had gone astray, but he stipulated that such measures should be under responsible medical guidance and not an affair of selftreatment, with a penny-in-the-slot arrangement.

Sir Thomas Barlow is a leader, perhaps he may be termed the leader of the British medical profession, and the views expressed by him on venereal disease, probably represent those of a very large, if not the majority of the medical men of Great Britain. The situation is grave, and those who are in favor of direct prophylaxis, point to its good results in some armies, and hold that if it can be proved that it is applicable to civil life, no moral scruples should be allowed to stand in the way of a method which might eliminate venereal disease. It seems as if the question should be thoroughly threshed out.

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The London Postgraduate Course, instituted by the Fellowship of Medicine some six months ago,

primarily for the benefit of American and other medical officers who have been attached to units in the field, has continued its course without interruption during the summer. Most of the American members have returned home, although a few are still at work in the London schools. Other American medical men and women have commenced their period of study in Europe by enrolling their names with the fellowship, and the course is being followed by an increasing number of graduates from the overseas dominions and many allied and neutral countries. Far-reaching arrangements are now being concluded to continue the postgraduate course upon a permanent basis.

* * *

Since the foundation meeting of the American Hospital for Great Britain held at the Royal Society of Medicine under Lord Reading's chairmanship in July last, the detailed organization of the hospital has been steadily proceeded with. Additional promises of active support have been received from many American medical men of distinction, and it is intended that the hospital will ultimately have a medical representative in every state of the union. The functions of the medical committee in the United States (consisting of Dr. George W. Crile, Dr. William J. Mayo, Dr. Charles H. Mayo, Dr. A. J. Ochsner, Dr. Rudolph Matas, and Dr. Franklin Martin) will assume considerable importance. It is proposed that this committee will select the candidates and make the appointments for the internships at the hospital, which will be filled by American medical men. The several committees dealing with finance and constitution appointed at Lord Reading's meeting are beginning active work, and it is hoped that the hospital will be able to open its doors in a temporary building early next year.

* * *

Medical men are raising their fees in many parts of Great Britain and in the course of a month or so it is expected that a recommendation will be adopted to make a general increase of fifty per cent. or thereabouts throughout the United Kingdom. According to Doctor Cox, secretary of the British Medical Association, the association some time ago circularized town councils, boards of guardians and other public bodies, asking them to increase the whole time salaried medical men by thirty-three and one-third per cent. and in many instances this has been done. With regard to private practitioners the whole matter is to be gone into at the next meeting of the council which will be held at the end of October. It should be borne in mind to their honor, that medical men have been the last to cry out. *The increased cost of living* has hit them in the same way as other people. They can be trusted not to charge on a higher scale in cases where it means a hardship. Medical men are naturally in a good position to be able to estimate with accuracy the financial standing of their patients. It must not be forgotten, too, that not only has there been an exorbitant increase in the cost of living, but drugs have increased enormously in price. Surgical instruments cost almost twice as much as ever before. The medical profession during the war deserved

well of their country, and some of those who served the most willingly have suffered in a pecuniary sense the most. The ones who stayed at home for excellent reasons, worked harder than ever before in their lives and received no special pay. Some of the London daily journals state that the general practitioners of New York set the lead in the direction some months ago by doubling their prices. * * *

In an address delivered in Aberdeen recently, Sir Napier Burnett put forward the suggestion that a sanitary survey of Great Britain should be undertaken in order to ascertain the "facts," and as a basis for future legislation dealing with the health of the people. The speaker, in recalling the measures adopted to safeguard the health of the army during the war, said it would be found, when the final figures were published, that the deaths from sickness as compared with bullets would be under twenty per cent. He suggested that the explanation of this remarkable result was to be found in the detailed provision made by the medical officers for the prevention and cure of disease. By mobilizing the scientific forces of the profession, organized and coordinated so as to prevent as well as cure, the great enemy disease was overcome.

How were our forces organized for warfare with disease in civil life? In contrast to the organized system under the military régime, the scientific forces at home were loosely arranged, and with but little or no attempt at organization. Individualism remained an outstanding feature of the medical profession. The call was as urgent during peace as during the years of war for a united and organized profession and this, he suggested, was possible of attainment when each medical man regarded the service from the point of view of the needs of the nation. With the establishment of a Ministry of Health, the country had taken the first real step towards the ideal of unity of command. Just as unity had been attained centrally in the Ministry of Health, so there was an urgent need for a replica of the ministry in the various districts throughout the country, an authority that would unify and direct all local energies pertaining to health. He thought that the time was now opportune for the legislature to consider the advisability of strengthening or supplementing the present local government executives by the establishment of regional areas or provinces, each region to be administered by a Health Council whose main function would be the supervision and coordination of all matters pertaining to health. With the division of the country into regional areas the ground would be cleared for instituting a national sanitary survey, and he suggested that the survey of each district should be undertaken by those resident in the locality. The provision of adequate hospital accommodation was a matter of vital importance to every class in the community, and it would appear to be the duty of each district to take immediate steps to cooperate with the Ministry of Health in collecting for it reliable data.

Sir Napier Burnett summarized some suggestions relative to hospital problems as follows: 1. The coordination of all hospital beds within a de-

fined area, such an area as is served by the main central hospital; these beds would be under the supervision and management of a Hospitals' Council, whose office would act as a clearing house in all matters, financial and administrative, pertaining to hospitals. 2. A greatly increased provision of convalescent hospital accommodation. 3. The consideration of establishing "paying beds" or hospital provision for paying patients. 4. An investigation into the whole basis of hospital finance. 5. Establishment of "team" work in hospitals, with payment of the medical staff. 6. A new appreciation of the one patient department, both from the point of view of the patient and medical student. 7. The establishment of a hospitals' association for the purpose of instituting a hospital survey of the region or area, with subcommittees to investigate various aspects. There is no doubt that organization and coordination are required to render prevention of disease effective. It is also obvious that in civil life, in Great Britain at any rate, such organization up to the present time, has been lacking. It certainly seems to fall within the province of a Ministry of Health to supply the lack. The hospital system of Great Britain is defective in some respects and Sir Napier Burnett put his finger on some of its shortcomings in the summary. Especially is it advisable that provision should be made for paying patients in British hospitals. * * *

One of the most progressive exponents of preventive medicine in Great Britain has just passed away in the person of Dr. A. H. Hogarth, who was medical officer of health for Buckinghamshire. For some time he acted as assistant medical officer to the Port of London, and when in this position he contributed some comprehensive reports to the Mansion House Council on Health and Housing. He next paid attention to school hygiene and in aid of the efforts to establish legislation on the question wrote and published a book dealing with the medical inspection of schools. While still an Oxford graduate Hogarth served through the Boer War and at the outbreak of the war just over rejoined the old regiment and went to France as regimental surgeon. After the armistice he was sent out by the Air Ministry on a special mission to the Eastern Mediterranean. On the return voyage he was attacked with Vincent's angina which completely sapped his vitality. Hogarth was an untiring and scientific worker and a man of original mind. He attacked every problem with eager zeal and "played the game" in war and peace alike. He was barely forty-two when death took him.

Treatment of Emypema.—Samuel Rosenfeld (*Medical Record*, September 20, 1919) from an observation of thirty-five cases at Camp Hospital 26, U. S. A., arrives at the following conclusions: Emypema is a surgical disease and should be so treated; aspiration is only occasionally curative, but is of use pending the walling off process; local anesthesia suffices for all acute operations and the intercostal incision will usually prove sufficient; the Carrel-Dakin method gives excellent results; breathing exercises and the diet are very important. Vaccine and bismuth iodoform paste are valuable.

Editorial Notes and Comments

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PUBLISHER'S ANNOUNCEMENT

Despite the printers' strike, after a considerable delay we have finally succeeded in resuming publication of the **NEW YORK MEDICAL JOURNAL**. We have been obliged to print our Journal, as have many other publications, outside of New York. Subsequent issues of the Journal will be mailed as rapidly as possible until we catch up with our regular mailing schedule. We are working under difficulties and beg the indulgence of our readers for the delay occasioned by the unfortunate circumstances over which we had no control.

We have received hundreds of letters of sympathy and encouragement from subscribers which have been gratefully received and which we hereby acknowledge with sincere thanks.

INFLUENZA CONTAGION.

A number of cases of influenza have been reported in various cities of the north and east of the United States and in Canada. Our Canadian neighbor often supplies us with a forecast of the disease conditions that may be expected to develop when our own weather becomes changeable and verges toward winter. There seems no doubt then that we shall have a series of influenza cases this winter, probably not so numerous as last season but with a higher mortality than during the first manifestation of the epidemic. This is the experience of previous epidemics so far as we have any definite records of them. In Massachusetts, for instance, as was true also in England where the mortality records are

reasonably complete, Frost of the United States Health Service showed that in 1891 and in 1892 the pneumonia mortality was higher in each year than in 1890, the first year of the last preceding epidemic.

The diffusion of knowledge of this kind may create a panic in the minds of the timorous so it may be well to note how difficult has been the solution of the problem of determining the mode of the spread of influenza and how much less contact with material that would be supposed to convey the disease means than has been thought. The fact that the disease at the height of the epidemic spreads so rapidly and so widely and when it occurs in the household a great many of the members of the family and often all of them are likely to come down with it, has made it seem extremely contagious. Any intimate association with the virus of the disease would appear to be quite sufficient to bring about its development through contagion.

Experiments made with army volunteers made it clear that mere contact with contagious material means very little compared to susceptibility to the disease. Dr. M. J. Rosenau, of Boston, last June presented the details of his experimental efforts to produce influenza and his failure to have the disease develop under conditions in which it would seem surely inevitable that it must occur.

The volunteers on whom the observations were made were from the United States Navy and of the most susceptible age between eighteen and twenty-five. All were in good physical condition, none of them had had influenza nor indeed could any account of any febrile attack of any kind during the winter be elicited. Pure cultures of Pfeiffer's bacillus of influenza were introduced into the nostrils of a few of these but without result. A score of the volunteers were given then "a very large quantity of a mixture of thirteen different strains of the Pfeiffer bacillus, some of them obtained recently from the lungs at necropsy." The mode of administration was by spraying suspensions of these organisms with an atomizer into the nose and eyes and back into the throat while the volunteers were breathing in.

After this the observers did not hesitate to take the mucous secretions of the mouth, nose, throat and bronchi of patients suffering from the disease and transfer them to the volunteers. The material for these observations was transferred almost directly from the patients to the volunteers and yet none of them became sick. There was no doubt about the original cases being influenza. The fact that we

have no criterion of influenza was kept in mind so that an isolated case of fever was never selected as the source of the secretion expected to be contagious, but the donors were always selected from a distinct focus or outbreak of the disease, sometimes an epidemic in a school of a hundred cases from which would be chosen four or five typical cases.

Finally a series of observations was made using the method by which it is supposed that influenza is commonly spread. Some idea of the completeness with which this experiment was carried out will be realized from a description of what happened in each case: "The volunteer was led up to the bedside of the patient; he was introduced. He sat down alongside the bed of the patient. They shook hands, and by instructions, he got as close as he conveniently could, and they talked for five minutes. At the end of the five minutes the patient breathed out as hard as he could, while the volunteer, muzzle to muzzle (in accordance with his instructions, about two inches between the two), received this expired breath, and at the same time was breathing in as the patient breathed out. This they repeated five times. Then the patient coughed directly into the face of the volunteer's face to face, five different times." This would seem to be enough to demonstrate the contagiousness of influenza as ordinarily supposed to occur, but the experiment did not stop there. "After our volunteer had had this sort of contact with the patient, talking and chatting and shaking hands with him for five minutes, and receiving his breath five times, and then his cough five times directly in his face, he moved to the next patient whom he had selected, and repeated this, and so on, until this volunteer had had that sort of contact with ten different cases of influenza, in different stages of the disease, mostly fresh cases, none of them more than three days old."

Doctor Rosenau suggests we must be careful not to draw any positive conclusions from negative results of this kind and yet it seems perfectly clear that they cannot help but modify most of the current impressions with regard to contagion in influenza and its mode of conveyance. Very probably they signify also that immunity means ever so much more than contagion and that keeping one's self in good condition is distinctly more important than frantic efforts looking to the avoidance of contagion. Some years ago when infantile paralysis was epidemic quarantine seemed extremely important and hysterical efforts for its maintenance were made throughout many towns and yet it was extremely rare to have a second case of the disease in the same family. Impressions with regard to con-

tagiousness may evidently be completely wrong and only the most careful observation and experiment can be expected to provide reasonable data for conclusions. In the meanwhile it would seem as though there is very little reason for the use of many of the very noticeable means of supposed protection that were employed last year. Most of these only made those who wore them eminently inclined to worry over the danger to which they were exposed, disturbed the minds of others and often seemed almost to do more harm than good because they interfered with normal free respiration.

INFLAMMATION OF MECKEL'S DIVERTICULUM AND INTESTINAL OCCLUSION.

Meckel's diverticulum is a formation met with relative frequency—at least in children—between one in sixty to one in one hundred according to various statistics. Other intestinal diverticuli may likewise be the cause of serious accidents of intestinal occlusion. The anatomical and physiological conditions in which the diverticulum is placed favor lesions of this organ and inflammation in particular. The diverticulum is often and early in life the seat of a pathological process. The larger number of cases are met with in children. Among these affections the most common is occlusion of the intestine. One form is mechanical without any individual symptoms and comprises volvulus, invagination and strangulation by bands of adhesions. It is, consequently, impossible to make a diagnosis of the lesion in the majority of cases causing the occlusion.

The second form of occlusion may be called inflammatory on account of its origin; it is the final phase of long standing or recent inflammatory processes in the diverticulum of Meckel whether they are acute, subacute, chronic or relapsing. Anatomically, the diverticulitis may be plastic, suppurating with encysted peritonitis or with general peritonitis, gangrenous or chronic. The microscopical lesions closely resemble the corresponding types of appendicitis. However, gangrenous lesions, as well as ultimate complications from adhesions, are more frequently found. Clinically, inflammatory occlusion undergoes its evolution in two phases. The first is the pseudoappendicular, the second phase that of occlusion. In the gangrenous or perforating forms of diverticulitis the second phase may be replaced by signs of pseudoocclusion.

The symptoms belonging to diverticulitis are as yet not definite and the evolution of the affection remains to be studied. As most characteristic may be mentioned: pain in the periumbilical region and

the presence of a deep seated mass or tumor in the same region; a high pulse rate and a relatively low temperature and abdomen soft and not distended remaining so for some time after the onset of the symptoms; and lastly, the presence of a congenital malformation,, congenital tumor or fistula of the umbilicus.

These symptoms are far from being characteristic so that the diagnosis of an occlusion from a diverticulitis can only be made with some degree of certainty when the symptoms present in a given case do not really belong either to appendicitis, strangulation or invagination of the intestine. The only treatment is surgical. The abdomen should be explored as soon as possible, the cause of the occlusion removed and according to circumstances, simple resection of the diverticulum, resection of the intestine or an artificial anus must be resorted to. In all abdominal operations, if an intestinal diverticulum is encountered it should be resected, because it is a permanent danger to the patient. Finally, if in a child a diagnosis of appendicitis is made and the appendix found normal or offering lesions in no way proportionate with the marked clinical manifestations, the last few centimetres of the ileum should be examined in order to discover an inflamed diverticulum, should one exist.

WOMEN PHYSICIANS AND PSYCH-ANALYSIS

It is a matter of no small significance that the larger part of the program of the International Conference of Women Physicians held recently in this city should be devoted to psychotherapy in its newer form of psychoanalysis. The consideration of this subject has not been that alone which the comprehensive title announced in the program would seem more generally to indicate. Under the heading *Emotional Reactions to Present Social Conditions and Their Effect on Health* one might at first glance think that the conference had simply devoted its attention to the many social problems which naturally lie under the care of trained and earnest women such as this body of women physicians. This of course has long been done both in a more general way and also with emphasis upon the various phases in which such women by merit of profession and of sex have been able to make their influence peculiarly felt.

Any one present at these meetings would have felt that something different was abroad in the medical profession, at least in the countries and communities which these women represented. There was

something more deeply definite in the interest which they centered so forcibly upon the relation of psychotherapy through psychoanalysis to the healing also of organic diseases. The subject announcements upon the program have been eloquent of this as has the psychanalytic personnel of the speakers chosen to present to the members of the conference this practical aspect of psychoanalysis. The members of the conference view it evidently as a factor of social interest, a means of mental and moral improvement in society at large, and they also show a more intensive interest in it as a factor in medical practice which can no longer be neglected. This was not alone in its more strictly psychotherapeutic aspect but there was a growing appreciation, as the sessions succeeded each other, of the close relationship between actual organic diseases, the mental makeup and attitude of the individual and the inseparable character therefore of both the physiological and the psychical approach in treatment. There is an appreciative recognition also of the close applicability of this to social and individual morals.

This does not mean that there was no criticism and no opposition to the points of view, which as they were presented came with startling and novel a force to some. Throughout all this, however, is manifest that earnest spirit of inquiry and desire to discover the truth in its practical bearings, particularly in strictly medical fields, which testifies to the recognition of psychoanalysis as an aspect of medical approach and practice which must at least be studied and tested in its possibilities as a diagnostic and therapeutic tool. It is a matter for earnest thought that these women, representative of the best medical thought of their communities and of conscientious occupation with medical problems, should have given such ample space and such earnest consideration to this newer phase of medicine.

SHELL SHOCK TREATED BY HYPNOTISM.

During the war shell shock was a common affection, certainly was the most frequent nervous affection. Of course, many cases of shell shock were not true shell shock, some were simulated unconsciously, while others were cases of malingering. The treatment of shell shock of every description was conducted on various lines. Hypnotism was one of the most successful means of treatment. In the psychology subsection of the meeting of the British Association for the Advancement of Science, held in Bournemouth recently, Dr. W. Brown gave an address on hypnotism and mental analysis as applied

to soldiers suffering from shell shock, gun shock and other maladies. Doctor Brown was appointed neurologist to one of the British armies in France, being the first medical man to be in charge of a nerve hospital in the field. All the patients treated by him were afflicted with loss of memory, fifty or sixty per cent. being severe cases. He employed hypnotism to clear up their memories and then proceeded to treat by suggestion. One of the most common symptoms was loss of voice. Brown had 121 cases in sixteen months, and in every instance he found that by hypnotizing the patient and suggesting that he lived the experience over again, but without mentioning anything about the voice, the man recovered his speech. Sometimes the malady disappeared not by suggestion but by unlocking the bottled up emotions. According to Doctor Brown, hypnotism was a simple way of carrying out a mental analysis. By means of it, a man was induced to talk about himself and his dreams with vivid emotion, and then relief was obtained. Melodramatic methods were not necessary. As far as possible, it was sleep, ordinary sleep that was required. Mental analysis must be employed in every case, and a medical man should always be on guard against repeatedly hypnotizing a person, because this would have a harmful effect.

In English speaking countries, a good deal of prejudice has been created against psychanalysis, on account of the insistence that Freud and his followers place upon the sexual origin of practically all nervous complaints. However, it appears to have been proved conclusively that mental analysis is of the greatest service in the treatment of the psychoses and that by means of hypnotism this method of treatment, at any rate, in cases of shell shock, can be best administered.

THE SENSE OF SMELL IN FISH.

In a lecture on the Significance of the Cerebral Cortex, quoted in the *Medical Press*, Professor Elliott Smith states that the sense of smell preponderates in the psychic life of the fish; that the first of the sensory systems to be represented in the development of the fish is the olfactory. The fish scents out its food and it is not until it is quite near the object of its search that visual guidance comes into play. "This is proved," says Professor Smith, "by the fact that the eyes are permanently focused for near objects." All this is to be news to the fisherman, for the trout, the bass and the muskalonge strike at the fly, the plug or the spinner from sight and not from a sense of smell. But on the other hand there is a well established belief in the efficacy of oil of anise as a lure when added to the wiggly worm.

News Items

Southern Medical Association.—This society will meet in annual session at Asheville, N. C., November 10th to 13th, under the presidency of Dr. Lewellys F. Barker, of Baltimore. Dr. Seale Harris, of Birmingham, Ala., is secretary of the society.

Western Surgical Association.—The annual meeting of this association will be held in Kansas City, Mo., December 5th and 6th, instead of December 15th and 16th, as originally announced. Dr. Roland Hill, of St. Louis, Mo., is president of the society and Dr. Arthur T. Mann, of Minneapolis, is secretary.

Personal.—Dr. Victor C. Jacobson, pathologist to the Peter Bent Brigham Hospital, Boston, has been appointed assistant professor of pathology in the University of Wisconsin.

Dr. Fred Towsley Murphy, who recently resigned as professor of surgery at Washington University Medical School, St. Louis, was chosen a member of the Yale Corporation by the successors of the original trustees.

Dr. Augustus Milton Anderson, of Atlanta, Ga., announces his return from New York, and the re-opening of his office at 303-304 Connally Building. Doctor Anderson's practice is restricted to ear, nose, and throat work.

Civil Service Opportunities.—The Civil Service Commission of the State of New York announces examinations for the following positions, examinations for which will be held November 22nd. Pathologist, State hospitals for the insane, \$2600 to \$3000, with an increase of \$100 each year from minimum to maximum, and maintenance; men and women. Assistant bacteriologist, quarantine laboratory, department of the health officer, Port of New York; \$1200; men and women. Assistant serologist, State Department of Health; \$1200 to \$1800; men and women.

New York Hospitals Approved by Surgical Congress.—A list of hospitals receiving official approval was presented to the Clinical Congress of the American College of Surgeons at the congress held recently in New York, by Dr. Louis D. Moorhead, of Chicago, inspector for the hospital standardization committee. Only hospitals of one hundred beds are included in the list, and twenty-six of the ninety hospitals of one hundred beds or more in New York State were named. They are: Bellevue Hospital, Beth Israel Hospital, Brooklyn Hospital, Buffalo Homeopathic, Ellis Hospital (Schenectady), Erie County Hospital (Buffalo), Hahnemann Hospital (Rochester), Hospital of the Good Shepherd (Syracuse), Jewish Hospital of Brooklyn, Lebanon Hospital, Long Island College Hospital, Mount Sinai Hospital, Mount Vernon Hospital, New York Eye and Ear Infirmary, New York Hospital, New York Infirmary for Women and Children, New York Orthopedic Dispensary, New York Society for Relief of Ruptured and Crippled, Oneida County Hospital, Presbyterians Hospital, Rochester General Hospital, St. John's Riverside Hospital, St. Luke's Hospital and Wyckoff Heights Hospital.

Hungary Gets Red Cross Aid.—Hungary is the first of the former Central powers to receive an official commission of the American Red Cross. A train of thirty cars carrying medical and surgical supplies valued at \$350,000 has been sent from Paris to Budapest. The unit is in charge of Major S. A. Moffatt, of Brooklyn, and Major B. B. Me-theany, of Seattle. Hospitals in Budapest were reported as being crowded and without the bare necessities, most of the patients being civilians whose constitutions had been undermined by war.

New York Hospitals Face Deficit.—Forty-six hospitals in New York, classed as nonmunicipal, face an aggregate deficit of more than \$3,000,000 next year, according to the annual report of the United Hospital Fund. The deficit is due to the increased cost of maintenance, particularly of free wards. The daily cost of nonpaying patients has risen from \$2.02 in 1914 to \$3.50 for this year. Free service totalled 1,282,078 days. The maintenance cost of the forty-six hospitals during the year was \$9,073,065. Revenue from pay patients amounted to \$4,247,440 and from endowments \$1,536,929.

California Floating Laboratory.—The State Board of Health of California is maintaining a floating laboratory in the Delta regions of the San Joaquin and Sacramento rivers in order to make a survey by fecal examinations of the intestinal parasites of Japanese, Chinese, Hindus, Mexicans, and other races resident in the State. In addition to the actual collecting of samples for examination, inspections and reports have been made of sanitary conditions in a number of camps in the Delta. The bureau of sanitary engineering is working on a water purification plant which will be installed in the laboratory early in fall as a demonstration to the people of a simple method of water purification. Another feature of the work of the laboratory is making it a centre for exhibits of animal parasites.

American Association of Electrotherapeutics and Radiology.—At the recent annual meeting of this society the following officers were elected for the year 1919-20: President, Dr. William Martin, of Atlantic City; vice-presidents, Dr. Virgil C. Kinney, of Wellsville, N. Y.; Dr. William T. Johnson, of Philadelphia; Dr. S. St. John Wright, of Akron, Ohio; Dr. Mary Arnold Snow, of New York; and Dr. John H. Burch, of Syracuse, N. Y.; secretary and registrar, Dr. Byron Sprague Price, of New York; treasurer, Dr. Emil Heuel, of New York; board of trustees; one year, Dr. J. Willard Travell, of New York, and Dr. Frederic deKraft, of New York; two years, Dr. Frank B. Granger, of Washington, D. C., and Dr. Frederick H. Morse Boston; three years, Dr. William L. Clark, Philadelphia, and Dr. Edward C. Tilt, New York.

Federal Aid for Maternity and Infant Hygiene.—Cooperative federal aid for states on maternity and infant hygiene is provided in a bill which has been introduced into the United States Senate by Senator Morris Sheppard, of Texas. The bill, if passed, would set aside \$1,000,000 a year beginning July 1, 1920, for instruction to mothers on the care of themselves and their children. Each year thereafter,

including 1925, \$200,000 would be added to the annual appropriation until by 1926 it reached \$2,000,000, which amount would be the permanent figure. The chief of the Children's Bureau is designated as the administrator of the proposed act, with the approval of the Secretary of Labor. Each State is to be authorized to create a board of maternity aid and infant hygiene, composed of the governor, a physician from the State board of health, a graduate nurse, and a teacher from the State university or college of agriculture. Each state is to submit to the Secretary of Labor its plans for carrying out the provisions of the act through public health nursing, consultation centres, medical and nursing care for mothers and children at homes or at a hospital when necessary, especially in remote areas.

Medical Women's International Association.—A permanent organization of women physicians has been formed as a result of the conference of women physicians held in New York from September 15th to October 25th. The new organization is called the Medical Women's International Association, with headquarters at the office of Dr. Esther C. P. Lovejoy, of New York, who has been elected president. Other officers are as follows: Dr. Christine Murrell, of London, first vice-president; Dr. L. Trillier-Landry, of Paris, second vice-president; Dr. Kristine Much, of Christiana, Norway, third vice-president; Dr. Martha A. Welpton, of San Diego, Calif., corresponding secretary; Dr. Marie Feyler, of Lausanne, Switzerland, recording secretary, and Dr. Ellen C. Potter, of Philadelphia, treasurer.

New Officers of the Clinical Congress of Surgeons.—At the annual meeting of the Clinical Congress of the American College of Surgeons, held recently in New York, Dr. George E. Armstrong, of Montreal, was elected president, succeeding Dr. William J. Mayo, of Rochester, Minn. Dr. Rudolph Matas, of New Orleans, and Dr. Horace Packard, of Boston, were elected vice-president, and Dr. Franklin H. Martin and Dr. Albert J. Ochsner, of Chicago, were reelected secretary-general and treasurer, respectively. Regents were elected as follows: For the term ending 1921, Dr. Alexander Primrose, of Toronto; Dr. Albert J. Ochsner, of Chicago; Dr. George W. Crile, of Cleveland; Dr. Harvey Cushing, of Boston; Dr. George E. de Schweinitz, of Philadelphia, and Dr. William J. Mayo, of Rochester. For the term expiring in 1922, Dr. John M. T. Finney, of Baltimore; Dr. James B. Eagleson, of Seattle; Dr. Charles H. Mayo, of Rochester; Dr. J. Bentley Squier, of New York; and Dr. Walter W. Chipman, of Montreal. The congress voted to accept the Chicago home which was offered as a gift to the college by citizens of Chicago. Administrative headquarters will be established there.

Contraindications for Wassermann Test.—Dr. Abr. L. Wolbarst will read a paper on Wassermann Contraindications from the Clinical Viewpoint before the Eastern Medical Society at the Hotel Brevort Friday evening, November 14th. The paper will be discussed by Dr. Archibald McNeil, Dr. D. M. Kaplan, Dr. M. Kalur, Dr. E. L. Keyes, Jr., Dr. B. Lapowski and others.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

Although, in the so-called "scarlatinal rheumatism," the joints are not, as a rule, severely involved, and various characteristic features of the infection are available to distinguish the condition from rheumatic fever, the possibility should not be overlooked, especially in view of the frequency of mild cases of scarlatina which may escape detection, that a joint disturbance actually due to this cause may be mistaken for acute rheumatism. According to McKee and Wells, 1914, in one of the forms of scarlatinal arthritis, viz., that occurring relatively early in the disease, the signs of inflammation jump from joint to joint—as in rheumatic fever—and the joints commonly invaded are those affected in acute articular rheumatism of adult life. In the experience of Kerley, 1914, joint complications have occurred in five per cent. of cases of scarlet fever, and have always been multiple. According to many authors, the most characteristic form of scarlet fever arthritis is that occurring in early convalescence and involving especially the wrists, fingers, ankles, and occasionally the knees. The local symptoms of involvement, as in various forms of arthritis, including rheumatic fever, are tenderness, redness, heat and swelling. The scarlatinal joint involvement is less likely to drag on and recur in the same articulations than that of rheumatic fever, but this fact can be of no assistance to the clinician called upon to ascertain the cause of the joint condition during its earlier stages, when, owing to mildness of a primary scarlatina, the presence of the latter might be overlooked.

In another, less common, form of joint involvement in scarlet fever, a septic condition usually coexists. According to McCollom and Place, 1913, this form is likewise polyarticular, as a rule, and the large joints are generally involved, though in some instances they found the wrist and sternoclavicular joint affected. Such involvements may at first show on puncture a thin, cloudy fluid containing streptococci and then go on to supuration, with formation of thick pus. The condition is apt to be merely a local manifestation of a general septic state, and the case often terminates fatally. The scarlatinal cause of the condition is less likely to escape detection in this class of case, the infection as a whole being so severe.

Recognition of the milder and more specific types of scarlatinal rheumatism may be facilitated, according to Wilson, 1909, by the fact that there is little or no rise of temperature and that the joint involvement lacks the fugacious character which is so marked in rheumatic fever. The chief means of

avoiding mistakes, however, would seem to be the recollection that in any acute joint condition which is at all obscure, scarlet fever is one of the possible causes to be sought and excluded, just as it is in any case of severe acute sore throat.

In the treatment of scarlatinal rheumatism, salicylates have proved of value, although some think their use inadvisable on the ground that they might irritate the kidneys and favor scarlatinal nephritis. A European observer, however, has recently recommended salicylates as a routine measure in scarlet fever, crediting them, to a certain extent, on the basis of a considerable series of clinical observations, with specific power in this disease—an interesting suggestion in view of the presumed relationship to some form of streptococcal infection of both rheumatic fever, which is amenable to salicylates and scarlet fever. Kerley prefers acetylsalicylic acid to sodium salicylate in scarlatinal joint involvement on the ground that the latter may be badly borne by the stomach. In a child four years of age he gives the former drug in five grain doses with ten grains of sodium bicarbonate at four-hour intervals, four doses being given in the twenty-four hours. Where the arthritis is very painful, the addition of small doses of acetanilide, acetphenetidin, or some similar coal tar analgesic to the salicylate has been advised.

External treatment of the scarlatinal joints consists, in the first place of rest, with support to the joints by bandaging or even splints if necessary. A saturated lead and opium solution may be used locally and renewed every six hours. Methyl salicylate might be employed instead, as in rheumatic fever; McCollom and Place recommend this agent in admixture with an equal amount of cottonseed oil, covered by cotton wadding and a supporting bandage. Kerley reports good results from a lotion consisting of two drams of menthol and four drams of tincture of opium with alcohol, enough to make six ounces. This is wrapped about the joints on soft linen, covered with rubber tissue or oiled silk, and the part then wrapped with cotton or flannel. The lotion is to be reapplied every four to six hours.

In the unusual instances in which the joints, late in the course of the disease, become seriously affected, careful immobilization is indicated. Where evidence of a suppurative process appears, surgical treatment is necessary, and the joint, after being opened up, should be irrigated and drained. The customary measures for sepsis will usually be indicated in these cases. Antistreptococcal serum might conceivably be of service.

In occasional instances scarlatinal rheumatism has itself been complicated by endocarditis or pericarditis. In such cases the same therapeutic measures as are availed of in true rheumatic endocarditis or pericarditis would be appropriate.

(To be continued)

Treatment of Wounds of the Brain.—Alan Newton and A. E. Brown (*British Journal of Surgery*, July, 1949) believe that in some instances the preliminary delay in operation may be of advantage in these cases. A study of sixty-seven cases has been made, in thirty-two of which operation was performed at a casualty clearing station and in the remaining thirty-five the patients were treated at a base hospital. As soon as the patient was seen a brief neurological examination was made and a radiogram of the head taken. If a projectile is present it is localized and the extent and direction of the indriven bone noted. A preliminary screen examination was made and at times stereoscopic plates were used. At first general anesthesia was used but it was supplanted by local anesthesia, the advantages being as follows:

1. The patient can be placed in any suitable position, and this position can be changed during the operation.
2. There is less hemorrhage from the scalp and the elevated position of the head lessens the venous oozing from the brain. Ether also provokes an increase in the secretion of cerebrospinal fluid and so augments the intraventricular pressure.
3. Postoperative vomiting is avoided.
4. Cleansing the track of the missile is facilitated by directing the patient to cough gently for a suitable length of time. One hour prior to the operation a hypodermic injection of one c.c. omnopon and scopolamine is given. The patient's head is shaved and cleansed by ether and three per cent. solution of picric acid. The local anesthetic is one half of one per cent. solution of herocaine, to which is added adrenalin, thirty drops to fifty c.c.

The steps of the operation are: 1, Excision of the wound of the scalp; 2, removal of the fracture *en bloc*; 3, removal of bone fragments and projectile from brain by the catheter method; 4, irrigation of wound of brain; 5, careful suture of the scalp wound in two layers with or without drainage or bipp pack.

1. Excision of the wound must be thorough. If an infected area is left it will infect the entire suture line.

2. Treatment of the skull fracture follows the method introduced by Cushing of *en bloc* removal which gives the following advantages: The wound in the bone which contains damaged and infected tissue is completely and cleanly excised; when the fracture is near a venous sinus the whole field is exposed at once by an *en bloc* removal, so hemorrhage can be controlled at once; it is often possible to piece together the indriven fragments like a jig saw puzzle and so be certain that all the fragments have been removed.

3. Unless the dura wound is ragged it is not excised.

4. All the indriven fragments must be removed from the cerebral wound and the projectile extracted if possible. All fragments should be localized by a rubber catheter to which is attached a Carrel-Gentil syringe; very minute fragments can be located. The wound is irrigated with saline or Dakin's solution. Most of the fragments can be removed by a sinus forceps. Retained bone

fragments are supposed to do more harm than metallic fragments. The disorganized brain and blood clots are removed by irrigation. Vigorous irrigation spreads infection. Bleeding points are controlled by ligatures of fine catgut or by a small piece of muscle. Wounds of a venous sinus were treated by fascial or muscle grafts.

5. At first the wounds were closed by through and through silkworm gut sutures passing through all the layers of the scalp. This has been replaced by suture in two layers in which the epicranial aponeurosis is sutured by catgut and the skin is then united by horsehair; these sutures are removed on the fourth day. The method assures accuracy of apposition without undue tension decreasing the incidence of infection.

Drainage depends upon the extent of the injury and degree of infection. In extensive injuries a glove rubber drain was employed for twenty-four to forty-eight hours. In more infected wounds a bipp pack proved of value. The pack consists of a thin strip of gauze soaked in paraffin and then impregnated with bipp. All recesses are lightly packed. The pack is removed on the third day and replaced by a smaller one. Dead spaces are filled and reinfection from the skin is prevented. For the after treatment the wound is dressed with bipp gauze. Daily dressing is required and should be done by the surgeon.

The treatment of cerebral hernia was mostly prophylactic. A thorough cleansing of the wound at the time of operation and a complete removal of all damaged tissue and foreign bodies will prevent the formation of hernia. No satisfactory treatment for rapidly increasing soft hernia has been found. Lumbar puncture is useful at times. Superficial infections were treated by Dakin's solution.

Group I. Consisted of local depressed fractures of various types with puncture of the dura. There was no cerebral hernia, as the skull formed a complete covering. The cerebral laceration was slight.

Group II. Formed of wounds of the gutter type with depressed bone fragments driven into the brain. These wounds were usually of a tangential nature and frequently accompanied by severe brain injury. The prognosis was grave depending upon the operation. The wounds were benign but the deep lesions were frequently serious. Bipp packing was used in these cases with great benefit. The wounds should be completely excised; all undriven fragments removed and early operation is necessary.

Group III. Composed of wounds of the penetration type with lodgment of projectile and bone fragments. In this group there is more destruction of brain tissue. The technical difficulty of the removal of the projectile was added. The prognosis was largely dependent upon the extent of cerebral laceration. The fatal cases were divided into two groups: Patients comatose on admission who died shortly afterwards without regaining consciousness, and patients in whom infection of the wound was present and who died from cerebritis at a variable period after operation.

Group IV. Wounds involving penetration of the neuricles. There were no recoveries.

Group V. Wounds involving both the brain and air sinuses. Here the type of injury increased the difficulties of treatment by the risk of infection from the air sinuses. In the frontal sinus cases the cerebral injury was not extensive. In the ethmoidal cases the patients died of cerebromeningitis.

Group VI. Through and through craniocerebral wounds. Wounds of this type have a more favorable immediate prognosis than is the case with lodging wounds. This may be due to the fact that in only the more superficial types do the patients live to reach the hospital. The track may be easily cleaned and drainage provided.

Group VII. Wounds involving injury of a venous sinus. The operative technic has been improved by the use of muscle grafts. Hemorrhage is easily arrested. The epicranial aponeurosis is easier to obtain and is almost as efficient in its action.

Treatment of Bilharzial Infection by Tartar Emetic.—Arthur Innes (*British Medical Journal*, September 13, 1919) was unable to complete the full course of treatment in a number of cases of bilharzial infection, but could follow the patients for some time after the cessation of the administration of the drug. He found that after the administration of only 0.3 Gm. (five grains) the blood in the urine began to diminish and the bilharzial ova began to show a marked delay in the time required for their hatching out. From this point onward the further administration of tartar emetic increases the required hatching time until the eggs finally fail entirely to hatch. At this stage both blood and pus may still be present in the urine, but if treatment be stopped the latter will soon disappear and the patient will be apparently cured. The author believes that the full killing dose of tartar emetic is 1.0 Gm. (fifteen grains), which is also a perfectly safe dose, though more of the drug may be given with care. It is evidently not strictly necessary to rise above this dose.

Progressive Abnormalities of Refraction.—Richard R. Daly (*Southern Medical Journal*, August, 1919) asserts that the period of the eye's development is from birth to the age of twenty-eight to thirty. The young eye should be carefully and thoroughly studied before the age of six, and if abnormalities are discovered they should be corrected and proper advice given to the parents. His statement that when possible, retinoscopy is done better without a mydriatic, and that it can be so done in the great majority of cases, may be seriously questioned, as well as his statement that myopia may change to hypermetropia, but he is probably right when he says that during the developmental period in ametropic eyes there may be changes, particularly in astigmatism, both in degree and axis. At the approach of presbyopia there may be changes in the axes and amounts of astigmatism as well as in the spherical corrections needed. He thinks it is not necessary to examine eyes at stated intervals, but, once proper glasses have been provided they should be worn until the onset of aches and pains, or dimming vision, indicate the need of further attention.

Traumatic Head Surgery.—Charles W. Roberts (*Southern Medical Journal*, September, 1919) lays down as cardinal principles: 1. Lacerations of the soft parts should not be looked upon as simple conditions. The frequency of brain abscess following such injuries does not justify this viewpoint. 2. In all cases of depressed fracture operation should be performed. Late epilepsy, or interference with the highly organized cortical centres, demands this method of treatment. 3. The important factor in a head injury case is not the presence or absence of fracture of the vault or base. Patients most seriously injured commonly have no fracture at all, and, conversely, the simpler types of brain injuries are frequently associated with tremendous linear or depressed fractures. Often in these apparently alarming fracture cases the patients are saved by the very enormity or extent of the rent in the bone, permitting quick drainage of free blood and the fluids resulting from rapidly ensuing edema. 4. The study of a head injury and the method of treatment required, hinges upon the question of intracranial pressure. The elevation of depressed bone, the removal of loose bone fragments, the checking of hemorrhages and the repair of soft parts, are the simple incidents connected with a given case. A gradually increasing intracranial pressure, as evidenced by a rising pulse pressure, but more accurately by frequent resort to the ophthalmoscope and the spinal mercurial manometer, should be convincing proof that a cranial decompression and drainage should be done. 5. The decompressive effect of a craniectomy is dependent upon the area of bone removed, and fails to be of value unless the dura is widely opened and left open. The old fashioned trephine should be discarded and remembered only as of historical interest. 6. The diagnosis of concussion of the brain should be held in reserve for that class of patients suffering only temporary symptoms. The lack of a proper understanding of the significance of this term negatives scientific investigation and effective handling in many cases.

Hay Fever and Asthma.—William Scheppegeggell (*Medical Record*, September 20, 1919) found after an analysis of 707 cases of hay fever at the Charity Hospital in New Orleans, that in thirty-seven per cent. of the patients asthma developed at some period of the disease. The diagnostic tests for hay fever with the pollens show that there are many cases of hay fever in which the nasal symptoms are so mild as to be almost unobserved or even entirely absent, and in which asthma is the predominant feature. The treatment of hay fever asthma during acute exacerbations does not differ from that in other forms of asthma. The diet and hygienic regulations are also similar. The immunizing and curative treatment, however, is the same as that of hay fever, namely, gradually increased doses of the indicated pollen injected subcutaneously. When the symptoms indicate catarrhal complications a vaccine, preferably autogenous, should replace one to four doses of the pollen extracts. The results of treatment of this form of asthma are the same as those of uncomplicated hay fever, namely, forty-five per cent. seasonal cures, forty-three per cent. improvements, and twelve per cent. without benefit.

Miscellany from Home and Foreign Journals

Adenomyomata Containing Uterine Mucosa.—Thomas S. Cullen (*American Journal of Obstetrics*, August, 1919) shows that adenomyomata consisting of a matrix of nonstriated muscle and fibrous tissue with typical uterine mucosa scattered throughout may occur not only in the uterus but also in the round ligaments, uteroovarian ligaments, uterosacral ligaments, rectovaginal septum, and umbilicus, and that one occasionally finds large quantities of normal uterine mucosa in the ovary. He lays special emphasis on adenomyomata of the rectovaginal septum, which, if overlooked, will in time render the patient a chronic invalid and in some instances lead to death. He has had fifteen cases of this condition. It usually starts just behind the cervix, bimanual examination revealing a small, somewhat movable nodule scarcely over a centimetre in diameter. Later it spreads out laterally and blends with the adjacent anterior rectal wall. It may then invade the broad ligaments and encircle the ureters or envelop the pelvic nerves. It may also push down into the posterior vaginal vault, forming definite and well formed vaginal polypi, and finally it may break into the vagina. When this occurs, one may find normal appearing uterine mucosa lining portions of the vaginal vault, and a menstrual flow may occur here even where a supravaginal hysterectomy has already been performed for uterine myomata. In the early stages, the patient comes complaining of much pain just before and at the beginning of the periods, especially at defecation. When the rectum becomes bulged and thickened there may be some rectal bleeding at the period. Where one or both ureters are encircled there is renal pain, and when pelvic nerves are caught, excruciating pain during menstrual congestion of the tumor. If nothing is done, the pelvis may become so choked with the growth that the patient dies from loss of blood and partial intestinal obstruction. As regards treatment, in the very early stages it may be possible to open up the vaginal vault just behind the cervix and remove the tumor. Where the nodule is one centimetre or more in diameter and is still freely movable, the abdomen should be opened, the ureters isolated, and the uterus with a cuff of vaginal mucosa removed. Where the growth is widespread, a preliminary colostomy is imperative. Later the pelvic structures can be removed *en bloc*. When hysterectomy has been done and a small portion of growth has been left on the rectum, radium seems to have held the growth in check.

Treatment of Skin Lesions by Electrodesiccation.—William L. Clark (*American Journal of Electrotherapeutics and Radiology*, August, 1919) does not wish it understood that he is attempting to be orthodox in his choice of methods. Over two hundred basal cell epitheliomata involving cutaneous structures have been treated by the desiccation or coagulation methods. Until two years ago it was estimated that about ninety-seven per cent. had re-

mained free from recurrence in from one to eight years. Due to the absence of metastasis favorable prognosis may be given in most cases. The results in 500 cases of squamous cell epithelioma of the skin or mucous membrane of the mouth or throat before metastases were slightly less positive than those of the basal type. The outlying areas and glands are treated by x rays, radium, or both, as a prophylactic measure against recurrence. X rays and radium will often cure basal or squamous cell epitheliomata but the results have been more constant by the electrothermic methods and the proportion of recurrence is less. If the x rays or radium are used to the limit without success, then the tissues are in a more devitalized condition than they were before treatment and less amenable to other forms of treatment. Carbon dioxide snow and chemical escharotics are considered dangerous methods, and while good results have been seen from the use of these methods there have been many tragedies caused by the rapid stimulation of cancer cells. The desiccation method produces but slight trauma. Radium may be used with success in the treatment of small angiomas but experience has shown that the desiccation method is better. One hundred and forty-three cases of superficial angiomas have been treated by the desiccation method under local anesthesia with uniformly good results. Good results were secured in one treatment, except in two cases in which the condition became worse because of imperfect technic, the whole blood lake not having been destroyed. The treatment must be thorough or serious secondary hemorrhage may occur. Fifteen cases of cavernous angina were treated with good results as well as forty-two cases of naevus flammeus. These required from four to eight treatments and showed some improvement. There were sixty-one cases of telangiectasis and 460 pigmented nevi as well as twenty-one tattoo marks successfully treated. Coal and powder marks may be removed by using the same technic. There are many other conditions which may be successfully treated by the use of this method.

Lengthening of Amputation Stumps.—W. E. Gallie (*Lancet*, August 16, 1919) records a case in which he successfully lengthened the femur by about two and a half inches by splitting the remaining fragment and sliding one half of it downward. The piece slid down was secured to the upper portion by means of two beef bone screws and as soon as union was firm the patient was allowed to begin active exercise of the stump, thus promoting the further growth and thickening of the entire bone. This operation enabled the patient to be fitted with an artificial limb from the socket of which the stump did not escape as it had done before. The author suggests that this, or a similar, method may be employed to great advantage in many cases of short stump and urges the desirability of performing the primary amputations, in which a short bony fragment is to be left, in such a way as to preserve as great an excess of skin and soft tissues as possible.

Vaccination by Subcutaneous Injection.—J. R. Goodall (*Lancet*, August 16, 1919) has vaccinated approximately 6,000 men by the simple subcutaneous injection of the vaccine diluted with sufficient sterile water to make about one mil. One half to three quarters of the contents of the usual capillary tube was employed for each patient. The vaccination was made in the usual way in which a simple subcutaneous hypodermic injection is given and entirely eliminated the dangers of infection. The reaction produced locally began in from two to four days in most cases, and was very similar to that following the injection of antityphoid vaccine, and just as variable in intensity, though no more severe. After the seventh to tenth day the local reaction subsided, leaving a hard nodule in the subcutaneous tissues which lasted for about one month. The general symptoms did not differ from those following vaccination in the usual way. In a few cases the injections were made intracutaneously and in these the typical vesicles and pustules developed after four or five days, and ran the usual course.

Nervous and Psychic Effects of Influenza.—J. Allison Hodges (*Virginia Medical Monthly*, July, 1919) states that the recent epidemic of influenza, in his section of the country, was notable for its effects on the nervous system. These nervous effects were mainly functional and symptomatic in type, but the psychic were uniformly graver and more rebellious. Of twenty-eight cases showing symptoms of genuine psychoses, eleven were classed as toxiinfectious delirium, eight as dementia præcox, three as encephalitis, and four as other psychoses, while two could not be rationally grouped. The average interval between the termination of the acute influenzal attack and the incidence of a psychosis was twelve days. Neither the duration nor the severity of the influenza materially influenced the psychoses. Two or three of the toxiinfectious cases were becoming gradually more like a frank dementia præcox. The mental disturbances met with did not differ materially from the same conditions arising from other causes, except that depression was less frequent as a symptom. Two of the cases grouped as encephalitis were instances of encephalitis lethargica, and the other, acute hemorrhage encephalitis. In the two former cases the patients died and in the latter they recovered. Continued elimination and tonic treatment proved of value in a fair proportion of cases.

Comparative Value of Intramuscular and Intravenous Administration of Arsphenamine and Neoarsphenamine.—L. G. Leonard (*British Medical Journal*, August 30, 1919) employed the Billon and Kharsivan brands in a series of 511 cases, representing all stages of syphilis, and controlled the results by means of the Wassermann reaction before and after treatment. Mercury was administered as a routine in all cases in addition to the arsenical treatment. Very good results were secured by both intravenous and intramuscular injections, there being a negative Wassermann in about ninety-one per cent. of the primary and secondary cases after treatment. The patients receiving intramuscular injections showed ninety-five per cent. of negative reactions as com-

pared with 88.5 per cent. in those receiving intravenous injections. The author believes that this difference is due to the slow and continuous absorption of the drug when injected intramuscularly, and its consequent slow excretion. Intramuscular injection, however, has the great disadvantage of causing considerable pain and stiffness, which make it difficult in many cases to induce the patients to continue the treatment. In the tertiary cases the intravenous method of administration gave somewhat better results than did the intramuscular.

Carcinoma of the Rectum.—Ivor Back (*Lancet* September 6, 1919) discusses this subject with special reference to the choice of operation, pointing out that only about thirty per cent. of cases admit of radical operation when first seen. When a radical operation is not possible no delay should be permitted in performing a hypogastric colostomy, for delay saps the patient's strength and causes distension of the bowel, while immediate colostomy overcomes the stasis and seems to retard the progress of the carcinoma. Hypogastric colostomy through the rectus muscle is decidedly the best, since the patient can better care for himself, and there is little difficulty in retaining the cup in any position assumed by the patient, while there is a strong tendency for the development of some sphincteric control. If a radical operation can be undertaken there are only two which can be considered, namely, the two stage operation of colostomy and subsequent radical intraperitoneal excision by the perineal route, and the combined abdominoperineal operation. All radical operations which aim at the retention of the anal canal are unsound. The two stage operation is described in detail, and is regarded by the author as the better of the two suitable operations.

Iodides and the Thyroid.—Fred Ransom (*Lancet*, September 6, 1919) discusses the existing relationships between the activity of the thyroid gland and its content of iodine, and between the administration of iodides and the activity of the gland. He concludes that there is considerable probability that the active principle of the thyroid is a decomposition product of protein which may be, but is not necessarily, iodized. When iodine is present it has no apparent direct effect on the activity of the gland's internal secretion, yet when that activity is reduced it can often be restored by the administration of iodides. It has been shown that unsaturated fatty acids have a powerful effect in inhibiting autolysis, but that when these acids become saturated with iodine they lose their inhibitory effects, so that the autolytic ferments are free to act. Since the active principle of the thyroid is probably the result of autolysis of protein, the administration of iodine would probably facilitate the formation of this active principle by removing the inhibition to autolysis. The curative action of the iodides in tertiary syphilis may be explained by the effect of the drug on the thyroid in favoring an increase of the active secretion which is passed into the blood, thus facilitating the absorption of lowly organized tissues, such as gummata. The same reasoning would apply to the influence of iodides upon enlarged lymphatic tissues. If the premises are correct one might expect that

tertiary syphilis could be treated at least as successfully with thyroid as with the iodides, and the results might be even more rapid without the dangers of iodism. Similarly, the usefulness of cod liver oil in tuberculosis may be due in part to its high content of fatty acids of the unsaturated group, which would limit the production of thyroid secretion and thus serve to prevent the absorption of the poorly organized tissues constituting the tubercles and in that way aid the encapsulation of the bacilli.

Fractures of the Femur.—James Driberg (*Lancet*, August 23, 1919) divides the treatment into two main groups; the surgical and the mechanical. The surgical treatment is life saving and must always take precedence over the mechanical when the former is necessary. When there is any suspicion of gross infection in compound fractures, the radical surgical cleansing of the whole wound should be carried out at once and delayed primary suture practised. The mechanical treatment comprises fixation, extension and suspension. Fixation can be accomplished in several ways, but the Thomas knee splint provides by far the best for general use. Extension also can be secured in many ways, but adhesive plaster strapping or the use of Sinclair's glue, on the one hand, and the use of calipers on the other are the most satisfactory. The best extending force is either gravity by elevation of the foot of the patient's bed, or traction by means of weights and pulleys. Other methods of extension are unsatisfactory. Finally, suspension should be provided from a wooden frame above the bed, using weights of appropriate size. Suspension enables the patient to move about comfortably in bed; secures the necessary rotation of the lower fragment; and aids in securing adequate counterextension. The details of each of the procedures are discussed, both generally and in relation to specific fractures. The author says that by the methods described a perfect result can be obtained in the vast majority of fractured femurs, though constant care and attention to detail are required.

Immunized Skin Grafts.—Arthur L. Yates (*Lancet* August 23, 1919) followed the method first suggested by German writers for immunizing skin grafts to the toxins present in the wound to be grafted. The method consisted of selecting the area of skin from which the grafts were to be taken, marking it out with silver nitrate, and then applying to that area the dressings from the wound to be grafted, after they had become saturated with the secretions. Such dressings were renewed once daily, and usually by the third day the previously healthy skin showed redness and slight prominence of the papillae. With careful watching to prevent a severe reaction, the applications were repeated for about seven days. In some cases no reaction occurred. Then the granulations of the wound were rubbed with dry, sterile, unmedicated gauze, Thiersch grafts were cut from the immunized skin, applied immediately and pressed down firmly. The wound was then covered with a sheet of waterproof tissue, perforated by holes about one eighth inch in diameter, which was held in place by adhesive plaster. Unmedicated gauze dressings were applied over this and bandaged in place.

Antiscorbutic and Growth Promoting Value of Canned Vegetables.—Mabel E. D. Campbell and Harriette Chick (*Lancet*, August 23, 1919) say that it was to be presumed from the information already available as to the destructive effect of heat upon the antiscorbutic factor in cabbage leaves, that canned vegetables would suffer considerable similar deterioration from the high temperatures employed in their preparation. It was the authors' aim to determine accurately the extent of such deterioration. They employed raw and canned cabbage and green runner beans in comparative studies on guineapigs, adding known quantities to the basal scurvy diet. It was found that the loss of antiscorbutic value of cabbage due to canning was about seventy per cent.; that is, the antiscorbutic value of five grams of raw cabbage was reduced by canning to that of about one and a half grams of raw cabbage. Experiments also showed that the growth promoting value of cabbage was considerably reduced by the process of canning and that this reduction was due in large measure to the passage of that food factor in the cabbage into the water in which the vegetable was canned. The antiscorbutic value of beans was reduced by canning to an extent even greater than in the case of cabbage, namely, by eighty to ninety per cent. The loss in antiscorbutic value was primarily due to the effects of the heat employed in canning, but a further loss also resulted from storage of the canned vegetables. The value of canned vegetables as regard both antiscorbutic and growth promoting factors must be regarded as negligible.

Quarantine and Infection in Scarlet Fever.—J. C. Gittings (*Virginia Medical Monthly*, August, 1919) describes the preventive measures carried out in dealing with 139 cases of scarlet fever in a military hospital. Until the infecting organism of scarlet fever is demonstrated, the proper duration of quarantine will always be open to argument. The human carrier is by far the most important factor in transmission. The unhealthy nasopharynx and throat might, *a priori*, be under the suspicion of harboring infection. Examination by a throat specialist may therefore enable one to prevent the discharge of a potential carrier and, possibly, to hasten the discharge of a healthy person. The actual limit of quarantine in uncomplicated cases probably may be placed safely at not more than thirty-five days. Before quarantine is lifted, the nose, ears, nasopharynx, and throat should be examined by an expert. The quarantine period prescribed in the army is forty-two days. The importance of the human carrier in transmission is being so recognized as to make it extremely questionable whether any measure other than thorough cleansing is necessary. Formaldehyde gas in proper concentration and with sufficient moisture will probably destroy the organism of scarlet fever; but that this optimum result is often obtained is very doubtful. Disinfection of linens and woollens and disinfection and removal of dust accumulating on floors and flat surfaces, followed by thorough airing, constitute sufficient protection after scarlet fever and are surely more effective than formaldehyde disinfection as usually carried out.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-Second Annual Meeting, Held at Cincinnati,
Ohio, September 15, 16 and 17, 1919.*

The President, DR. JOHN F. ERDMANN, of New York
in the chair.

SYMPOSIUM ON VENEREAL DISEASE.

The Work of the Detention Home for Women in the Management of Venereal Disease.—DR. PALMER FINDLEY, of Omaha, Nebraska, stated that in June, 1918, at Fort Omaha, measures were taken to protect the soldiers from venereal disease. There were six or eight hundred boys in the fort at the time. After the establishment of the detention home, in order that infected girls and women could be properly cared for and treated, the percentage of venereal disease in the soldiers was greatly reduced, and a great deal of valuable work was done in this regard.

The Value of Detention as a Reconstruction Measure.—DR. C. C. PIERCE, assistant surgeon general, United States Public Health Service, Washington, D. C., said that the two years of war had given us volumes of data proving conclusively that the prostitute or sex offender required individual, correctional care to overcome the handicaps of mental inferiority, physical defects, educational neglect, and hereditary and environmental influences. The detention home had a definite place in the reconstruction program, but it must be a detention home only in the sense that individuals were detained until such time as they could be returned to society equipped to take their places as respectable and respected citizens. The ideal location for such a home was in the country. This gave opportunity for outdoor exercise and work which was of great rehabilitating value. There must be sufficient space in order that the mentally normal could be separated from the subnormal and the girls separated from the women, because the problem of moral contagion was as great as that of physical contagion.

Competent medical attendance was essential. Adequate hospital facilities for the care of the venereal and other infections was imperative. The atmosphere of the place should be as homelike as possible and the personnel selected from women specially qualified and trained, with a sympathetic interest and a belief in the movement. To use a detention home merely for the cure and treatment of venereal diseases was to promote a vicious cycle. Unless the person detained was given a vocational training whereby a decent economic status could be maintained the detention home contributed to delinquency rather than correct it. The responsibility in the matter of correctional therapy extended beyond the walls of the institution and this responsibility was met only when an efficient system or follow-up was established and maintained. The war time detention house was designed primarily to meet an emergency, to protect the fighting men from venereal infection; the peace time detention house must

be designed to protect the working forces—posterity—from venereal infections. It must be designed along different lines, however, and provide correctional as well as medical facilities.

Pioneering in Venereal Disease Control.—DR. A. J. McLAUGHLIN, of Sioux City, Iowa, stated that educational methods such as authentic literature, lectures, etc., were a good thing to bring about a demand in different communities for the suppression of these diseases, but the carriers were not reached by this form of control. Law enforcement was the only method through which they could be reached, and if this was strict enough, venereal disease could be wiped out. There was a class of people that you might call the venders of vice, or the people who were making their living by promoting vice, who were backed by quack physicians, curealls, and political power, that were fighting work along this line, because enlightening the ignorant of the dangers of infection drove trade away from the vice dens. An important movement that would reduce venereal disease infection was the stopping of the sale of liquor. Many infections were contracted while a person was under the influence of intoxicants.

About ninety per cent. of infections were due to women, and ten per cent. to men. Men took greater precautions and were more particular about treatment and prophylaxis. Women were very negligent, and took treatment only for the relief of pain or under compulsion. One woman would infect ten men for every woman that one man would infect. Prophylaxis should be encouraged. This was not an encouragement for improper sexual intercourse, but it was merely a protection against disease, and if venereal disease was on the increase in our country today after all the efforts of the different organizations, Doctor McLaughlin thought that every rational means should be taken to head off infections in every possible way.

In the extracantonment zones, with the government's assistance where law enforcement, quarantine and prophylaxis were used, public health men were of the opinion that venereal disease was reduced to a minimum, and the results were very gratifying. Clinics properly managed were of great assistance, and many thousands of cases were treated beyond the infectious stage, which only went to prove that if these same methods were carried out strenuously in every civilian community, the results would be wonderful. The development of this work depended largely upon the sort of cooperation given by the medical profession. If every physician in the United States would take a special personal interest in the control of venereal disease it would go a long way towards the success of the movement. The encouragement of local boards of health to report all cases of infection, to intern all persons suffering from these diseases, and to enlighten the public in their local communities regarding the havoc which these diseases played upon the moral, physical, and economic life would be of great assistance.

An important point in connection with the internment of women was that prostitutes were not the only carriers of venereal infections. In some of the large military venereal hospitals of London, statistics showed that three fourths of the infections were due to women who were not prostitutes but were common carriers, known in that country as *amateurs*. It was found that the same condition existed in this country in different communities, young girls from fourteen up, living at home, commonly known as private snaps or street walkers, spreading a large proportion of the infections. The greatest amount of good was being accomplished among this class of carriers by social workers, women of the welfare league, police matrons, probation and juvenile officers, all of whom should be encouraged in this work, especially the followup work on carriers after they were released. All patients should be treated. A person suffering from a venereal disease should receive immediate attention just the same as a person injured in an accident.

The Detention and Treatment of Infected Women as a Measure of Control of Venereal Diseases in Extracantonment Zones.—DR. W. F. DRAPER, of Richmond, Virginia, said that the detention hospitals were a potent factor in controlling the spread of venereal diseases in extracantonment zones in the following ways: 1, By making it possible to remove a large number of infected immoral women from the community and holding them absolutely apart from the general population for a number of months; 2, by making the chances of isolation for a considerable period of time so great as to discourage immoral women from operating in these areas; 3, by giving a practical demonstration to the community of the great prevalence of venereal diseases among immoral women and the time and effort necessary in the treatment of these diseases; 4, by actually removing foci of infection by medical treatment.

The actual treatment of the women was believed to have been of far less importance in controlling venereal diseases in the extracantonment zones than the other factors mentioned. None of the women gave the slightest indication of any intention of changing their mode of life. It was what they were accustomed to, what they liked, and what they intended to follow. In this connection the efforts of doctors, nurses and social workers proved of no avail. A period of treatment lasting only a few months was of doubtful efficacy and served only to embitter the patient without in any way detracting from her intention of again resorting to prostitution immediately upon her release from the hospital. It was believed that the period of detention and treatment should be extended from one to four years, thus allowing time for more definite results as to treatment and affording an opportunity for rehabilitation. In cases where the mentality was so low as to preclude the possibility of a life other than one of prostitution it would be an economy and a humanitarian act to commit such individuals to institutional care for life. They were a far greater menace to the happiness and welfare of society than many murderers who were serving life sentences in our prisons.

The cost of the detention hospital was the most serious obstacle in the path of its development. Few communities were willing, if indeed they were able, to maintain such an institution. It was freely admitted, therefore, that federal aid in the establishment and maintenance of detention hospitals for women would be necessary for a considerable time to come, and institutions of this character not adequately equipped and provided with proper facilities to accomplish the work at hand were worse than none. Jails when used for hospital purposes were an abomination and served only to further degrade and debase the poor unfortunates who came within their confines.

JOINT SESSION WITH THE INTERSTATE ASSOCIATION OF ANESTHETISTS.

THE ADMINISTRATION OF ANESTHESIA IN OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY.

Safety Factors in the Team Work of Operator and Anesthetist.—DR. JOHN J. BUETTNER, of Syracuse, N. Y., said that one could state with perfect safety that team work in surgery had its advantages. It was no longer an experiment, but rather a well established fact. Encouragement was given the anesthetists, who being recognized as a full fledged specialist assumed his place in the surgical team, not alone as the one who administered the anesthetic, but as a consultant. He helped weigh in the balance the advisability of operating, the selection of the time that would be safest to operate, and made the choice of the anesthetic. He helped to prepare the patient for the operation. To do this the anesthetist must be a trained physician. A further object of this trained surgical team was, not alone to prevent death but to overcome or, at any rate, to minimize the discomforts attending surgical operations. This training, having brought about specialization, in turn encouraged further study and the discovery of new and hidden paths that would otherwise be unknown.

The duty of the anesthetist was not merely to administer the anesthetic agent, but to help prepare the patient for the operation. When should he begin and what preparation was needed? When it was possible, the anesthetist should begin his work when the surgeon had decided that an operation was needed. It was advisable to have the patient in the hospital at least forty-eight hours before the operation. In some cases it might take several days to a number of weeks to properly prepare the patient. A full physical examination of the patient was advisable. With this there should be a quantitative and qualitative examination of the urine. We were no longer satisfied with a simple chemical examination of the urine. A full knowledge of the quantity of the urine for twenty-four hours, specific gravity, presence or absence of albumin, sugar, acetone, diacetic acid and casts. When possible a functional test should be made. The examination of acetone before operation was too often neglected; it should be made a routine practice. A full blood examination including the clotting time of the blood was another safeguard.

One of the most trying and obstinate discomforts that was encountered at times was acidosis. The

laboratory could be a great help in this condition and proper diet and medication would overcome or mitigate this condition to such an extent that surgery could be undertaken with perfect safety. The laboratory work in diabetic cases was of inestimable value.

It was especially in genitourinary surgery where this preoperative care and preparation of patient showed up so vividly. With this preoperative care, patients that formerly were doomed to die without operation, were now made fit subjects for surgery that afforded not only relief but oftentimes cure; at any rate, comfort was secured where only misery was possible before.

The one great field that was slowly but surely adopting gas oxygen was obstetrics. Chloroform had done noble work in obstetrics, and it would never be totally replaced by gas oxygen or any other anesthetic. It was a very valuable anesthetic agent, when properly used, and in properly selected cases. Ether would, of necessity, be the agent most largely used. It had its indications and in many cases its advantages over any other anesthetic. No doubt the difference in cost had been a drawback to the greater use of nitrous oxide. Greater experience had thus been gained with ether and when properly administered compared quite favorably with gas oxygen. The success of the administration of any anesthetic agent lay absolutely with the administrator rather than with the agent or apparatus used. Doctor Buettner urged, first, a change in college curricula to meet suggested requirements; second, a greater preoperative care and examination of patient; third, better team work in the hospitals.

Some Adjuncts Which Promote Efficiency in the Use of Local Anesthesia.—DR. ROBERT EMMETT FARR, of Minneapolis, Minn., stated that the factors which had largely influenced him in the adoption of his present attitude regarding local anesthesia might be enumerated as follows: First, a realization that liberal amounts of novocaine could be used if properly safeguarded; second, the development of an improved armamentarium; third, the development of a morale on the part of his assistants and the hospital attachés which, together with the gradual education of his clientèle, greatly influenced the mental attitude of prospective patients, and fourth, an improvement in the method of handling the tissues.

At the present time, all of his operations were begun under local anesthesia, with the exception of cases in which it would be obviously impossible to handle the condition by this method. While local anesthesia had many shortcomings, because certain operative procedures could not be carried out under its use and some patients would not submit to it, it was his belief that faulty technic was responsible for the vast majority of failures. Take, for example, a simple laparotomy for the removal of the appendix and the shortening of the round ligaments, a perfect local anesthesia would allow us to complete this operation without touching the viscera within the pelvis except where it was necessary to attack the round ligaments and cecum. No gauze was necessary for packing off the intestines and all

pelvic viscera might be examined as at autopsy. The ideal sought was a complete abolition of the reflexes of the abdominal wall, with resultant relaxation, and a negative intraabdominal pressure like that seen at autopsy. This was accomplished by a perfect anesthetization of the line of incision, painlessly produced, and gentle vertical retraction of the abdominal wall. Exposure of the viscera was facilitated by the use of gravity, the Trendelenburg position and lateral tilting.

Doctor Farr believed the most important point was the careful introduction of the drug, and it was in attention to small details that success was achieved. In all of his abdominal work, except in the operation for inguinal hernia, a direct infiltration of the tissues was effected and the complete infiltration of the abdominal wall was made before the incision was begun. This method was chosen because of its efficiency, simplicity, accuracy, and speed. It was not used in the case of inguinal hernia because the infiltration of the tissues obscured to some extent the anatomical relations. His experience led him to believe that postoperative ileus and gas pains were, in the absence of infection, directly proportionate to the amount of trauma employed during the operation. Nausea, thirst and vomiting, with their resultant unpleasantness and the sequela of wound strain and pain, were largely eliminated.

When operating upon children under local anesthesia restraint was necessary while the anesthetic was being introduced. Doctor Farr's experience with more than one hundred operations performed on children under the age of fifteen showed that the restraint necessary was probably less than ten per cent. of that required during the administration of a general anesthetic, and that this class of patients lent themselves exceptionally well to this form of anesthesia.

Surgical Barrage.—DR. CHARLES W. MOOTS and DR. ELMER L. MCKESSON, of Toledo, Ohio, stated that a surgical barrage might be defined as the process of surrounding the surgical patient with all the skill and refinement known to specialists in the various departments of medicine and surgery during the preoperative, operative, and postoperative periods. Surrounded with such a barrage, the patient might reasonably anticipate the lowest possible mortality rate, with the shortest and least uncomfortable morbidity period, the latter factor becoming more and more the aim of every thoughtful surgeon. The gynecologist probably came in contact with a higher percentage of chronically ill patients than did any other surgeon. He must therefore consider with unusual care the preoperative and postoperative periods. Everything possible must be done not only to raise the patient's physical condition to the highest point of resistance, but her psychology must receive special attention. She should reach the hospital and be received without an unpleasant experience whenever possible. Immediate preoperative purgation was to be avoided. Fluids, especially alkalines, were given freely. A good night's rest was assured by the use of sedatives or, if absolutely necessary, a narcotic.

It was assumed that a positive diagnosis had been made if such was a human possibility, and the work well planned before the hour of operating. This bespoke smooth, rapid surgery, without bungling haste. All known means should be used to measure the patient's resistance, including carefully acquired knowledge of the kidney function and cardiovascular system, as well as metabolism in general. Much importance was still attributed to the pulse pressure ratio, a term used to indicate the relation between the pulse pressure and the diastolic pressure. A systematic use of this principle had been made for some years. All cases were recorded and the records comprised interesting data for study.

The question of the advisability of nurses administering anesthetics had recently been brought up. The authors concluded, after an impartial study of the subject, that while many nurses might be taught to administer the safer agents in uncomplicated cases in a manner highly satisfactory to the operator, yet the principle was fundamentally wrong for reasons so numerous that they hesitated to embody them in their paper. They still maintained that the administration of a general anesthetic was the giving of the most powerful and dangerous drug at the most perilous time of the patient's life. During any major operation the anesthetist might be called upon to make one or several new diagnoses and prognoses, and this certainly constituted the practice of medicine and even demanded unusual skill.

Circulatory depression or decompensation was best divided for surgical operation into three degrees: 1. Safe: ten to fifteen per cent. increase in pulse rate without change in pressure; ten to fifteen per cent. decrease in blood pressures without change in pulse rate. 2. Dangerous: fifteen to twenty-five per cent. increase in pulse rate with fifteen to twenty-five per cent. decrease in blood pressure. 3. Fatal: Progressively increasing pulse rate above 100 with progressively falling blood pressures of eighty or less systolic and twenty or less pulse pressure, for more than twenty minutes.

The first degree was never fatal but might gradually merge into the second degree, beginning shock, and might be regarded as dangerous in the sense that it exhausted the heart and disarmed it for defense against continued low blood pressure.

The third degree was always dangerous to the life of the patient. A vicious circle was established consisting of low blood pressure, the reduced heart nourishment which in turn still further reduced the blood pressure, and so on progressively. This usually developed within twenty minutes after the third degree depression occurred and when once well established proved fatal at once or at most within three days.

Where nitrous oxide oxygen was available in skilled hands, the war had corroborated previous observation that this form of narcosis was one of the best shock prophylactics we had. It was not remarkable that nitrous oxide oxygen should be safer in shock and in preventing shock than other anesthetics when one recalled the fact that muscles could not be paralyzed with it.

Postoperative Analgesia.—DR. BERTHA VAN HOOS-EN, of Chicago, Ill., said that postoperative analgesia meant a painless convalescence for surgical patients. Attention to every detail before, during, and after operation, especially from the viewpoint of pain production, would produce an analgesic technic which would reward the surgeon for his time and trouble. This technic should be directed toward the prevention rather than the relief of pain. It should include the avoidance of psychic trauma previous to operation, and tissue trauma during operation. Gas pains, thirst, emesis, and catheterization must no longer be regarded as necessary certainties but as avoidable and infrequent occurrences.

Scopolamine morphine was the only anesthetic that gave one a perfect means of preventing psychic trauma previous to operation, and unlike any other anesthetic it was followed by a period of analgesia varying from eight to twelve hours after consciousness had been regained. It might be desirable to continue the analgesia for a longer time. If so, it could be done by prescribing scopolamine 1-200 grain, with morphine 1-32 grain or scopolamine 1-400 grain with morphine 1-64 grain every four hours beginning about four hours after the operation and continuing for twenty-four, thirty-six or forty-eight hours according to the probable length of the period of postoperative pain. Convenient hours for giving this post-operative twilight sleep (for that was really the condition produced) were at twelve, four and eight o'clock, morning and afternoon.

The factors in postoperative analgesia technic might be enumerated in the order of their importance as follows: Scopolamine, morphine anesthesia; large enemata (four to five quarts) given in half an hour after the operation and retained; frequent minute doses of scopolamine morphine at regular intervals after operation, and continued for the first twenty-four or thirty-six hours; the use of sharp instruments during the operation, avoiding blunt dissection; sponging gently and infrequently; a comfortable posture for the patient, with an effort to secure relaxation or support as might be required for the traumatized part of the body. The fear of operation which so often caused the patient to seek surgical aid too late was a testimonial to the little attention surgeons had bestowed on this subject; nevertheless it was well worth an effort.

By instituting analgesia technic the old laborious, worrisome first two days after the operation would be transformed into a period of much needed rest and quiet. The hospital would be free from the odor of ether, enemata, and vomitus, the groans of suffering patients, the frequent ringing of bells, and the insistent demands for something to relieve thirst. When patients were comfortable or sleeping relatives would willingly refrain from long and frequent visits. Interns would not be awakened at night by nervous and restless sufferers and the surgeon would have patients who no longer looked upon an operation with dread and terror, but who would encourage their friends to take advantage of a cure by painless surgery.

Pathologists Wanted at Manhattan State Hospital.—The New York State Civil Service Commission announces that an examination will be held on November 22d to secure candidates for the position of pathologist to the Manhattan State Hospital for the Insane, Ward's Island. The examination is open to both men and women; salary \$2,600 a year, with maintenance, with an advance of \$100 a year until a maximum of \$3,000 is reached. Candidates must be physicians, licensed to practise medicine in the State of New York, or eligible to secure such license; must have worked at least four years in an approved pathological laboratory, two of which in the laboratory of a State hospital or institution. Application forms will not be sent out by mail after November 10th, and applications received at the office of the commission after November 12th may not be accepted. For further information regarding the examination and for the proper application blanks address the State Civil Service Commission, Albany, N. Y.

Hospitals to Benefit by Sage Will.—A number of educational and charitable institutions are to benefit from a sale of real estate left by the late Mrs. Russell Sage for their benefit.

Civil Service Opportunities.—The United States Civil Service Commission announces an open competitive examination for hospital interne for men only, on November 19th, to be held in the larger cities throughout the country. Vacancies in the Public Health Service throughout the United States at \$100 a month, with subsistence, quarters, and laundry, and in positions requiring similar qualifications at this or other salaries will be filled from this examination. Appointees whose services are satisfactory may also be allowed the temporary increase granted by Congress of \$20 a month. At present there are the following vacancies in the Public Health Service: Two in Boston, one in Buffalo, six in Chicago, one in Cleveland, two in Greenville, S. C., one in Mobile, Ala., three in New York, one in St. Louis, one in San Francisco, four in Stapleton, N. Y., and four in Washington, D. C. Applicants must be between the ages of twenty-two and thirty years and must have been graduated from a recognized medical school. Applications should be made to the Civil Service Commission in Washington or to the secretary of the United States civil service board at the various cities listed.

Letters to the Editors.

CORRECTION OF ERRONEOUS STATEMENTS IN THE CHICAGO DAILY TRIBUNE.

Washington, D. C., October 16, 1919.

To the Editors:

In the How to KEEP WELL section of the *Chicago Tribune* for October 6, 1919, there appeared an article carrying the caption Would Avert 'Flu' Attacks. This article is in some respects so misleading and reflects so seriously on the U. S. Public Health

Service that I would request you to give this letter space in your columns.

There is considerable diversity of opinion as to whether vaccines need to be made from the local strains of bacteria. Since very few communities can get vaccines from local strains, they will have to use the standard strains or do without.

Some State Boards of Health will furnish vaccines as they did last winter.

The question about lipovaccines is a difficult one to answer. The Public Health Service has refused to allow the commercial houses to sell lipovaccines. Some city and some State health departments will doubtless manufacture them and distribute them to their citizens. The citizens who live in such communities are lucky. It looks as though other citizens will have to go without. The Army is supplying lipovaccines for the soldiers. They offer it to employees of the War Department. They have issued two favorable reports on lipovaccines as protective agents against pneumonia, one based upon thousands of vaccinations done at Camp Upton, and the other upon thousands of vaccinations done at Camp Wheeler. Not only are they behind it with their reports, but they are supplying it for the use of those for whose health they are responsible.

In civil life vaccination must be done at one sitting, or it will not be done at all. The people will not come three times at week intervals for injection. Therefore vaccination to be done at three sittings is not practicable. A great many people want to be vaccinated with lipovaccine. The commercial houses are willing and able to supply them with the vaccine. The Public Health Service will not let them.

The physicians who are dependent upon the commercial houses for their supplies will have to get along without lipovaccines. They can get the three injection vaccine. Some health departments will equip their physicians with the other kind.

The first statement objected to as inaccurate is the reference to the use of lipovaccines in the Army, the statement reading "The army is supplying lipovaccines for the soldiers". The fact is that the army discontinued distributing lipovaccine some months ago and withdrew that which was outstanding.

It is also stated that the army issued a favorable report on lipovaccines "based on thousands of vaccinations done at Camp Upton". This is incorrect. The fact is, as may be ascertained by a glance at the Camp Upton report (*Journal of Experimental Medicine*, July, 1918, p. 21, Cecil and Austin) that a saline suspension vaccine was used. The reference to lipovaccine at Camp Wheeler is correct, in so far as the preparation used is concerned.

The chief objection raised is to the coupling of the refusal of the U. S. Public Health Service to license lipovaccines with statements which imply that for this reason people are being deprived of a valuable prophylactic agent. The facts are that the U. S. Public Health Service has been and is conducting extensive clinical and experimental investigations of lipovaccines and is of the opinion that they are not now on a footing which makes them desirable for general use.

The lack at present of satisfactory potency and sterility tests for lipovaccine has led the bureau to decline to license such vaccines for interstate sale, and the evidence at our disposal indicates that a saline vaccine containing pneumococci is at least as effective an oil suspension of the organisms.

The U. S. Public Health Service has always made it a rule to license only such biological products as are safe for general use, and within recent years has added the restriction that for original license satisfactory evidence of efficiency must be presented as well, if it is possible to secure such evidence.

Constructive and reasonable criticism is welcomed, but such an insinuation of failure of the service to perform its duties as is carried in the article referred to is unwarranted and unjust.

Respectfully,

RUPERT BLUE,
Surgeon General.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Clinical Case Taking. An Introductory to Elementary Clinical Medicine. By ROBERT D. KEITH, M.A., M.D. (Aberdeen); Formerly Principal of the King Edward VII Medical School, Singapore; Consulting Physician, Tan Tock Seng's Hospital, Singapore; Formerly Captain and Officer Commanding Singapore Field Ambulance Company, etc. New York: Paul B. Hoeber, 1919. Pp. 105.

While this small book was prepared primarily for the students of King Edward VII Medical School, Singapore, it no doubt will have a wider interest for students in nontropical countries and for students in this country as well as for those in England. Occasional reference to the coolie class, dialects, etc., does not detract from the clear and simply expressed information set forth. The first chapter, *Introductory, General Advice to Students, Warnings, Scheme to be Followed*, contains some direct and valuable material in a very small compass. Chapter II covers the principal features of the general examination, and the succeeding chapters take up, respectively, the examinations of the circulatory, respiratory, digestive, nervous and excretory systems and microscopical examination. The author treats the subject of case taking in about 100 pages. The whole thing is hardly more than a brief manual, but the main practical points seem to be included. The book is good of its kind, but its main defect, its brevity, defeats its entire purpose and seem to belie the author's statement of "our guiding principles, enthusiasm and thoroughness."

The Bishop and Other Stories. By ANTON CHEKHOV. Translated from the Russian by CONSTANCE GARNETT. New York: The Macmillan Company, 1919. Pp. 302.

In these stories we find the insight of an observing physician, but not the physician alone. Chekhov has the faculties of keen analysis and of placing himself in the completely objective position of the characters he so graphically portrays. In the story of the Bishop and his illnesses he brings out in his jerky bits of description the atmosphere surrounding the bishop and the manner in which he is

affected. His abnormal attachment to his mother is emphasized; also his leaning upon her in his hour of illness and the absolute necessity for some one for him to talk to and confide in even though he knows he has nothing in common with the people among whom he lives. This emphasis is not brought about by an elaborate explanation of causative factors but is gathered from sketches left lying about here and there in the text. Chekhov is a master at unravelling the structure of human minds and human institutions. He does not attempt to piece them together; he places them in neat little bundles, for the reader to make use of as he best sees fit. In some of the other stories, especially *The Letter*, he portrays the transition of the old order to the new, in their attitudes toward morality; the contrast of the provincial to the cosmopolitan and how it is all relative and a question of point of view. He at no time attempts to moralize. This series of stories is the result of careful observation and they are well worth reading and studying.

Births, Marriages, and Deaths

Died.

AYDELOTT.—In McKenzie, Tenn., on Tuesday, September 16th, Dr. J. F. Aydelott, aged sixty-five years.

BRISTOW.—In Portland, Ore., on Tuesday, September 16th, Dr. James H. Bristow, aged fifty-two years.

BYERS.—In Mohawk, Ind., on Saturday, September 20th, Dr. Walter M. Byers, aged thirty-six years.

DEACON.—In Cambridge, Mass., on Saturday, September 20th, Dr. Thomas Irving Deacon, aged forty years.

DILL.—In Perkasio, Pa., on Thursday, September 25th, Dr. M. B. Dill, aged sixty-seven years.

DODIN.—In New York, N. Y., on Wednesday, October 1st, Dr. Henry A. Dodin, aged sixty-one years.

FELLMAN.—In Philadelphia, Pa., on Monday, September 22d, Dr. Morris W. Fellman, aged forty-seven years.

GANS.—In Philadelphia, Pa., on Tuesday, September 30th, Dr. Emanuel S. Gans, aged sixty-three years.

HOLLINGSHEAD.—In Seattle, Wash., on Thursday, September 11th, Dr. Eli Hollingshead, aged eighty-six years.

KARREMAN.—In Chicago, Ill., on Tuesday, September 30th, Dr. A. R. Karreman, aged fifty-one years.

KEITH.—In Wareham, Mass., on Thursday, September 19th, Dr. Lawrence F. Keith, aged thirty-six years.

KNOTT.—In Monticello, Ill., on Thursday, September 25th, Dr. Jephtha D. Knott, aged fifty-eight years.

KURR.—In Fredericksburg, Pa., on Saturday, September 20th, Dr. T. A. Kurr, aged forty-four years.

MINOR.—In Cleveland, Tenn., on Monday, September 22d, Dr. Dabney Minor, aged thirty-two years.

RHIEL.—In Lowell, Ill., on Sunday, September 28th, Dr. Albert C. Rhiel, aged fifty years.

SYDNOR.—In Heathsville, Va., on Monday, September 22d, Dr. William P. Sydnor, aged thirty-four years.

VAN SLYCK.—In Pasadena, Cal., on Tuesday, September 30th, Dr. David Bernard Van Slyck, aged ninety years.

WELD.—In Old Town, Me., on Monday, September 29th, Dr. Garvin Gilmore Weld, aged sixty-four years.

WOOD.—In Roan Mountain, Tenn., on Tuesday, September 16th, Dr. Samuel B. Wood, aged fifty-one years.

WORMACK.—In Benton, Tenn., on Friday, September 26th, Dr. Riley Wormack, aged seventy-five years.

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Original Communications

FEVER AND WHAT IT REALLY MEANS.

By WILLIAM HENRY PORTER, M. D.,

New York

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To the average medical man, and to most laymen, temperature rise during fever is commonly ascribed to an increased production of body heat during the febrile state. Subconsciously the mind reacts to the very interesting but highly idealistic picture of old Dr. Weelum McClure and the rugged husband of his fever patient trudging up the hill from the spring to the house, with their buckets of cold spring water. It is comforting to know that the patient lived, and it is probably true that the treatment helped her, but our conception of its method of operation is, to my mind, quite erroneous.

Treatment administered solely upon the theory that there is an increased production of body heat may be effective, but it is only effective because of the increased elimination it causes, for it seems to be true that during the febrile period instead of there being increased production of body heat, there is decreased production, although there is an increased retention of that which is produced. This is a most important point, for, if it is true, our entire system of treating fevers may need to be remodelled in order to put it upon a rational basis. Before considering the problem of heat production in connection with pathological conditions of the system, let us first see how heat is produced normally on a physiological basis. Once this point is definitely comprehended, we can more readily understand heat production as related to febrile and pathological conditions.

Physiologists tell us that there are two sources of heat production in connection with the life processes. Most important of these is oxidation of the food stuffs. The second is a minor source of heat, produced by friction, commonly called frictional, as opposed to oxidation heat. It must be remembered, however, that even this so-called frictional heat must necessarily have had its initial origin in food stuff oxidation.

The proportion of oxidation heat produced by the combustion of food stuffs within the body is approximately ninety per cent. of the total bodily heat produced. This is brought about by oxidation reduction of the food stuffs—the starches, glucose, fats and proteids,—as well as by the actual burning

up of adipose tissues and muscular structures. The other ten per cent. of heat is produced by mechanical friction as it occurs in connection with the flow of the blood and lymph through their respective vessels. In addition to this there is the friction of the joint surfaces, the play of muscle fibres, the friction of soft organs upon each other, and possibly even a certain amount of friction produced by the movements of the molecules and atoms. The chief calculation, however, with regard to heat production has to deal with the oxidation reduction processes which are continually taking place within the system of living organisms.

So this intricate and important problem has chiefly to do with food stuff and body tissue oxidation. It is not merely a mathematical problem of oxidation and friction production of heat, however, for within certain limits of normal or physiological conditions a generally uniform temperature of 98.6 degrees F. is maintained with absolute disregard for the external or surrounding temperatures, or the amount of food or tissues oxidized. Therefore, there are two principal factors to be taken into consideration: excretion of the heat from the body and the storage of heat within the system. The animal economy, through its nervous mechanism and glandular organs, is endowed with the function of radiating more than the normal amount of heat when the surrounding temperature is high and when there has been an inordinate consumption of food stuffs. If this were not so, the body exposed to direct rays of summer sunlight would probably melt in its own fat, and when exposed to the other extreme of temperature it would quite as promptly freeze stiff. These opposing conditions in the chemistry of the animal economy with relation to the uniform maintenance of the body heat are explained on the one hand by an increased excretion and a decreased retention, or storage, and on the other hand by a reduced excretion and an increased retention of the heat produced within the system. Thus there are three chief factors entering into the problem of body heat production and the maintenance of a uniform temperature, or the rise and fall of this temperature from normal. These are the production of heat within the animal economy, its excretion or radiation from the body, and the storage of heat within the system. Nature, fortunately, has provided us with a tolerably wide margin of variation in these three factors, and yet we cannot go beyond certain limits without developing pathological conditions.

Abnormal physiological conditions, such as the introduction of microbes or toxic agents, will produce pathological changes within the system that may cause wide deviations from normal temperature standards, either by stimulating a too rapid radiation of heat or an enhanced storage of heat within the animal economy. These deviations multiply as we study this question, until finally we are confronted with pathological conditions in which all the excreta remain normal, with no increased oxidation or loss of body tissues, but in which, nevertheless, the temperature, as measured by the clinical thermometer, remains many degrees above the normal standard. We frequently encounter cases in which patients present marked pathological changes and a greatly decreased body oxidation, together with a continuously normal temperature, although the excreta show a decidedly marked sub-oxidized state of the system. In other cases, in which the consumption of food and body oxidation are greatly reduced, the patients retain a temperature continuously above the normal standard, and in still other instances the consumption of food and the body oxidation are greatly augmented, as evidenced by the excreta, while the temperature remains normal.

An explanation of these varying clinical pictures is attempted by assuming that there is in the brain a heat centre or centres. This may be true, so far as the nervous system is generally interpreted, but the location of these centres, or the method by which they control these three factors, are unknown. Their manner of action and the method by which they can be affected by medicinal agents have yet to be more clearly worked out before information concerning them can be of any practical value.

This much we know to a certainty and our knowledge on the matter can be utilized to the benefit of patients. Heat is produced within the system by oxidation and friction; it is excreted from and stored within the system; and there is some compensating action between these three factors. We can also determine whether we are dealing with an increased or decreased heat production, with excessive excretion, or an augmented storage of heat produced within the system, even if we cannot explain the intricate phenomena connected with these facts.

The production of normal excrementitious products of the physiological economy, maintaining at the same time a normal state of the system, with uniform temperature and body weight, demands perfect utilization of a given quantity of food daily, although the animal economy is so constituted that a reasonable deviation from this standard may be indulged in without producing pathological changes. Beyond this margin, however, it is not safe to go for any length of time.

It will be admitted that if we could get, for instance, a typhoid patient to digest and fully utilize during the four weeks of his disease one half of his usual quantity of food intake, we would be doing remarkably well. Therefore when we compute the heat production for twenty-eight days on full rations, and that which can be obtained on half

rations, the fall in heat production will be nearly one half.

The oxidation heat production on full rations is 175,237,916 foot pounds. This, added to the 19,470,879 foot pounds produced through friction heat for the twenty-eight days, makes a total heat production of 194,707,795 foot pounds for the twenty-eight days. This is assuming that the quantity of heat produced by friction during the course of the disease remains the same as during health, although, in all probability, friction production is decreased. The decreased muscular activity fully counterbalances the increased circulatory activity. Therefore it is evidently correct to allow the heat production by friction to stand the same in both instances.

The heat produced by oxidation reduction, however, is without question reduced one half as a result of the fifty per cent. diminished food supply. Consequently, if we add the one half heat production derived from one half the amount of food intake—all that can be taken during the active stage of the fever—we have only 87,613,958 foot pounds of heat derived from oxidation. When friction and oxidation heat are added together, we have for the twenty-eight days of the typhoid fever duration a total heat production of 107,084,837 foot pounds. If we deduct the amount of heat generated during the typhoid fever from the total quantity produced in twenty-eight days during which the temperature is maintained at normal standard on full rations, there would be an actual loss of 87,622,958 foot pounds.

The generally accepted opinion is that during the typhoid period there is an increase in body temperature. If this rise were caused by increased heat production from oxidation it would require the utilization of food stuffs or body tissues in sufficient quantity to produce 15,576,623 foot pounds of heat. This must be added to the loss which occurs as the result of the inability to utilize the full quota of food, making a total of 103,199,581 foot pounds of heat, which must be generated from some source other than the food supplied the system, if the average increased temperature is to be maintained throughout the fever period as a result of oxidation. The body undoubtedly contains fat and proteid material, the oxidation of which within the system can produce this heat, but to generate it would require the destruction of more than a third of the fat and proteid constituents of the body, and a typhoid patient rarely survives this loss.

That this loss of body tissue does not occur during the febrile period is further proved by the fact that there is a marked decrease in the excretion of nitrogen and carbon dioxide during this period. Also, if this increased heat production were the result of increased oxidation of the body tissues, there would necessarily have to be a larger amount of excreta eliminated than is commonly found during the physiological state of the system.

There being no increased amount of excreta eliminated, it follows logically that during febrile conditions, instead of increased heat production there is a state of decreased heat production to combat. The rise in temperature is really the result of the

decreased production of heat in the body, associated with the decreased excretion of heat, and an increased storage of the diminished amount of heat produced within the system. Therefore it is apparent that what we must treat during fever is not an increased but a decreased production of body heat.

The chief factor in causing febrile changes is toxicity and the treatment for toxicity is prevention and elimination. If the digestive functions are augmented and the rapidity and perfection of the secretory and excretory functions of the body are insured, a larger heat production will result. The nervous mechanism will be more normally stimulated, and as a consequence, the excretion of heat will increase, while the storage of heat will decrease until normal standards of heat production, excretion and storage are reached and the normal temperature of the body reestablished.

The methods by which these results are attained are not considered in this paper. What we are chiefly interested in is to show that during the febrile period there is a decreased heat production to combat, not an increased,—and that the fever is merely a symptom of this pathological state and not the condition that most cries out for treatment.

From the foregoing it will be evident that cold baths, except as they increase the activity of the perspiratory ducts and facilitate elimination, are, if anything, contraindicated in fevers. If there is already too little heat production, it certainly is not rational to abstract further heat from the body. It is only when the cold bath increases heat production, augments the utilization of food stuffs and stimulated a more perfect secretory and excretory action, that it can be of any value in febrile conditions. At all other times it may work positive harm by overburdening the already weakened circulatory system with a mass of blood driven in from the periphery. A patient who is strong enough to stand a cold bath under these conditions is too near normal to require it at all.

46 WEST EIGHTY-THIRD STREET.

The Neutrophilic Index and the Administration of Tuberculin.—Wallace J. Durel (*Southern Medical Journal*, September, 1919) says that by giving tuberculin guided by the fluctuations of the neutrophilic blood picture we are able to control the stimulation and supply of new polymorphonuclear neutrophilic leucocytes in the blood circuit and also to favor a greater supply of matured polymorphonuclear neutrophilic leucocytes in the tuberculous foci. By so doing we increase the leucocytic resistance, both in the blood and about the tuberculous areas, and greatly aid and promote the reconstruction and healing of ulcerated tuberculous areas. The neutrophilic index is easily taken, is a simple and efficient guide for the administration of tuberculin, and is a reliable gauge for the control of exercise in tuberculosis. The predominance of one lobule polymorphonuclear neutrophilic leucocytes, associated with an increase of moist râles over the tuberculous lesion, and following a reaction to tuberculin or severe exertion, often clears up a doubtful condition.

THE DIFFERENTIAL DIAGNOSIS OF HYPERTHYROIDISM*

By Basal Metabolism and Alimentary Hyperglycemia.

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The purpose of this paper is a further discussion (1) of basal metabolism and alimentary hyperglycemia with special reference to the differential diagnosis of hyperthyroidism from clinical conditions bearing some resemblance to it. Another purpose is to point out the limitations of these laboratory methods, which, however valuable they may be, should always be regarded as subsidiary to the general clinical picture. This seems to be especially desirable at the present time, not only because of the great importance of this large clinical group, a part of which presents differential diagnostic difficulties scarcely exceeded in internal medicine, but especially because of the interest now focused upon these new, or at least very recently available, scientific aids to clinical study.

BASAL METABOLISM.

There seems to be quite general agreement as to the causal relationship of overactivity of the thyroid gland to increased metabolism. In fact, it seems to have been proved that there is a close quantitative parallelism between the thyroid secretion and the metabolic rate, and that the estimation of the latter by means of the oxygen consumption may, therefore, be relied upon, with certain reservations to be described later, as an accurate index of the activity of the thyroid gland.

The isolation and identification of thyrotoxin and its complete chemical study by Kendall, (2) together with its physiological and therapeutic study by Plummer (3), have placed this entire subject upon an accurate, almost mathematical basis, rarely if ever attained in any other field of medicine. It seems justifiable to accept at least tentatively Plummer's conception of the physiological action of thyrotoxin, which is that it is distributed to and held by *all* of the cells of the body, and in some way determines the energy output of the individual cell. This is, of course, equivalent to the determination of the rate of metabolism in each cell, the summation of which constitutes the total metabolism of the entire body. Definite conclusions have been reached by Plummer (3) in regard to the effect of certain quantities of thyrotoxin upon the tissue changes of the body. These facts indicate accurately the requirements of the latter in regard to thyroid secretion. For instance, one third of a milligram of thyrotoxin (about one 200,000,000th of the body weight) increases the basal metabolic rate one per cent. in an individual weighing approximately one hundred and fifty pounds. From this and other data it is calculated that the total quantity of thyrotoxin functioning within the adult body is between twenty-three and fifty milligrams,† or between one

* Read before the Fort Wayne Medical Society.

† These figures are quoted from Kendall, E. C.; Thyroid Hormone and Its Relation to Other Ductless Glands. *Collected Papers of the Mayo Clinic*, X, 364, 1918. In the same volume, p. 387, C. H. Mayo gives the quantity as thirteen mg. This discrepancy, if not due to typographical error, obviously has no practical importance.

third and two thirds of a grain. The thyrotoxin apparently remains in the tissues a long time, probably two weeks or longer, being used over and over again, and finally disappears by a process of destruction or elimination. The daily requirement of the body for this substance is, therefore, exceedingly small, but must be met with almost mathematical accuracy, and the total quantity maintained at a constant level. Ten milligrams is said to increase the basal metabolism in a case of myxedema by thirty per cent. at the same time relieving all of the characteristic symptoms of this condition. Apparently we have here exact data for the study not only of thyroid disease but of many other problems of health and disease. I quite agree with Dr. C. H. Mayo when he says (4) that he considers this "the most important advance made in medicine of the chemistry of life." It will stand as a great scientific achievement for the emulation of future endeavor.

These discoveries, it seems to me, have relegated to the domain of obsolete pathological conceptions the always dubious hypothesis of dysthyroidism, at least in so far as it refers to perversion, rather than a quantitative variation of thyroid secretion. Certainly with such facts as these before us the burden of proof rests entirely upon those who would assume a dysfunction instead of a hypofunction or a hyperfunction. The contradictory clinical manifestations which have suggested dysthyroidism will probably receive their final explanation in the personal equation of the individual patient, or the unknown possibilities of the polyglandular syndrome. The full explanation may have to be deferred until someone does for the remainder of the endocrine system what Plummer and Kendall have done for the thyroid.

Returning now to the strictly clinical aspects of the question, we may, I think, confidently proceed on the following assumptions:

1. That the symptoms of hyperthyroidism and hypothyroidism are due to quantitative variations of thyrotoxin in the body cells.

2. That the fundamental phenomenon which dominates the entire clinical picture from cretinism to "Basedowism" is perversion of the metabolic rate.

3. That this metabolic rate has its absolute equivalent, in accordance with fully established physical laws, in the heat production of the entire mass of body cells.

4. That this heat production is essentially a process of oxidation and is equivalent to the quantity of oxygen consumed, the latter being regulated by, and dependent upon, the metabolic rate.

5. That it is now possible with the comparatively simple Benedict portable respiration apparatus to determine clinically the oxygen consumption over a sufficient period of time, say ten to fifteen minutes, with sufficient accuracy for all clinical purposes.

6. That if food metabolism is eliminated by twelve to fifteen hours' starvation (the usual normal condition in the morning), and the metabolism of voluntary muscular effort is eliminated by absolute rest in the recumbent position (one half to one hour is sufficient time), there remains only the energy output—the heat production—the metabolism of the circulatory and respiratory mechanism, with

small and probably negligible additions for the phenomena of secretion and the intracellular chemical changes of the cells of the body while at rest, which is called basal metabolism. This so-called basal metabolism is very constant, not only in the same individual but in all individuals when calculated in *proportion to the area of body surface*, varying in health, in a large majority of people, probably less than ten per cent. from the average normal rate. Gephart and Dubois (5), in a study of four cases in normal adults, made five observations in one case over a period of two years and found extreme range of nine per cent.; aside from the first observation the range was 3.7 per cent. Benedict and his collaborators (5), however, found much larger variations in twenty-four out of thirty-five cases.

The clinical estimation of basal metabolism is thus a very practical and reliable guide (and comparatively easy, although requiring the utmost care and accuracy) to the functional activity of the thyroid gland in health and disease, and without which thyroid disease cannot be adequately and scientifically studied.

Now this looks like a perfectly plain road to the goal of a complete and decisive corroboration or correction of the clinical diagnosis which, it is taken for granted, has always been made. But it is not quite so simple as it appears. Before making a final decision as to the functional state of the thyroid, there are certain important limitations and reservations which must receive careful attention. The first and perhaps most important question is: What other causal conditions, aside from variation in thyroid activity, may produce the fluctuations of basal metabolism which form the basis of this clinical study? For while quantitative variations of the thyroid hormone produce these changes to an extent and with a promptness and certainty that nothing else can equal, it does not follow that other and independent factors exist with which we must reckon. In reality such factors do exist, although it may be said at once that they are of such a nature that careful clinical study of the case will easily differentiate them, so far as they are at present known. If found, however, they may easily tax the skill and judgment of the clinician to the utmost to give them their proper appraisalment in the pathogenic rôle.

Probably the most important of these factors is fever. The very essence of fever, whatever its cause, is an increased metabolic rate. In typhoid fever, e. g., the basal metabolism has been found by Coleman and Dubois (6) to rise and fall roughly proportional to the rise and fall of temperature. At the height of the fever there may be a rise of forty per cent. in basal metabolism, sometimes reaching fifty per cent. Pyrexial states from other causes must, therefore, be excluded, or their probable relative value determined, before attributing an increased basal metabolism entirely to hyperthyroidism. Of course it should not be forgotten that in the severer grades of hyperthyroidism slight fever is not rare, and in fact would be constant but for the large and ample reserve function of heat elimination. Chronic infections, notably tuberculosis and syph-

ilis, with their frequent slight fever, sometimes play a confusing rôle and emphasize the imperative necessity for a comprehensive study in all cases.

Severe cardiorenal disease is another condition that has been found to require careful attention. In dyspneic patients with cardiac decompensation there is apparently a definite rise in the basal metabolism. In one series of cardiac cases observed by Peabody, Wentworth and Barker (7) the basal metabolism was increased 2.5 per cent. in patients who were in good condition, while dyspneic patients showed an average increase of 12.5 per cent. In a few cases of decompensation the increase has been found (8) as much as twenty-five to fifty per cent. These large increases may be due to increased muscular action resulting from the dyspnea, which causes increased activity of the ordinary muscles of respiration and increased action of the accessory respiratory muscles—two factors which do not occur in the absence of the dyspneic state. Some of the observers, however, think that this does not entirely explain the rise in metabolism.

It has been found, on the other hand, that in edematous patients (9) the metabolic rate is lowered. In two cases this was as much as twenty-seven and forty per cent., respectively, below the normal rate. A lowered basal metabolism is really what should be expected, as the rapid interchange of metabolites, essential to the maintenance even of the normal rate, must be more or less interfered with in the waterlogged tissues. It is necessary to put the clinician on guard concerning such cases simply in order that they may not mislead him in the study of the thyroid problem.

In pernicious anemia, especially during its severe stages, there has been found a considerable increase of basal metabolism (10). It is even higher in leucemia (11), which, however, ought always to be easily recognized and should never mislead. This is also true of pernicious anemia, excepting in the periods of improvement, and at such times the basal metabolism will be found normal, in the absence of other disturbing factors.

An interesting and rather important fact, which prohibits a cup of coffee in the morning before the metabolism observation is made, is an increase or from seven to twenty-three per cent. in basal metabolism after the ingestion of from seven to ten grains of caffeine (12).

Very important is the age of the patient. The average rate of 36.9 calories for women and 39.7 for men (by the "height-weight" formula) applies to the ages of twenty to fifty, which of course covers most of the cases of thyroid diseases heretofore recognized. Above forty years the rate begins to fall slightly. A group of men and women between forty and fifty studied by Gephart and Dubois (5) gave results 4.3 per cent. below, while another group from fifty to sixty gave 11.3 per cent. below the average obtained in those from twenty to fifty. On the other hand, in boys of twelve to thirteen years, the metabolism is twenty-five per cent. higher than the normal standard for middle age (3, 13, 14) with a rather rapid fall observed (14) during the period of adolescence amounting to thirteen per cent.

The significance of these facts is obvious. Per-

haps the most difficult problem is the clinical interpretation of the metabolic rate in the borderline cases, in which the variations are necessarily small. These of course are precisely the cases in which diagnostic aid is most needed. There is pretty general agreement that the normal rate may vary from ten per cent. above, to ten per cent. below the average normal. This does not mean that in a normal individual this wide range of variation ordinarily occurs, but that in a large group of presumably normal individuals deviations as great as these are found. This would seem to suggest that each person may have a "norm", just as Wunderlich showed long ago to be true of temperature. We are told (5) that we cannot prove the metabolism abnormal unless it varies from the normal at least fifteen per cent., although it is probably so above ten per cent. With these facts before him the clinician must weigh the importance of these smaller variations in correlation with all the other facts in the case. If some individuals have a metabolic norm definitely below, and others as constantly above, the average norm for the particular age, it is perfectly obvious that the clinical interpretation of a small variation would be influenced by this fact, if it were available. For the present we can only weigh these facts along with the other evidence, just as we do other clinical data not in themselves decisive, as a part of the basis of a clinical judgment. In my opinion if we entirely ignore variations up to fifteen per cent. or any more than ten per cent., we will entirely miss an important factor in many cases, for these smaller increases extending over a period of years, without reaching a conspicuous degree, may possibly produce definite pathological results.

Further investigations may possibly reveal additional facts which will need consideration, but it is extremely doubtful if anything will seriously impair the validity of the conclusions outlined in this and the preceding paper. With due attention to the precautions and exceptions as indicated above, the rate of basal metabolism must be regarded as an altogether dependable index of thyroid activity at the time of the observation. Its diagnostic value has, I think, been conservatively stated by Means and Aub (15): "While a rise in metabolism may be likewise found in a few other pathological conditions, it is less marked, and is found in conditions easily differentiated from hyperthyroidism".

ALIMENTARY HYPERGLYCEMIA.

It was my intention to make a fuller discussion of alimentary hyperglycemia in its relation to hyperthyroidism, but owing to the length of this paper, it will be reserved for a future communication. At the present time I wish to say, as a result of further experience:

1. That alimentary hyperglycemia following 100 grams of glucose is present in probably every case of thyrotoxicosis.
2. That it is rarely, if ever, present at the end of the first hour in normal persons, although it may have occurred at the end of about thirty minutes.
3. Its presence, therefore, in one hour and especially in two hours always indicates abnormal carbo-

hydrate metabolism unless gastrointestinal function is delayed.

4. It occurs in latent, and of course in manifest, diabetes, in alcoholism, malignant disease, arthritis, and very probably in a considerable number of infections, acute, subacute or chronic in the same category with arthritis.

5. Before attaching a positive diagnostic value to alimentary hyperglycemia in suspected hyperthyroidism, these conditions and possibly others of which we are now learning must be excluded.

6. While its positive value can only be considered corroborative, its negative value in excluding hyperthyroidism is very great and probably exceeds ninety per cent.

7. In hyperthyroidism there is no constant direct ratio between its intensity and the height of the alimentary hyperglycemia, although in general the blood sugar values in severe cases are high.

8. Too much importance should not be attached to alimentary blood sugar values below 140 mgm. of sugar in 100 c. c. blood, although sharp lines of demarcation can not yet be drawn.

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MILITARY SURGERY AND THE MEDICAL OFFICERS RESERVE CORPS.

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One of the most striking lessons forcibly demonstrated by the world war is the necessity for specialization in the medical corps. When the United States entered the conflict certain elementary steps in this direction had already been taken, as evidenced by the personnel of the Red Cross base hospitals, but months elapsed before well organized attempts became apparent to sift, grade, and assign men to the tasks for which they were best fitted by their civilian training. Even after officers' schools had been organized at various medical centres to give instruction in specialties, such as genito-urinary, brain, oral, plastic and orthopedic surgery, the pupils assigned to these courses were largely self selected. Consequently many were found to be misfits and not qualified to benefit from the instruction. This necessitated the dismissal from the schools of a number of students; or, as not infrequently happened, men poorly qualified to the tasks assigned to them were graduated. This article is designed to discuss only a limited phase of the entire subject but, *en passant*, attention should be called to the fact that if this country should ever again become engaged in a war which requires the mobilization of a large army the organization of the medical corps should not be on strictly military lines.

There will be no dissent from the dictum that regimental medical officers, officers connected with ambulance companies, and all administrative heads, such as commanding officers of hospitals, or base sections, division surgeons, etc., must be thoroughly versed in military routine. Adjutants, detachment commanders, and property, mess officers, registrars, etc., should regularly be recruited from the sanitary corps as became more common in the later months of the war, thus liberating physicians for purely medical duties and also further reducing the necessity of "militarizing" doctors.

There appears no reason or excuse, however, in future wars for removing large numbers of civilian physicians and surgeons prematurely from civil life and subjecting them to a prolonged, arduous and useless military training at camps where these officers are destined to exercise purely medical functions in hospitals. This resulted in entirely useless hardships and waste of time. Moreover, although uncomplainingly and even cheerfully borne by the great majority, it has deterred and will continue to deter many medical men from joining the reserve corps in peace times.

In order to avoid such difficulty in the future the Surgeon General's Office could have not only efficiency records covering the entire medical profession of the country, but also one or more directors of professional services. The function of these directors should consist of keeping in touch with the profession and by travelling throughout the country enable them to form a large acquaintanceship with the doctors. This would provide the Surgeon General's Office with knowledge concerning the capabilities

ties of large numbers of available men. If this plan could be carried out, the right men could at once be assigned to the work for which they were qualified and the profession would be assured of protection against unnecessary hardships due to assignment to tasks for which their training, age or physical condition did not fit them. With the available men previously classified, docketed, and assured of duties such as they were competent to perform, no preliminary military training would be forced upon pathologists, operating surgeons, internists and members of the various special branches of medicine, nor would ophthalmologists, for example, be asked to do genitourinary work.

In the recent war "surgical teams" proved their usefulness. These teams consist of small operating organizations composed of an operating surgeon, an operating assistant, an anesthetist, one or two nurses, and two orderlies. They carried a full set of instruments, gowns, and rubber gloves. This small mobile unit could be instantly rushed to evacuation hospitals situated in active sectors.

It is no exaggeration to state that the hundred or more teams of the A. E. F. gave the first major surgical treatment in the vast majority of all battle casualties incurred by the American Army. After the first few pioneer teams had proved their usefulness it was necessary to recruit the necessary numbers largely at the expense of the equally vital base hospital personnel. Consequently a dearth of experienced medical men was experienced in these more stable organizations. It is evident that such lack must be guarded against in the future.

My object is to point out the best method of training a large number of efficient teams. Not every competent civil surgeon is fit to be the head of a team. In addition to surgical skill and experience certain mental and physical qualities are requisite. Often men of forty to fifty years proved best fitted for the task. Men of this age are, as a rule, averse to submitting to the curriculum of a M. O. T. C. which exacts drills, hikes, equitation, "policing" of quarters, and other tasks which are of no use in their surgical activities. Cheerfulness, versatility, strong physique and adaptability are valuable assets. The ability to operate smoothly, rapidly, and continuously with a minimum of effort is essential. It was surprising how quickly the various new technical methods developed during the war, such as débridement, the closure of joints, chest and brain injuries, were learned, nevertheless preliminary instruction in some of the special requirements would have been of incalculable benefit. A team surgeon should and must be able to treat all varieties of injuries skillfully. Oral and plastic, brain, abdominal and orthopedic teams are ideal, but in times of stress such specialization cannot be carried out in front line hospitals.

Instead of individual officers' schools in neurological, orthopedic, genitourinary, surgery, etc., a central school for heads of surgical teams would fill an important and indispensable function. Here instructors endowed with the necessary knowledge could train the experienced surgeon in the modern art of military surgery. At the present time there are a sufficient number of men versed in this art.

Now, while the knowledge and practice is still fresh, is the time to establish such a school, to formulate its policy, and lay the foundation for its traditions and continuity. The graduates of the school would form a part of the M. O. R. C. but should be exempt from the military training prescribed for the younger men destined for regimental assignments. It is unnecessary in this survey to enter into the details of the curriculum for such a school. It should keep pace with advances in surgical knowledge. It would obviate the defects of the schools established during the war in which instructors, well versed in civil surgery, but totally ignorant of military surgery did their best to teach. Their efforts were laudable but often fell far short of the requisite. Unless débridement should be discarded in future wars, which is unlikely, the study of applied anatomy as applied to military surgery must be modified in some respects. This applies also to the study of joints, and chest, nerve, and brain injuries. The ligation of vessels as taught in the current text books is antiquated. Gas gangrene and débridement have enhanced the importance of hitherto neglected nutrient arteries to muscles, and the small muscular branches of nerves a hundred fold. Injury to the sacral arteries was followed in many instances by gas gangrene of the glutei; injury to the posterior tibial unless treated by exact ligation, often required subsequent amputation; evacuation of hematomata necessitated the ligation of the affected vessel instead of packing, in order to avoid gangrene. Unless the anatomy of the parts was thoroughly familiar irreparable damage to nerve and other structures resulted during the débridement.

The successful treatment of penetrating wounds of the knee and other large joints requires an exact technic. Experience is needed to decide which wounds of the chest must be treated by radical operation, and which can be cured by simple closure of the pleura at the point of entry and exit. Even greater finesse is needed in the successful cure of brain and nerve injuries. Ligation of the subclavian, the axillary, the brachial, circumflex, popliteal, posterior and anterior tibial arteries, requires extensive exposures never previously attempted. With exsanguinated patients quick exposure is essential. Therefore exact anatomical knowledge and familiarity with the technic is a requisite to success.

Now also is the time to prepare standard textbooks dealing with the subjects. The books published by the Surgeon General's Office fulfill this need to a certain degree, but now that the period of stress and haste has passed, a short comprehensive guide on lines similar to that adopted by the British Army can be prepared at leisure. Large anatomical wall charts for use at the evacuation hospitals are also needed. These should be partly schematic, colored, and of the poster type in order that essentials may be strikingly displayed. Of utmost importance, of course, are 1, the relation of the main structures of the neck, axilla, brachium, wrist, groin, popliteal space and ankle; 2, nutrient arteries to muscles, joints and bones; 3, nerves to muscles; 4, surface anatomy in relation to underlying parts; 5, methods of approach to important vessels; 6,

standard amputations. Further additions will suggest themselves, but the want of the above mentioned was most acutely felt.

An officers' school conducted along the lines outlined above ought to attract a most desirable and valuable element to the M. O. R. C. To be permitted to attend its sessions will be regarded as a distinction. Its graduates, carefully selected from the best surgeons, will form the heads of teams. Their rank should be commensurate with their importance. All further training along military lines should be dispensed with and they should be called into active service only when their professional aid is needed. The team assistants, composed of younger surgeons, should be given the identical course prescribed for the heads of teams in order that they would be fitted to succeed the older men as these stepped out. Base hospital surgeons would derive great benefit from a similar course of instruction modified to meet their requirements. Greater attention to more definite treatment of existing wounds, to the Carrel-Dakin technic, to treatment of osteomyelitis, reamputations, nerve suture, mobilization of stiffened limbs and reeducation would be some of the additional requirements. Such a school could be organized in connection with some preexistent medical centre, because it would require special equipment, much anatomical material, and would probably give a military course only during one short period of each year.

61 EAST EIGHTY-SECOND STREET.

DIABETES MELLITUS

By THOMAS W. EDGAR, M. D.

New York

Investigators, research workers, and clinicians interested in glycosurias of pancreatic origin are unanimous in their opinion that diabetes mellitus is an incurable disease, and do not hesitate to place it in the classification of chronic progressive diseases. They offer only palliative measures to sustain the sufferer and the prognosis is always considered most grave, even hopeless. It is classed with carcinoma and Hodgkin's disease, and although its progress may be more insidious, it is nevertheless just as surely fatal.

The question arises in my mind, from treating many cases, whether this malady is the result of a functional inability of the body to care for its sugars, or whether it is a chronic progressive disease with destruction of tissue and function. All suggestions as to treatment have as their prime factor the elimination of sugar from the urine and the production of a normal or minimized blood sugar. In other words, treatment aims to establish an equilibrium between the ingested carbohydrates and their excretion.

Investigation and tradition have taught us that a sugar free patient is far better off regardless of his general condition of resistance, than he who is running one or two per cent. sugar with a fair degree of bodily resistance. Are we not robbing Peter to pay Paul?

Starvation has done much to help the diabetic to plod along, nevertheless, the fact that an individual has a glycosuria is no reason why he must be starved. Starvation is not applicable in all cases and must not be used empirically. It is a dangerous weapon in the hands of the general practitioner, unless he has modern laboratory requisites at his disposal, and is able to ascertain with definite knowledge the condition of his patient.

A contraindication to the use of the starvation treatment is emaciation, with lowered body resistance. The diabetic subject who is progressively losing weight, although aglycosuric, perhaps, is not in any danger of death from coma, but his general body resistance is being lowered to such a degree that he is reducing to a minimum the pancreatic secretion, both quantitatively and qualitatively, thus gradually but surely reducing his chances of acquiring the goal of his ambition, increased tolerance. Impaired or lowered resistance produces impaired pancreatic function.

I have found that the emaciated diabetic, who, almost cachectic, has resorted time and again to starvation with ever decreasing tolerance, will do better if carried along on his last assimilation limit for a short period. However, I always reduce the fat one half and make up the difference in calories with protein and carbohydrate. In this way I allow my patient an opportunity to gain weight, which acts as a mental stimulus. Careful daily watch is kept on the urine both by the patient and by my office assistant, so that diacetic acid or acetone may not accumulate in unexpected excess.

The mentality of the frequently starved, emaciated diabetic is a factor worthy of consideration. Starvation is dreaded by diabetics and I have seen many who absolutely refuse to accept treatment by this means in spite of my protestations as to the benefits to be derived. The emaciated patient fears starvation as a horrible spectre and as a result the nervous system is upset, with the resultant detrimental action from nervous influence on the secretion of the gland. Joslin aptly states that it is almost as dangerous for a diabetic to get angry as for a man with angina pectoris.

By intermittently starving animals I find that at first their ability to assimilate sugars is increased, followed by a decrease as time advances, that is, after body weight has been sacrificed. This demonstrates the fact that decreased resistance has a direct bearing on the carbohylic action of the sugar enzyme or enzymes. This is true of all other body functions whether they be of an internal nature or otherwise. This is true in the cachectic diabetic and although we may render him aglycosuric in a short time by starvation he will take much longer to attain his previous point of tolerance than if we granted him a short reprieve and allowed him to continue on his present diet in spite of the urine showing sugar. One case in particular will impress the sanity of this procedure.

CASE.—H. F., aged thirty-five, married, one child; no history of diabetes in the family; Wassermann negative. History dated back four years; patient had received treatment under six physicians; starvation whenever the urine showed sugar.

On presentation at this office the urine showed sugar .8 per cent. with a slight trace of acetone and diacetic acid. Weight 115 pounds; weight three years ago 165 pounds. Physical examination showed patient to be very poorly nourished and cachectic in appearance. He was without question suffering from inanition due to frequent periods of starvation.

I continued the patient on his present diet in spite of his objections and carefully watched the urine twice daily for acid. I might say that I reduced the fats one half with a consequent increase in the carbohydrates and proteins. At the end of one month patient had gained six pounds. I had injected my serum, twice weekly, for three months. During this time there were three starvation periods of thirty-six hours each. At the time of discharge the patient was aglycosuric eating about twenty-five hundred calories daily of a mixed diet and had gained thirty pounds. He has remained sugar free for the past eight months, and at the present time, in violation of my orders, is eating anything and everything.

This was evidently a case of true diabetes, as evidenced by the persistence of the glycosuria, thirst, polyuria, and emaciation, and my diagnosis was corroborated by the verdict of at least six physicians of the community. The course of the disease is apparently arrested and whether or not the serum was the active factor in clearing up the condition I am not prepared to say at the present moment. However, in other cases of a similar nature I am obtaining promising results. These cases are being studied at a diabetes clinic in Rochester, N. Y., which is under the supervision of Dr. John R. Williams.

The pancreatic secretion is dependent upon the state of the body resistance. The musculature of the body contains a substance which has the power of activating or combining with this secretion to produce sugar cleavage. Poorly nourished, inactive muscles produce inactive enzymes, whose combining power is lessened, with the final result that the end product is poor in carbolytic properties. The muscle has the power to manufacture a hormone or enzyme which in all probability is produced by the action of oxidation on the striated muscle. This product enters the blood stream, forms a stable combination with the internal secretion of the pancreas, the result being the production of a sugar splitting substance capable of allowing the body to assimilate carbohydrates in proportionate quantity to the splitting power of the combination. It would seem feasible that we are dealing with an inability of the body to warehouse its sugar, rather than an overproduction from that ingested.

There are four primary organs concerned in the assimilation and metabolism of sugars; namely, pancreas, liver, kidneys, and muscles. As dextrosa is the end product of digestion, and sugars and starches are absorbed as monosaccharides (unless taken in excess) the sugar reaches the liver in this form, where the excess is stored and the remainder distributed to the blood. Thus we must consider the liver as the check valve or regulator of the

blood sugar. The liver and the muscles are the reservoirs into which the sugars are stored in the form of glycogen, while the pancreatic secretion acts as an intermediary regulator of storage and excretion. It has the property of combining with muscle hormone to raise or decrease glycogen storage, which it also combines with some as yet unknown substance in the liver to produce the same results. In other words the internal secretion of the pancreas governs the threshold of sugar assimilation which may assume either the positive or negative balance depending on the virulence of its secretion and combining power. The kidneys being excretory organs perform the simple process of filtration and diffusion and may be excluded as being concerned with carbohydrate metabolism, unless the condition is that of alimentary glycosuria.

Thus I feel that we are not dealing specifically with pancreatic irregularity in diabetes mellitus, but with a series or cycle of events in which the pancreas plays the premier rôle. Resistance of body function must be preserved and stimulated, while activation of liver, muscle and pancreas is indicated. I have treated numerous cases with my rabbit serum and although very promising results are being achieved more work is to be accomplished before statistical results may be charted.

It would appear, therefore, that specific serum therapy is the key to the successful treatment of diabetes mellitus.

As soon as possible I intend to chart the results of other physicians who are using the Edgar serum, and shall publish in case form as many as possible.

766 WEST END AVENUE.

DIABETES MELLITUS.

By J. C. DENSTEN, Ph. D., M. D.,
Scranton, Pa.

Previous to the advent of the twentieth century, diabetes mellitus was considered as malignant and a not well understood condition. The medical profession in general was at sea as to its etiology, its treatment, and the *modus operandi* of its physiological chemistry. It became a worldwide slogan among physicians when certain symptoms, such as excessive thirst, polyuria, or evidence of sugar in the urine, were discovered to withdraw at once the carbohydrates from the regimen of the diabetic patient. The dietary and drug therapy prescribed and practised by the more modern physicians in the treatment and cure of diabetes mellitus are evidence of the advanced conceptions in physiological chemistry and a much better understanding of applied thermopharmacodynamics.

Physiological chemistry teaches us that the starches, when received by the animal economy as food, become subjected to the action of enzymes, each of which in their cleavage adaptability during the alimentary processes split the starches into dextrine ($C_6H_{10}O_5$); the dextrine into sugar ($C_6H_{12}O_6$); the sugar into alcohol (C_2H_6O); the alcohol into the carbohydrate radicle or nonnitrogenized food elements ($C H O$). This cleavage

process may be shown to be a wise provision of nature. She can not use either starch, dextrine, or sugar to effect a desired potentiality because they are solids, so she continues the cleavage from starch through dextrine and sugar splitting until alcohol is produced, which being a liquid carbohydrate is consumed entirely through respiration, its end products being principally carbonic acid anhydride (C O_2), the physiological result of dehydration of the nonnitrogenized food elements (C H O).

The animal cell cannot manufacture tissue building material (proteid) without nitrogen (protein), hence all food containing nitrogen are tissue building and become nitrogenized food. Nitrogenized foods may be either animal (animal proteid) or vegetable (vegetable proteid) and hence tissue forming material. In order to remain healthy we must therefore partake simultaneously of both nitrogenized and nonnitrogenized food and thus furnish to the cells of the body the necessary heat and energy, with the elements of nutrition to insure growth before and the resupply of waste tissue after maturity.

Why does a diabetic patient eliminate sugar? Because of systemic interference with constructive metabolism, prohibiting a normal function of the anabolic process. There is a reason why the diabetic patient cannot split the sugar into alcohol. As nature cannot utilize the solid sugar or split it further, the blood gives it over to be excreted by the kidneys. The excess of unutilized carbohydrate (sugar) and hydrocarbon (fat) which fail in furnishing the system with their anabolic properties will, by giving off the carbohydrate radicle (C H O) through reagents in their nascent state, form into acids such as acetic acid ($\text{C}_2\text{H}_4\text{O}_2$); diacetic acid ($\text{C H}_3\text{C O}$, C H_2 , C O O H), and oxybutyric acid $\text{C}_4\text{H}_5\text{O}_2$, which become accountable for acidosis and often for diabetic coma.

Diabetes mellitus is not a disease *per se*. It is due to some existing constitutional or organic abnormality or disease and is but a symptom. It may be a sequel of syphilis, or it may be traced to some viscus as the pancreas, liver, spleen, vermiform appendix, etc., or to deranged functions of the pituitary body (hypophysis cerebri) or one of the endocrine glands. Wherever diabetes mellitus persists in its elimination, with diabetic symptoms and an output of two per cent. (the danger mark) or over of sugar, the physician should search for the etiology and by treating and removing the cause effectively cure the result. To name and treat diabetes mellitus as a disease *per se* is a misnomer and malpractice its just appellation.

It is not advisable to withdraw the carbohydrates from a diabetic no matter what his age. It becomes extremely dangerous to interfere with the regimen of a diabetic in the sunset of his life or past the fifty mark, or in any case where the diabetic is losing weight. Feeding and assimilation are the all important factors looking toward comfortable health. How may this be done? By feeding directly to the patient the food elements of nutrition which are essential to health but which are being denied him in the failure of the body to further split all the sugar into the required food

product, alcohol, thus furnishing the carbohydrate radicle C H O and its elements of necessary nutrition in such form as will insure normal metabolic utilization and assimilation.

What are these elements and how shall they be prescribed? They are principally carbon, hydrogen, oxygen, and nitrogen. Since there is little or no interference, within the animal economy of a diabetic, with the ingestion and metabolism of animal nitrogenous food such as meat, fish, eggs, etc., and some vegetable proteins (the major fault being in the noncleavage of sugar into alcohol or its radicle), why not go to the mountain if the mountain will not come to you and prescribe the alcohol direct, in sufficient quantity to fully account to the system the lack of nourishment and ability which the sugar should furnish if split further by a normally constituted system?

There is nothing to be gained and much to be lost by withdrawing the carbohydrates from a diabetic. Even so slight a shock given a debilitated constitution, suffering from an already too meagre supply of nonnitrogenized food elements, cannot but endanger the life of a diabetic in hastening death by inanition, even though we endeavor to supply the deficiency by administering alcohol and other elements of nutrition by drug therapy. It is axiomatic that a diabetic is receiving some nutriment from the ingested carbohydrates; their withdrawal precludes even this minimum possibility.

Suppose hypothetically a diabetic, the etiology being syphilis, passing three to ten per cent. or more of sugar. The patient, with a ravenous appetite, consumes enough food to supply two or three normal appetites yet continues to lose weight. What will happen if we withdraw the carbohydrates? There will at once be a demand by the animal economy for those elements of nutrition contained in nonnitrogenized food furnished by the carbohydrate radicle (C H O) and denied the system by the withdrawal of the carbohydrates. In order to meet this demand and prevent rapid death by inanition, the patient must be fed. If he does not receive culinary food he must be fed artificially. Nature wisely stores within the animal body a depository of fat, converted into a hydrocarbon, from excessive carbohydrate and hydrocarbon elements (C H O) ingested and assimilated during health. When there is a call for the elements of nutrition by a diabetic after withdrawal of the carbohydrates, this fat splits into alcohol and the carbohydrate radicle, and the patient lives on himself until all his fat is consumed, when he dies. Man can not live without alcohol in his system and those elements which comprise nonnitrogenized food—carbon, hydrogen, and oxygen. Why not give him alcohol in some form and continue his carbohydrates without disturbing his regimen?

By such a method we do not disturb the previous metabolism of the diabetic, and as the etiology when found calls for specific administration of remedies indicated in each particular case, their administration will lessen the diabetic symptoms as the etiology is proved by the prescribed therapy. As the sugar lessens in the urine the carbohydrate (alcohol) may be gradually and systematically

withdrawn until this artificial feeding is being supplied normally to the system through normal feeding and assimilation of culinary food.

Here is a case in point. C.E.C., male, aged sixty-nine years, with diabetic symptoms, applied for treatment. The urine test showed approximately nine per cent. of sugar; thirst and polyuria profuse. When questioned as to previous syphilitic infection the answer was always negative. Took a sample of his blood, prepared a slide, and the microscope told the story. The ravages of the *Treponema pallidum* were revealed and the cause of his diabetes became etiologically clear. Syphilitic treatment cured his diabetes in ten months. Treatment: Usual regimen continued; plenty of carbohydrates and nitrogenized food; dilute phosphoric acid incorporated with his drinking water, to allay abnormal thirst; specific syphilitic remedies containing mercury, arsenic, and iodine, with strychnine sulphate to one-twentieth of a grain three times a day, and a small but sufficient amount of whiskey after meals. This patient later acknowledged having contracted syphilis twenty-five years before. The syphilitic treatment was continued for two years after cessation of the diabetic symptoms, and the patient added thirty-five pounds to his weight.

By a system of fasting for several days with absolute withdrawal of the carbohydrates there is a lessening and sometimes entire cessation of the sugar output. But there is also a devitalization of the patient which is dangerous. It is axiomatic that sugar will not accumulate in the blood when the animal economy receives no carbohydrate food. It also becomes a selfevident truth that sugar elimination will in a few hours exhaust the blood supply already present. When the feeding of carbohydrates is resumed after a few days of fasting, the elimination of sugar will again return in approximate measure as before, and the same results follow again in a series of feedings and fastings, without any permanent benefit to the diabetic.

Such a procedure is but a camouflage diagnosis and renders more tardy and obscure the possible detection of the true etiology, insuring a prognosis of inevitable death by the progressive development of the undiscovered pathological conception underlying and causing the diabetic symptoms, for again we would emphasize our former assertion that diabetes mellitus is not a disease by itself but represents a symptomatic physiopathological function of some underlying and obscure disease, either constitutional or organic, and quite often evolving out of the central nervous system.

In health we have carbon, hydrogen, and oxygen within the blood stream supplied by both carbohydrate and hydrocarbon. These elements of nutrition are given to the cells, which in connection with nitrogen (protein) utilize them in the manufacture of proteid or tissue building material with which to repair the waste of the body cells caused by physical and mental activity. The carbohydrate radicle (C H O) furnishes the heat producing element (carbon) and the energy producing elements (H O). This heat and energy, in connection with nitrogen, furnish to the cell system the thermopharmacodynamics in the production and utilization of cell

tissue. Suppose we withdraw from a diabetic this needed supply of heat and energy which is represented in the carbohydrate or nitrogenized food. How is the cell going to manufacture the needed proteid for bodily restitution of food supply? Not by the withdrawal of the carbohydrates nor yet by feeding the patient solely on nitrogenized foods, for these nitrogenized foods cannot be converted into cell building material without the carbohydrate radicle. If they become ingested but fail to become metabolized, they enter the blood as toxins and clog the system, resulting often in animal protein poisoning. Yet for a time the fat of the diabetic may split into the carbohydrate radicle and furnish for awhile sufficient to sustain life. The patient, though growing weaker daily, will live until all of his own fat is consumed and then will die.

RÉSUMÉ AND PHILOSOPHICAL DON'TS.

Don't disturb the regimen of a diabetic by absolute withdrawal of the carbohydrates.

Don't treat too strenuously a diabetic passing less than two per cent. of sugar.

Don't pronounce to be diabetes mellitus every case in which sugar presents itself in the urine. There are pseudodiabetics, passing sugar today and none tomorrow, and often alternating with albumin.

Don't fail to add alcohol in some form to the daily regimen of a diabetic who continues to pass over two per cent. of sugar or continues to lose weight.

Don't fail in your endeavor to discover the etiology of the symptom of diabetes mellitus.

Don't fail to push the specific remedies indicated, when the cause has been discovered, and don't pay too much attention to curing the diabetic complications. When the cause has been removed or cured, the effect or symptoms, will cease.

Don't think to benefit permanently a diabetic by diagnosing and treating the microscopic evidences as a disease *per se*. The etiology always lies beyond somatic and microscopic evidence. Microscopy will in the majority of cases make your diagnosis secure and the etiology plain.

Don't attempt the practice of medicine without a working knowledge of the microscope. Without such knowledge a medical practitioner must depend too much on guesswork. It is the positiveness of one's diagnosis which alone renders positive treatment available and insures successful cures by the application of positive therapy.

Don't fail to support the musculature of a diabetic, and especially the heart. Strychnine sulphate (notwithstanding the contradictions of many) will be found sufficient but must be administered in large doses. Not less ever to an adult than one twentieth of a grain three times a day. Strychnine is not cumulative. Its physiological maximum effect is reached two hours after administration and may be continued for months. It is a nitrogenized food and also carries the carbohydrate radicle, presenting the formula $\text{C}_{21}\text{H}_{22}\text{N}_2\text{O}_{12} \cdot \text{H}_2\text{S O}_4 \cdot 5\text{H}_2\text{O}$. It also contains sulphur.

Don't forget that diabetes mellitus may be the result of congenital as well as acquired syphilis.

116 ADAMS AVENUE.

TREATMENT OF WOUNDS BY MODERN ANTISEPTICS.

By JOSEPH C. SCAL, M. D.
New York.

The application of the modern antiseptics, Dakin's solution, dichloramine-T, flavine, the bipp mixture, and the ambrine treatment for burns, has not yet received proper attention from the medical fraternity. These remedies are especially valuable in industrial centres where a host of workers are constantly being injured and where the prompt application of such antiseptic treatment will get them well and return them to work in far shorter time than under former conditions. The modern antiseptics are at our disposal only as the result of the findings of surgeons who, through war experience, learned the importance of fighting wound infection as soon as possible after the wound had been sustained, thereby shortening the length of disability of wounded soldiers. Practically all war wounds were infected, for by the time the patient reached the surgeon the wound was hours or even days old, and it was only at the beginning of the war that the importance of fighting wound infection impelled the Rockefeller Institute to employ Carrel as the surgeon, and Dakin as the chemist, and to them should be given the credit for producing the agents by which we are able to successfully combat infected wounds. These men endeavored to find an antiseptic which would rapidly and successfully destroy microorganisms in a wound and at the same time would be harmless to new tissue. The result was Dakin's solution and dichloramine-T. About the same time flavine, bipp, and the ambrine treatment for burns appeared, each with its respective merits. With the immediate and prompt application of these modern antiseptics, infection can be eliminated, prevented, or controlled, even in severe wounds with existing contamination.

DAKIN'S SOLUTION.

Dakin's solution when applied by the Carrel-Dakin method is the most valuable agent for the treatment of deep and extensive wound infections. It prevents impending infection and makes possible secondary sutures for previously infected wounds, and primary sutures in favorable cases.

Previous to the use of this method every war wound was drained. Carrel eliminated this and instead filled the wound with antiseptic fluid, constantly renewing it so that it did not lose its germicidal potency.

The solution consists of not less than .4 per cent. nor more than .5 per cent. of sodium hypochlorite, which is not alkaline to powdered phenolphthalein but is alkaline to an alcoholic solution of phenolphthalein. This solution can be prepared easily by using ten grams of dry sodium carbonate to the litre of water through which about 1600 c. c. of chlorine gas is allowed to run. Then syphon off the clear fluid and add boric acid to clear the filtrate. Daufresne's modification of Dakin's solution is prepared in the same way except that it is neutralized with sodium bicarbonate instead of with boric acid. The solution however must not

contain more than .45 to .5 per cent. sodium hypochlorite to avoid irritation of the tissues.

METHOD OF APPLICATION.

After shaving the area about the wound, wash with a neutral soap and remove every foreign material as well as any detached skin and necrotic tissue which may be present. Then place the Carrel tubes deep enough to reach the most dependent part of the wound in such a manner as to permit irrigation. Smear the wound edges with yellow petrolatum to prevent irritation of the skin and cover the wound with absorbent gauze.

The tubes are then connected with a reservoir containing the solution, the flow of which is controlled by a simple clamp. The wound is irrigated every two hours while the dressing is removed once daily. The infected wounds are rendered sterile in from six to eight days at which time secondary suture may be attempted.

The advantages of the solution are that it acts with exceeding rapidity, being many times stronger than carbolic acid, and yet does not irritate the skin when it is used in its proper percentage. It is only slightly toxic, and can be applied freely to any part of the body. It also causes a very rapid dissolution and separation of necrotic tissue. The only disadvantage is that the solution is very unstable and decomposes quickly in light, rapidly losing its germicidal power. It should be freshly prepared and kept in dark brown or amber bottles.

In wounds of shallow dimensions the solution is applied directly by a wet gauze dressing. When the wound is sutured and gauze dressing applied, it is interesting to note the absence of any reaction around the wound, there being no pain, redness or swelling present. In compound fractures the use of this solution keeps the wound from suppurating so that in most cases not even a drop of pus may be found on the dressing.

DICHLORAMINE-T

This remedy was introduced by Dr. H. D. Dakin. It is one of the most powerful antiseptics known, being the most rapid in action and fifty times as powerful as carbolic acid. It is nontoxic, non-irritating and easily applied. It consists of aromatic chloramine derived from toluene, containing 29.5 per cent. chlorine. Chemically it is toluene-parasulphonedichloramine. It is marketed in the form of a yellowish white crystalline powder with the pungent odor of chlorine. It is insoluble in water, but soluble in certain oils such as eucalyptol, carbon tetrachloride, and chloroform. Dichloramine-T will not keep in these oils unless they are heavily charged with chlorine. Dakin has prepared an oil called chlorocosan which is a liquid paraffin wax, heavily chlorinated by passing a stream of chlorine through it. In this the antiseptic will keep six to eight weeks at least in dark amber bottles, away from light, heat and moisture.

The antiseptic is easily prepared by rubbing the proper quantity of dichloramine-T to a paste with a small quantity of warm chlorocosan and then adding the proper volume of the oil which has been previously warmed to about 140°, mixing thor-

oughly. If the solution is not clear, filter. A five per cent. solution is best for general use.

The advantages in the use of dichloramine-T are its prolonged action on a wound and its thoroughness in destroying microorganisms, the chlorinated oil giving up the chlorine antiseptic slowly but surely so that its action is continuous for about twenty-four hours. This action is in contradistinction to most aqueous antiseptics which are immediately diluted by the serum wound secretions and become inert and powerless almost immediately after application. The use of dichloramine-T is also economical, as large amounts of solution and large dressings are unnecessary, and the short time it takes to dress the wound is a great saving for the doctor, as the dressing seldom sticks to the wound. The other advantages lie in the rapidity of its action, the decrease and prevention of secondary infection, and the possibility of previously infected wounds being sutured long before it would have been possible with the ordinary antiseptics.

METHOD OF APPLICATION.

Remove all foreign matter as well as devitalized necrotic and loose tissue from the wound. Wash the wound with a neutral soap and dry it thoroughly by fanning, with a therapeutic lamp, or the application of ether. Always keep in mind the fact that alcohol, iodine, bichloride, or other aqueous solutions in the form of wet dressings must not come in contact with the wound as they decompose the dichloramine-T and form hydrochloric acid, which is irritating to the wound. A piece of specially prepared waxed mesh gauze should be placed over the wound to prevent the dressing from sticking. The dichloramine-T is applied over the gauze with a medicine dropper, a swab, a pipette, or an all glass atomizer which sprays the liquid evenly, deep into the wound. This last method is greatly to be preferred as it is absolutely painless. If the solution is too thick for spraying from an atomizer, add ten per cent. in volume of carbon tetrachloride just before the oil is sprayed. Old and decomposed solutions are irritating and must be avoided.

It is interesting to note the experiments of Doctor Dunham with this agent, in which he determines that dichloramine-T (two per cent. solution) will destroy in half a minute the number of microorganisms it would take bichloride three hours, carbolic acid twenty-four hours, and Dakin's five per cent. solution four minutes. He does this by determining the total number of microorganisms in a culture medium of blood serum and muscle extract inoculated with *Staphylococcus aureus*, to which the antiseptic is added, and the length of time required to destroy the organisms noted.

This antiseptic has been widely used and tested by Dr. Harry M. Archer, of New York, and Dr. W. E. Lee, of Pennsylvania, who report wonderful results, as well as safety and ease in its application.

THE FLAVINE ANTISEPTICS.

Proflavine and acriflavine are dyes only recently introduced as antiseptics and are very powerful agents, their germicidal action being increased by

the presence of serum and wound secretions, in contradistinction to dichloramine-T, which acts best on dry surfaces. They are supposed to be much more powerful than dichloramine-T, and can be used in aqueous solutions of 1:1000 or 1:3000 thereby making it very economical.

Proflavine, which is chemically diaminoacridine sulphate or chloride, is weaker and less toxic than acriflavine, which is chemically diaminomethyl-acridinium chloride, and is the preliminary product in the manufacture of acriflavine. They show equal results, however, in the treatment of infected wounds, except that proflavine has, to some degree, a selective hemostatic action.

The preparation of the solution is simple, a 1:1000 strength being obtained by adding a given amount of the powder to the proper quantity of normal saline, the solution being facilitated by heating, and filter when cool. Boiling does not decompose the solution. A very dark amber fluid results.

For ordinary use in wounds, 1:1000 solution is required. Its advantages are absence of pain on application and its power of selective destructiveness to microorganisms, while it does no harm to the tissues or other protective agents of the body. It can be applied directly to the wound as a wet dressing and it is so harmless to tissues that several ounces of the antiseptic in a 1:1000 strength can be injected into the muscles or tissue without local or general effect. In spreading infections and inflammations where incisions are not advisable a good result can be obtained by injecting this fluid into the affected areas, especially around the edges. Theoretically, it should exert some influence in erysipelas also but in such cases I have had no experience.

The chief value of this agent in my experience is its prophylactic action in wounds severely contaminated. In about four hundred cases of wounds, many of which were badly contaminated, not one became infected where flavine was used to clean and dress the wound. A great number of these wounds were sutured. No surgeon should hesitate to suture a wound regardless of apparent contamination, provided all foreign material and necrotic tissue are removed and the wound thoroughly cleansed and dressed with flavine. Too frequent dressings should be avoided, as the agent acts better when in contact with the wound serum and excretion, and exerts its influence over a longer period.

THE BIPP PREPARATION

This is a very excellent remedy for sinuses and chronic bone fistulæ. It consists of bismuth subnitrate one part, iodoform two parts, and petrolatum twelve parts rubbed into a paste. It was originally prepared by Sir Almoth Wright and introduced by Rutherford Morison who found it of excellent value while other British surgeons abandoned it.

The method of application in sinuses and fistulæ is to first explore the wound, remove dead bone, open the sinus as much as possible. Then inject the mixture, which has been melted, into the sinus by a syringe, or pack it into the wound. The mixture

is worthy of a trial, having been found to give satisfactory results in two cases which came to my attention, in which the patients were cured after a two weeks' application of bipp.

In the treatment of wounds this mixture has not yet been given a fair trial in this country. Morison, of England, affirms that infected wounds can be sterilized rapidly and spreading infection checked by a few applications of bipp. His method is to cleanse the wound and surrounding area, remove all foreign and necrotic material, and then fill the cavity with bipp, rubbing the paste gently into the wound with dry sterile gauze, wiping off the excess, but leaving a thin covering of the antiseptic on the wound. The wound is then dressed with sterile gauze kept in place by adhesive strips. If the patient is free from pain and constitutional symptoms, the dressing need not be changed for several days or weeks. If discharge comes through change the dressing at once, first cleansing the wound with alcohol.

The danger in the use of this mixture is the possibility of bismuth or iodoform poisoning due to the absorption of these ingredients and due caution should be observed in its use. It should also be noted that bismuth being impervious to the x ray, bipp should be used after x rays have been taken where such are necessary.

PARAFFIN TREATMENT OF BURNS.

This treatment was introduced during the war as an excellent remedy in selected burns, as well as extensive surface wounds, and as it is a liquid wax dressing, it does not adhere to denuded surfaces. Its application is absolutely painless, affording immediate relief from pain, and promotes healing with the minimum amount of scarring. The removal of destroyed, devitalized, and necrotic tissue is facilitated and with proper application contractures and disfigurement are avoided.

Its application is simple. Irrigate the wound surface with either normal saline or proflavine, and dry it by fanning or with a therapeutic lamp. Melt the wax preparation and apply it to the wound by a brush, swab, or special metal atomizer (the last method is best) and cover it with several layers of sterile gauze. Then spray the wax over the gauze so as to form a film. The part is then bandaged, and the dressing changed daily for the first few days, after which every second day will be sufficient. In dressing these burns, the blisters should not be interfered with at the first dressing, but dead layers of skin can be removed and the blebs punctured at the second dressing. Its action by this method is the formation of a protective nonadhesive dressing, relieving the pain and smarting of the burn quickly, and giving nature a chance to do the rest.

Ambrine, which was named by Dr. Barthe de Sandfort, is the oil of amber mixed with paraffin wax, and is an improvement on the other paraffin preparations. This preparation was used extensively for burns at the front. It can be applied as hot as the patient can bear and forms a protective layer over the burned area. It does not adhere to the wound and the dressing can be removed without pain, bleeding, or pulling away of newly formed

layers of skin. In this way healing is promoted and the new tissue and skin form rapidly with the absence of scars. Other wax preparations on the market, especially parreisene, can be applied with good results, but I have found ambrine to act the most favorably as it forms a very even and very light protective layer.

Fauntleroy and Hoagland (1) report cases in which continuous applications of paraffin resulted in a profuse discharge and the formation of granulating edges. In cases where the granulations are sluggish—scarlet red can be added to the paraffin wax to accelerate the healing. Dr. J. R. Beiter (2) relates his experience with the paraffin treatment of burns in industrial cases and says that superficial burns healed rapidly but that deep burns behaved as in former times. Other equally experienced physicians have obtained excellent results even in deep burns.

In using these antiseptics, I have obtained almost equally good results with all, but lately I have been using flavine instead of dichloramine-T, with the result that in about 400 cases all the wounds healed by primary union, while with the use of dichloramine-T in at least two cases in a hundred the wounds would become infected despite its use. This I believe could be accounted for by the fact that the oily preparation of dichloramine-T is not able to penetrate to the most dependent part of a contaminated wound while the aqueous flavine solution is easily accessible to it. Then again in the use of dichloramine-T in about 0.5 per cent. of cases the skin would show irritation if prolonged use was necessary, while with flavine no wound yet has shown any skin irritation. In infected cases I have come across several obstinate wounds where dichloramine-T had had no effect on the microorganisms and the use of some other antiseptic was necessary.

The following cases in which dichloramine-T and flavine were used will be of interest.

CASE I.—A. R., aged thirty-one, injured on March 4th by catching his right hand between a belt and pulley. He called at my office ten minutes after the accident. Examination showed a deep gaping wound stretching across the entire palm of the right hand, exposing tendons, muscles and bone. I cleansed the wound and removed the grime and grease by pouring ether from a can into the wound, then flooding it with dichloramine-T and suturing the tendon sheaths and fascia with No. 0 catgut and the skin with horsehair. No drainage was used. An x ray taken the following day by Dr. Leopold Weiss, showed a comminuted fracture of proximal phalanx of the left index finger, as well as fracture of the third and fourth metacarpal bones. There was no infection, the wound healed by primary union, the horsehair skin sutures were removed on the seventh day and mechanical movement instituted at once. A wonderful result followed, movement of the fingers and hand being almost normal when he was discharged.

CASE II.—C. B. W.; occupation press hand; injured July 29th, by catching right ring finger in press. When he presented himself fifteen minutes later, examination showed an amputation of almost

the entire terminal phalanx of the right ring finger about one quarter of an inch away from the joint, severing bone and tissue, but still attached by a small strip of skin on its under surface. Circulation to the amputated part was poor. I removed the loose nail, adjusted the fractured ends of the bone in good apposition, placed two retention sutures of horsehair on either side of the finger, flooded the wound with flavine and dressed it without drainage. Circulation reestablished itself, the sutures were removed on the seventh day, healing being completed, and the patient was discharged several days later as being able to return to work.

CASE III.—R. T., aged twenty-five; occupation press feeder; cut right hand with knife of machine; arrived at office half an hour later. Examination showed an incised wound on dorsum of right hand an inch and a half in length exposing the tendon sheath going to the middle finger. I flooded the wound with flavine, put one No. 0 catgut suture into the subcutaneous tissue covering the tendon, and sutured the skin with four horsehair sutures. Primary union resulted, the skin sutures being removed on the fifth day. A slight swelling remained but subsided by the tenth day at which time he was discharged ready to return to work.

CASE IV.—C. L., aged thirty-six; occupation, carpenter; injured July 10, 1919, by stepping on a nail which penetrated through his shoe and into the front part of the sole of the right foot. Appeared at office six hours later with severe pain in the right foot, especially on dorsum. Examination showed a punctured wound of the sole of the right foot, the probe showing penetration of almost three quarters of an inch. There was beginning swelling on the dorsum of the foot behind first and second toes. I incised the wound and squirted flavine into it with a hypodermic syringe to which a pipette was attached. Tetanus antitoxin was administered. This wound was kept open by a piece of gauze saturated with flavine between the incised parts and removed the next day. No infection resulted, the swelling on the dorsum disappeared on the third day, and the wound was healed on the seventh day.

CASE V.—L. I., aged nineteen; occupation, packer; injured July 30, 1919, by the release handle of a baling machine striking his scalp; appeared twenty minutes later showing an extensive laceration over the right parietal region of the scalp, extending down to the periosteum. The scalp was shaved, the wound cleansed with ether, loose hair was picked out of the wound with forceps, and the wound flooded with dichloramine-T and six sutures were inserted through the entire thickness of the scalp without drainage. Primary union resulted, the sutures being removed on the sixth day, a fine narrow scar being the only evidence of the deep laceration.

CONCLUSION.

In conclusion I would add that with the more liberal use of the new and powerful antiseptics by the medical profession in the treatment of wounds, there will be far fewer cases of infection with far less scarring and fewer permanent injuries resulting. To workers, as well as to employers and insurance carriers, there will be a great saving in the lessening

and in many cases the prevention of disability and permanent injuries with loss of use of members. In fact, at the present time many employers will not send their injured employees to physicians who do not use one form or another of the modern antiseptics.

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1. Fauntleroy and Hoagland: *Annals of Surgery*, June, 1919.
2. Beiter: *Paraffin Treatment of Burns in Industry*. *Journal A. M. A.*, June 16, 1917.

235 LAFAYETTE STREET.

Observation on Aortic Disease in Soldiers.—Thomas F. Cotton (*Lancet*, September 13, 1919) made careful investigations in fifty cases of aortic insufficiency, none being of the advanced type. All of the men had served in the army, the average duration of service having been over two and one half years with an average of one and one half years of overseas service. The average duration of symptoms exceeded one and one half years in thirty, and was greater than this in twelve in whom the symptoms had been present before entering the army. Half of the men had been on the firing line. Prior to enlistment thirty-six per cent. of the men had engaged in heavy occupations and forty-one per cent. in such as were moderately heavy. Vigorous sports had been followed by sixty-two per cent. of the men. Only one man gave a history of rheumatic fever and one of syphilis, while in twenty-three per cent. the Wassermann reaction was positive. The exercise tolerance was determined for all of the men and in the early cases the response was good in twenty-two and poor in seventeen. In twenty-eight cases with free regurgitation, fifteen gave good responses and thirteen responded poorly. From these observations it was evident that aortic disease is compatible with good exercise tolerance. Comparative investigations were made which showed that when there was an equal degree of distress after effort the increase in the pulse rate was the same in patients with slight aortic incompetence, in those with free regurgitation and no venous congestion, and in those with disordered action of the heart without signs of structural disease. It was possible to divide aortic disease into three types: 1, Aortic disease without symptoms; 2, aortic disease with the symptoms of the effort syndrome; and, 3, aortic disease with venous congestion and angina. In the first type the condition is recognized by the physical signs alone and even with fully developed incompetence the condition is compatible with good exercise tolerance; the most severe exercise can be performed without greater distress than is produced in the healthy untrained subject. The extra load put on the heart by the insufficiency is taken care of by the large reserve of the healthy myocardium. In the second type the symptoms are quite indistinguishable from those of the typical effort syndrome in persons with no organic cardiac lesions. Study of the cases indicates that the symptoms in this class of aortic cases are not due to the valve defect, but to the same cause as disordered action in a sound heart.

Editorial Notes and Comments

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PUBLISHER'S ANNOUNCEMENT

May we ask our readers to bear with us for a short time if the usual number of reading pages do not appear. Due to the printers' strike, we are going through the most trying time in the history of periodical publishing. We have been obliged to print the NEW YORK MEDICAL JOURNAL outside of New York but we are making rapid progress and will soon resume our regular mailing schedule, with the usual number of reading pages within a few weeks. We desire to extend our thanks to our subscribers, contributors and advertisers, for the generous attitude they have taken.

WORK AND HEALTH.

Some valuable facts, with regard to the period of work compatible with the retention of adequate physical and mental vigor, have been discovered during the course of the war. At one time it was essential in Great Britain that munitions should be made with the utmost rapidity. Men, youths, women and girls were requisitioned for the purpose and were urged to labor for long hours. At first the results were satisfactory, but soon it was found that the output was deficient in quality and not especially satisfactory so far as quality was concerned. Investigations were then set afoot to determine as nearly as possible, the length of time that individuals can work without reaching the point of fatigue, when of course, the quality of the work deteriorates and the health of the worker suffers. In the early days of the war when the

emergency was great, men, women and children too, were very unwisely kept at their tasks, not for forty-eight hours a week, but for sixty, seventy and even more hours a week. Moreover, the work was frequently of a very monotonous or very exhausting nature. It became obvious to the government officials that there is a point beyond which it is an economic as well as a physiological mistake to push the delicately adjusted complex of nerves, muscles and bones controlled by the mind known as the human machine. Scientific investigations showed that women and youths, generally speaking, were incapable of sustained effort for a period longer than eight hours a day at the most, while for the majority of women and girls and youths forty-two hours a week were found to be sufficient. For the average male adult worker forty-five hours a week were concluded to represent the time required for a satisfactory output combined with good quality of work. When the process was carried below the forty-eight hour limit, the benefit was not so uniform, that is from the output and quality points of view. However, the conclusions generally come to are of great interest.

In most industries the eight hour day does not cause more than a moderate amount of physical fatigue, and that workers suffer rather from monotony and boredom, as many of them are engaged on the same task day after day and year after year, than from the effects of excessive labor. Thus, it appears to have been definitely learned that long hours of labor are wrong from the economic standards of health. But although it has been proved that, as a rule, forty-eight hours of work a week are compatible with health, quality and output, there are many laborers who dissent from the decision and contend that six hours a day is enough time in which to work. It seems patent that economically this is a false doctrine, that is, economically from the broad outlook of a nation, as the country whose workers toil for forty-eight hours a week must turn out more than the one whose workers are at their tasks but thirty-six hours. It is also a false doctrine considered from the health aspect, as under average favorable conditions an eight hour day is rather conducive to good health than otherwise. It is nevertheless true that a great deal of industrial work is monotonous, and this handicap arises from the newer developments of industry, due to the further introduction of machinery and greater specialization. The drudgery of industrial work is its greatest drawback, and the drudgery or monotony may be reduced but cannot

be wholly eliminated. The best that can be done is to relieve it by various means. It is absolutely apparent, that work, even hard work, be it mental or physical, if it is done in congenial circumstances, and the worker likes his task, is not only not harmful but beneficial. Work of this character is healthful, and the object of all employers should be to make their workers contented. To be contented they must be well paid in order that they may be well fed, must not work too long at a time, and the monotony of their toil must be relieved by all available means. On the other hand, it is mischievous to assert, as many workers do assert at the present time, that an eight hour day is inimical to health.

THE TUBERCULOSIS DEATH RATE.

The report of the executive committee of the National Tuberculosis Association gives food for thought. If it were nothing more than the fact emphatically pointed out that the annual death rate from tuberculosis is more than a hundred and fifty thousand that would be quite sufficient to deserve attention. This preventable disease sacrifices more lives every year than America lost in the war. As we had nearly two million men in France, it is easy to understand what that death rate means. We realize what an immense sacrifice of our young men the war demanded and yet we accept the yearly sacrifice of a still larger number without realizing its significance. The examinations made for draft purposes revealed the fact that one hundred thousand young men between twenty-one and thirty-one, most of whom had no suspicion at all of the fact, had to be rejected because they were tuberculous. We know that we have over one million active cases of the disease in the United States, a number which is not reduced by the annual deaths for it is constantly recruited from the rest of the population. The revelations that followed the careful examinations of the young drafted soldiers would seem to indicate that we must have at least double the number of unsuspected cases throughout the country. This conclusion is confirmed by the social survey for medical purposes made in Framingham, Massachusetts, a year ago, for there too it was found that for every case of recognized tuberculosis there were two latent cases in the population.

With the possibility that we have altogether some three million cases of the disease in this country, it is easy to understand how much we are likely to suffer from it. If taken in time there is no serious affection that is quite so amenable to treatment as tuberculosis. If the patient only has good will

and the courage to follow what is demanded of him he will usually get better and then if he avoids the conditions in which his tuberculosis developed he will stay better. The expression "tuberculosis takes only the quitters," that is, only those who cannot make up their wills to do what they are told and who are so afraid that they may be told that they have the disease that they refuse to go to a physician who might possibly tell them that they had it.

It is undoubtedly true, however, that not a few of the unsuspected cases of tuberculosis continue in that class because physicians refuse to diagnose as tuberculosis until they can find outspoken symptoms of the disease, very definite physical signs in the lungs. It is the early discovery of tuberculosis that gives the patient the best possible chance for the arrest of his disease and for such recovery from it as will often afford him a long life of usefulness. Physicians, therefore, need not only to look for the most serious symptoms but for the early signs of the disease. There is little advantage in knowing the physical signs by which one is able to recognize variations of forms of cavities in the lungs, but slight disturbances of the breath sounds which occur with the earliest consolidation are extremely important.

The pulse is usually the first normal function to be disturbed in the disease and should be carefully watched whenever there is any suspicion of the existence of the affection. A persistently rapid pulse, even if only above ninety, should be regarded with suspicion. If the patient exhibiting it has been in contact with tuberculous patients and is losing any weight or has recently lost weight it is enough of itself almost to justify the diagnosis of tuberculosis. As nine out of ten people have some focus of the disease within them a diagnosis on such slight grounds is quite justified. If with this there is even a slight hacking cough, though perhaps without any expectoration, the suspicion is amply confirmed. Any localized lung symptom in connection with these, as for instance a lengthening of expiration at one of the apices, gives proof positive of a tuberculous infection of the lungs.

If when these symptoms are present the patient can be made to gain in weight and above all can be made to reform habits of life so that he shall get more air than before, there is an excellent chance of making the case one of those in which the presence of tuberculosis will be absolutely demonstrated as it is so often only after death. Waiting until there is a definite febrile reaction, especially above one hundred, or until tubercle bacilli can be discovered in the sputum, very often means a long

road to recovery and a serious impairment of resistive vitality if ever there should be a relapse of the symptoms. Physicians sometimes seem loath to hint at the diagnosis of tuberculosis until serious symptoms are present, but this is always an unfortunate mistake for the patient. When our present knowledge of tuberculosis is explained to the patient, a diagnosis made on very early symptoms instead of doing harm by arousing discouragement will usually have the opposite effect and make the patient understand the necessity for such care as to habits of eating and getting fresh air as will insure him against more serious developments.

POSTPNEUMONIA MYELITIS.

Myelitis following pneumonia is usually found in adults only, though it may occasionally occur in children after the age of ten. The process in the cord generally appears during convalescence or when the patient has recovered from pneumonia. In a case recorded by Leudet and Landry, the myelitis did not manifest itself until two months after the onset of the pneumonia but in most of the reported cases it has occurred in from twelve to eighteen days after the début of the pulmonary process. In only two instances reported by Bettelheim and Mouratoff, did the myelitis occur during the height of the pneumonia and in a case observed by Bachmachnicoff the medullary accidents appeared twelve days after the development of the general phenomena pneumococcic septicemia. The onset of the medullary lesions is variable. Sometimes it begins with tingling in the limbs or in the feet and fingers, as in Leudet, Landry and Varanini's cases. At others there is a weakness of the lower limbs (Daireaux and Mouratoff), retention of urine (Achard) or the paraplegia may be complete from the start (Bettelheim and Bordescu). In Bachmachnicoff's patient incontinence of urine and feces were the first symptoms noted.

In the more serious cases the motor disturbances which begin by a paresis of the lower limbs, become accentuated and soon appear in the upper limbs as well. Walking, which is difficult at first, soon becomes impossible; active instability ceases and the muscles are usually limp. Occasionally the paraplegia is complete at the onset. In mild cases the motor disturbances occur in the lower limbs only and are less accentuated. There is merely a simple muscular weakness—paresis. The gait recalls that of a limp paraplegia in some cases. Varanini noted the existence of involuntary movements consisting of flexion of the thigh on the pelvis and the leg on

the thigh. In Bachmachnicoff's case there was merely a simple paresis evident in the group of extensor muscles only but this soon became cuneiform. Spontaneous walking was impossible but this was due to vertigo. Sensibility is interfered with in the majority of cases. This takes the form of subjective disturbances: tingling, pain in the lumbar region and lower limbs. The objective disturbances consist of anesthesia extending quite high up; in Mouratoff's patient it reached the second rib. Tactile and muscular sensibility were lost in Landry's case and also in Varanini's patient. The sensibility has been found intact in a certain number of cases, among which is Daireaux's, which was a poliomyelitis.

Muscular atrophy is rare and when it exists it is more marked in the lower limbs, but the upper extremities may be involved later. The reflexes have not been systematically examined in all cases. Sometimes they are normal, but may be absent. They were exaggerated in one case only and there was also a phenomenon present which recalled clonus of the foot. In one instance there was complete absence of the patellar and tendon achilles reflexes. In a few cases the electric contractility has been tested, examined, and the results obtained have not been uniform. Cané noted a marked diminution of paradic contractility in his patient and Mouratoff came to the same conclusion. Both Landry and Varanini found nothing abnormal, although in Landry's case there was an acute ascending paralysis. Sphincteric disturbances were noted eight times in eleven cases. Incontinence of urine and feces is more frequent. Achard and Varanini noted retention of urine in their cases, while Bettelheim's patient presented difficulty in micturition. Trophic disturbances are rare.

HOBBIES

It is well for a man to have a hobby. Just what place this hobby should have in his life is a debatable question. At times it may turn out to be one's life work and again it may remain a remote phantasy which is not approached for fear that it may prove disappointing. The rule, however, is that in one's journey through life various things are encountered which are especially attractive. They may be chess, golf, photography, the collection of beetles or postage stamps, mechanics, music, aeronautics or what not. Some professional men, especially physicians, find their source of chief interest in some branch of their profession. They continue the practice of medicine, to earn their livings, but the specialty which for some unknown reason has attracted them receives their deepest attention. The

moment the question is brought up or an article is written which touches upon the subject nearest their hearts everything else is forgotten and they find their true media. Again other men become so obsessed by their chief source of interest that all other subjects are cast to the winds. The hobby ceases to be a side issue and becomes the predominant one. This may in turn prove unfortunate and even dangerous for a paranoid form of reasoning may result. The world becomes inhabited by bacteria alone or all phases of life are explained through the endocrine theory or psychoanalytical philosophy. Specialties cease to become servants and assume the rôle of masters. This frequently leads physicians to no longer regard the advocates of various specialties as experts but look upon them as slaves chained to a dogmatic formula which has turned their heads. The full benefit is not derived from whatever the specialty may be. The hobby instead of broadening its possessor tends to make him more narrow and to limit his vision. It is well to have a hobby. It is well to have a hobby which can be used as a faithful servant. It is well to have a hobby as long as you can ride it, but when it begins to ride you it is better to look about for another steed.

SUGAR A NONESSENTIAL.

The use of sugar in the dietary has become so universal that it is usually classed among the essentials. The *per capita* consumption of sugar grew steadily up to the time that its production was crippled by the invasion of the beet fields of France by the Germans. Since then the world has been on a restricted diet of sugar and the United States has endeavored to divide up the world supply fairly through its Sugar Equalization Board. But before man turned to agriculture the sole source of sugar was wild honey—a very limited supply of which was available at any time. As late as the days of Queen Elizabeth sugar was little more than a curiosity in England, but the *per capita* consumption of sugar in Great Britain in 1914 was estimated at about forty-eight pounds while the United States consumed about seventy-five pounds annually for each member of its population. It is true that sugar is a food in a most concentrated and palatable form, and for this reason it is a valuable food for persons doing heavy manual labor, though they are the ones who get relatively less than their share. The consumption of candy, which has grown enormously of late years, is fraught with danger, mainly from two viewpoints. First, that it is eaten between meals and tends to prevent the use of a normal amount of the ordinary foods at the regular mealtime. The other danger is that when eaten between meals it clings to the teeth and is likely to cause fermentation, producing an unhealthy condition of the gums. While it would be extremely inconvenient to have to forego the use of sugar in coffee or tea, sugar is by no means a necessity and the health of the community will probably be improved by the sugar shortage rather than undermined.

News Items

Health Instructors' Course.—Wisconsin's second class for health instructors has been opened in Milwaukee. The class is conducted by the Wisconsin Antituberculosis Association.

Dr. Erik Waller Here.—Dr. Erik Waller of Lidsköping, Sweden, one of the most prominent surgeons of his country, is at Johns Hopkins Hospital studying surgical methods used at that institution.

Relief for Hungarian Children.—Through the co-operation of the American Society for the Relief of Hungarian Sufferers, recently formed, approximately 100,000 needy children in Hungary will receive American aid.

Army Mental Tests for College Women.—Psychological tests as used in the United States army during the war were used to obtain intelligence statistics in regard to 130 freshmen at the Connecticut College for Women. The test is known as the Alpha test for officers.

Venereal Disease Prevention in Panama.—A meeting of representative citizens of Panama and the Canal Zone was held recently, under the auspices of the Panama Canal Health Department, to consider means of minimizing prostitution and the spread of venereal disease.

Overcrowding in College Towns.—The Illinois State Department of Health is investigating the reported overcrowding of students in college towns. It is stated that in many instances the rental for student quarters has been materially increased and that as a consequence quarters formerly accommodating one or two students are now being occupied by three or four.

Five Year Medical Requirement.—Students matriculating in 1917 and after at the University of Illinois College of Medicine will be required to complete a five-year medical course, including a year's internship in a hospital, before a degree is conferred. This is the ninth medical school to adopt this requirement.

Roosevelt Memorial for Orthopedic Hospital.—A Roosevelt memorial tablet, the gift of Mrs. Whitelaw Reid, has been placed in the Orthopedic Hospital, New York, in recognition of the interest which the former president always manifested in the institution. The hospital was founded by Colonel Roosevelt's father.

Awards of Maryland Academy of Sciences.—The insignia of the Maryland Academy of Sciences has been conferred on a number of men—and one woman—who have distinguished themselves in scientific achievement. Among the list are the following medical men: Dr. Edward Plummer, of Baltimore, for his public services and his attainments in medicine; Dr. W. Earle Wingood, for his services in surgery during the world war; Dr. J. Carlton Wolf, for his attainments and years of service in medicine and pharmacy.

Hospital Seeks Fund.—The Hospital of the University of Pennsylvania is launching a campaign for a fund of \$1,000,000. Of late years a steadily growing deficit has been facing the board of managers. These deficits have been partly liquidated by State appropriations, but present conditions make it necessary to appeal to the public.

Organization Against Health Insurance.—The New York Federation of Physicians announces that the Kings County Professional Guild will call a mass meeting in the near future for the purpose of organizing the medical profession in opposition to compulsory health insurance. Persons desiring further information may communicate with the organizing committee at 207 East Tenth Street, New York.

Harvard to Study Influenza.—Extensive research into the causes, effects, and complications of influenza will be carried on by the laboratories of Harvard University, largely under the direction of Dr. Milton J. Rosenau, professor of preventive medicine and hygiene at the Harvard Medical School. The work has been made possible by a gift of \$50,000 by a corporation which suffered losses during the epidemic last year.

International Gynecological Organization.—At a conference of gynecologists held in Brussels, Belgium, the last week in September, the International Association of Gynecologists and Obstetricians was organized, with the following among the officers: President, Dr. Franklin H. Martin, of Chicago; secretary-general, Dr. Frank F. Simpson, of Pittsburgh; councilors, Dr. J. Riddle Goffe, of New York; Dr. Thomas J. Watkins, of Chicago, and Dr. George Gray Ward, Jr., of New York.

Tuberculosis Conference Elects Officers.—The Mississippi Valley Conference on Tuberculosis, which met in Des Moines, Iowa, the latter part of September, elected the following officers: President, Dr. John H. Peck, of Des Moines; vice-president, Dr. W. McM. Miller, of St. Louis; secretary, Dr. Arthur T. Laird, of Duluth, Minn.; councilors, Dr. Sherman Kingsley, of Cleveland; Dr. James W. Pettit, of Ottawa, Ill.; Dr. Ethan A. Gray, of Chicago; Dr. R. J. Reed, of Des Moines (reelected); Dr. Eugene B. Pierce, of Howell, Mich.; Dr. Alfred Henry, of Indianapolis, and Mrs. P. Wanzer, of Armour, S. D.

What We Know About Cancer.—The American Society for the Control of Cancer announces the publication, through the Council on Health and Public Instruction of the American Medical Association, of a new handbook for practitioners entitled *What We Know About Cancer*. The handbook has been prepared by a special committee consisting of Dr. Robert B. Greenough, director of the Harvard Cancer Commission; Dr. James Ewing, professor of pathology at Cornell University Medical College, and director of cancer research at the Memorial Hospital, New York, and Dr. J. M. Wainwright, of Scranton, Pa., for many years chairman of the cancer commission of the Pennsylvania State Medical Association. In addition the manuscript has been reviewed and criticized by a number of prominent surgeons and other students of cancer and

revised in accordance with the suggestions thus obtained. The handbook attempts to provide in a brief compendium the essential facts about cancer in general and its manifestations in the different locations where it most commonly occurs.

Medical Society of the State of Pennsylvania.—At its recent annual meeting the Medical Society of the State of Pennsylvania elected the following officers to serve for the ensuing year: President-elect, Dr. Henry D. Jump, of Philadelphia; first vice-president, Dr. J. Wesley Ellenberger, of Harrisburg; secretary, Dr. Walter F. Donaldson, of Pittsburgh; assistant secretary, Dr. C. B. Longenecker, of Philadelphia; treasurer, Dr. John B. Lowman, of Johnstown; manager of sessions and exhibits, Dr. William H. Cameron, of Pittsburgh; editor of the Journal, Dr. C. L. Stevens, of Athens. Dr. C. L. Stevens was installed as president. The society will hold its next annual meeting in Pittsburgh the first Tuesday in October, 1920.

Personal.—Professor Richard P. Strong, of the Harvard Medical School, has sailed for Europe to take up work on the League of Red Cross Societies, which has headquarters at Geneva. Sir David Henderson is director general of the league.

Dr. Percy Case, of Patchogue, N. Y., has been appointed a member of the Polish Commission and is on his way to Warsaw to serve as a typhus and tuberculosis expert.

Dr. Samuel Lloyd, late colonel Medical Corps, U. S. Army, having returned from France, has resumed the practice of surgery with offices at 50 East Forty-Second Street, New York.

Dr. G. E. Tarkington announces his association with Dr. W. T. Wootton in the general practice of medicine at Suite 500 Dugan-Stuart Building, Hot Springs, Arkansas.

Dr. E. R. Hunter, director of the first aid division of the American Red Cross, will make a tour of the Middle West this month for the purpose of stimulating first aid and accident prevention activities in industries and schools.

Dr. Christian R. Holmes, dean of the Medical College of the University of Cincinnati, has announced his intention of retiring from practice to devote his entire time to the work of the college. Doctor Holmes is now under treatment in a New York hospital.

Reduction of Negro Infant Mortality.—The Association for Improving the Condition of the Poor for several years past has been cooperating with the Bureau of Child Hygiene of the Department of Health in work for the reduction of infant mortality among the negro babies which, as is well known, has been practically twice as high as that among the white. Following a survey in 1915 of a number of districts in which the negro population predominated, the bureau began intensive study and work in these sections; the result has been a gratifying reduction in the infant mortality rate among the negro babies, from 202 per 1,000 born in 1915, to 193 in 1916, 168 in 1917, and 170 in 1918.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.

Philadelphia.

(Continued from page 593)

Acute osteomyelitis is a condition sometimes mistaken for rheumatic fever. Early differentiation of these two affections is important, as the former frequently requires prompt surgical measures if a dangerous illness is to be avoided.

Osteomyelitis often follows exposure to cold or overexertion; hence the history of the case will sometimes tend to mislead, suggesting that a rheumatic disorder has been induced. Although usually the pain developing in the affected part in osteomyelitis is more severe than that in rheumatic fever, there occur mild cases in which the pain is relatively slight. The process is believed to originate at the epiphyseal end of the shaft of the affected bone, and is thus close to a joint to begin with. Thereafter, instead of extending along the diaphysis, it sometimes—especially in children—progresses through the epiphyseal cartilage and invades the neighboring articulation. Among 167 cases of osteomyelitis reported on by Becker the joints were involved in no less than forty-eight. Traumatism has been frequently emphasized as an etiological factor in this condition, but in Becker's experience it did not seem to play an active part in the production of the epiphyseal osteomyelitis. Beck, 1910, states that in some instances he has seen, a sore throat was the starting point of the disease—another opportunity for confusion with rheumatic fever, so frequently associated with tonsillar inflammation. The periostitis always co-existing in osteomyelitis may, according to Davis, 1916, mask the true nature of the case. The bones most commonly affected in osteomyelitis are the femur and fibia—112 cases out of 167 in Becker's statistics,—while in rheumatic fever the knee is one of the most frequently involved joints. In the occasional cases in which more than one bone is the seat of acute osteomyelitis, the resemblance of the clinical picture to rheumatic fever may be further augmented.

The differentiation of osteomyelitis from rheumatism is sometimes facilitated by careful observation of the area of greatest tenderness, which is likely to be over the epiphysis of a bone and not directly over the joint. The general picture, moreover, is often a more serious one, the initial chill being more pronounced, the temperature rise greater, and the patient more distinctly prostrated. There may be delirium, the pain is generally more severe, and the constitutional effects are apt to be those commonly recognized as signifying a septic state. The affected part is not only swollen, but

may exhibit a brawny condition indicating mischief other than that of rheumatic involvement. A history of traumatism will be obtained more frequently before osteomyelitis than before rheumatic fever, while in some instances the former affection follows one of the eruptive fevers. After a few days the characteristic migratory proclivity of the rheumatic disorder is likely to assert itself, the inflammation of the joint originally involved passing off and the process invading another articulation; in osteomyelitis, on the other hand, the disease spreads rapidly at the initial site and fails to leave that site to involve other parts. According to Beck, an early diagnosis of osteomyelitis is aided by x ray examination. McKee and Wells, 1914, believe that many cases of so-called "infective rheumatism" in children are really instances of osteomyelitis. Since a large proportion of cases of osteomyelitis occur in bony tissue in the vicinity of the knee, it is especially in cases of apparent acute rheumatism involving this joint that the physician should be on the lookout for a possible osteomyelitis.

The treatment of osteomyelitis, it is important to note, is radically different from that indicated in rheumatic fever. Hence the necessity of early differentiation. Since the condition may cause rapid and widespread destruction of the involved bone, prompt and efficient treatment is required. In this manner the patient may be spared many months of suffering and saved from marked permanent deformity of the affected part.

According to some, bacterial vaccines have proved of value in osteomyelitis. The recommendation of C. E. de M. Sajous, 1912, that dried thyroid be given in doses of two grains three times a day to enhance the defensive activities of the system against the pathogenic germs present is also to be borne in mind. The chief indications, however, are as a rule surgical. Pain and abscess formation are the two principal indications for surgical interference (Beck, 1911). Where the long bones are affected free incision and drainage are required, in order to eliminate the cause of the more or less severe constitutional reaction and permit of preparation for removal of the involved portion of bone. Beck recommends that, while a broad opening should be made, the periosteum should be left intact as much as possible. All diseased tissue should be removed. Although bone chips, skin grafts, pastes, and waxes, such as the Mosetig-Moerhof bone wax, have been used to fill the bone defect resulting from removal of diseased tissue, Beck deems these all useless except in narrow, channellike cavities, and advises that, in the routine treatment, no bone cavity at all be left behind. The bone according to this plan is chiselled away until about one half of its circumference is gone. The periosteum, previously saved, is sutured and allowed to fall against the chiselled

bone, thus obviating the production of any cavity in the latter. The periosteal cavity may in some cases be packed with gauze and later with paste for some days. The external wound is closed, and readily heals. In a later, 1916, modification of the technic, Beck employed a sufficiently large skin flap to implant over the resected bone cavity. The wound is at first left widely gaping. Subsequently any epithelium required for granulating surfaces is supplied by means of skin grafts. Beck asserts that he has thus been able to cure nearly all cases in which operation had previously been performed without successful results, and in which bismuth paste injections had likewise failed.

The most recent improvement in the operative treatment of osteomyelitis is embodied in the procedure recommended by W. Wayne Babcock, the essential steps of which comprise the immediate sterilization of the disease focus by injection and application of zinc chloride solution; delineation of infected areas with methylene blue; excision *en masse* of the entire area of infection, and wound closure with obliteration of all dead space. Further details as to this procedure, which aims at a prompt, radical cure of the condition, were presented in the June 21, 1919, issue of the *New York Medical Journal*.

(To be continued)

Treatment of Wounds of the Knee Joint.—Pool and Jopson (*Annals of Surgery*, September, 1919) confine their methods to the immediate treatment of wounds of the knee joint by projectiles. It was found that the large joints were particularly resistant to contamination and infection if properly handled. Early operation and complete excision of traumatized and contaminated tissue and foreign bodies were essential. It was found that primary suture was essential to success and success was lacking where the joints were left unsutured and post-operative chemical sterilization was attempted. All wounds of joints by projectiles, except certain perforating wounds, should be operated upon. This type of wound is seldom infected even when a fracture is present, but should be carefully watched in case any symptoms are manifested. The patient and his lesions should be examined and the extent of involvement and the location of foreign bodies determined by x ray. The time which had elapsed since the wound was received, the location of the wound, the extent of injury to the soft parts, complicating lesions of the main blood vessels and large nerves, and the general condition of the patient, should all be considered. Then a choice should be made between amputation, resection, and conservation of the joint.

The principle of conservative treatment are as follows: Complete débridement of the tract of the projectile through the joint; absolute closure of the joint by suture; primary or delayed closure of the superficial parts according to the rules laid down for primary suture of the soft parts alone; and early active motion. The incisions should permit the thorough débridement of the soft parts and the removal of the foreign body and involved bone. Incision in the patellar tendon should seldom be

made. In the simplest type of cases, where there are small perforating wounds with little or no bone involvement, the bullet or fragment has either perforated the limb traversing the joint in its course or has penetrated the joint and lodged in it or in the adjacent tissues. The capsule and synovial membrane should be opened, and a thorough débridement effected, care being taken to conserve all tissue that can be safely left. Foreign bodies and loose fragments of bone should be removed. The wound is thoroughly irrigated with normal saline solution and then distended several times with ether. The synovial membrane and capsule are closed with fine catgut, the two layers to be sutured separately whenever feasible. Complete closure without drainage is the invariable rule. The soft parts over the capsule may be closed or left open for subsequent suture. Primary suture may increase the danger of joint infection by inward extension of a superficial infection, while leaving the soft parts unsutured may delay the institution of early movements. When the tract involves an articular surface with destruction of bone and cartilage, the tract must be followed and cleansed as thoroughly as possible. This should be done with the sacrifice of as little bone as possible. The débridement of bone and cartilage can not be as thorough as of the soft parts.

Compound fractures of the patella should be treated by removal of completely separated fragments and preservation of large attached fragments which should be approximated by suture. Complete removal of the patella should be avoided as it causes a poor functional result. In extensive involvement of the articular surfaces an effort should be made to save the joint, provided the conservable articular surfaces and soft parts are sufficient to warrant a reasonable hope of securing a useful joint. Where there is such loss of articular surface as to preclude obtaining a useful joint, resection should be done. When there is such destruction of the soft parts that the edges of the capsule cannot be approximated and an attempt is made to save the joint, the defect in the capsule should be completely closed with muscle or fascia. In all cases before the joint is closed complete hemostasis should be obtained. The joint is then washed with salt solution to remove blood, bone fragments, and débris. This is followed by an ether lavage and closure.

The important part of postoperative care is the early active mobilization of the joint. Early mobility was found preferable to the immediate mobility as practised by Willems. If the joint becomes distended and infection is suspected, it should be aspirated immediately and a culture made. At times in a low grade infection, aspiration will serve to cause an uneventful recovery. If the culture indicates a pyogenic infection lateral incisions should be made at once to allow for drainage. In cases of suppurative arthritis of the knee joint early drainage is important. Lateral incisions well backed are best; occasionally an incision elsewhere may be employed. No drains should be used. Free mobility every two hours should be enforced by active movements, so as to evacuate the joint.

Reinforced Rubber Substituted for Lost Segments of Bone.—Pierre Delbet, Girrode, and Contremoulin (*Bulletin de l'Académie de médecine*, July 29, 1919) report two cases in which rubber apparatus reinforced by metal was used successfully to replace destroyed sections of bone. Both patients had lost a portion of the radius about eight months before the operation. Each of the artificial bone sections was provided with a cuplike device at either end, to grip firmly the broken extremities of the bone. These cups were slipped over the bone ends independently of the intervening rod. Reduction was then effected by means of a special instrument which held the two bone fragment in proper relationship, and the intervening rod then inserted between and fixed to them by means of clamps in the cases of the cups. The process of clamping was so carried out that the bone ends were themselves also firmly fixed to the artificial bone segment. When the procedure was completed the forearm was at once restored to its normal form and solidity, and no exterior retaining apparatus was required. In one of the patients the orthopedic result was perfect seventy days after the operation, though some motion had been lost by reason of nerve lesions attending the initial injury. In the other case, seen eighty-eight days after the operation, results were good from both the orthopedic and functional standpoints. The rubber covered metal embedded in the tissues restored the forearm completely.

Prophylaxis and Curative Treatment of Traumatic Shock by Serotherapy.—Paul Bouchet (*Bulletin de l'Académie de médecine*, July 29, 1919) describes traumatic shock as a toxemia characterized by low blood pressure, increased rate and extreme weakness of the pulse, pallor and cooling of the skin, reduction in temperature, increased rate of the respiration, which is superficial and hypesthesia. This group of symptoms is notably different from those of severe hemorrhage or of nervous shock, as in cases of open trauma of the abdomen or of wound of the central nervous system. It appears in at most three to ten hours from the injury, after a free interval during which toxic substances formed locally have been entering the circulation. Various measures recommended against traumatic shock, e. g., saline solution injections and the application of heat in warm chambers, have largely failed. The author found, however, when receiving the wounded within four to eight hours after their injury on the Champagne front, that subcutaneous injection of the Leclainche and Vallée polyvalent serum caused a rapid improvement in the appearance of the wounds and also a reduction or disappearance of the signs of traumatic shock. Again, in a military hospital in the Oise Department, symptomatic improvement sufficient to permit of operative treatment in cases with traumatic shock followed subcutaneous administration of twenty mils each of antitetanic serum and of the Leclainche and Vallée serum. Subsequently the author made it a practice always to inject these serums at the first dressing in wound cases. In seventy-five cases in which this was carried out no traumatic shock appeared, and in twelve in which it was already present the symptoms were reduced by it.

Therapeutics and Gastrointestinal Disorders.—Douglas Vanderhoof (*Medical Record*, September 20, 1919) finds, from an analysis of two thousand cases of indigestion, that over sixty per cent. were caused by five common underlying conditions. These conditions are, in order of frequency, chronic appendicitis, chronic cholecystitis, neuroses, peptic ulcer, and affections of the kidneys. Chronic appendicitis caused as many cases of indigestion as any two other conditions, namely 21.8 per cent. Coated tongue gives no evidence of real value and its appearance is certainly subordinate to the condition of the teeth, tonsils, and pharyngeal wall. Scalloped heartburn or sour stomach is never due to hyperacidity alone, as it has been proved that the stomach is insensitive to greatly increased amounts of hydrochloric acid. The consciousness of sourness on the part of the patient indicates the presence of pylorospasm with or without regurgitation into the esophagus. In treating indigestion, or the complaints of patients referable to the stomach and intestines, we must relieve the symptoms and then search for and remove the underlying cause. Drugs have their place, 1, in relieving symptoms, as belladonna and alkalies in pylorospasm, and, 2, in removing the cause, as digitalis in chronic passive congestion of the stomach and liver in myocardial insufficiency. Psychotherapy cures some cases, eye glasses others, and glandular therapy still others. Competent surgery based on a proper study and interpretation of symptoms is one of the greatest advances of recent years in the treatment of many gastrointestinal disorders. The diagnosis of these disorders requires a broad working knowledge of medicine and keen judgment.

Mode of Use of Mercury and Arsenic in the Treatment of Syphilis.—L. Borry (*Presse médicale*, July 17, 1919) thinks the prevailing methods of using mercury in syphilis are antiquated. He suspects that organic preparations with the mercury "masked" and relatively nontoxic to man might be tested out clinically with great advantage. As yet, however, he has had opportunity to use only benzoate of mercury. He believes strongly in the giving of ascending doses. In the first month of treatment sixteen injections of a three per cent. solution of this salt are given, the first five or six intravenously in doses ascending from 0.015 to 0.05 gram of the salt, and the remainder intramuscularly in doses of from 0.06 to 0.1 gram. From one to 1.15 grams of the salt is thus given during the month. To avoid side effects one day's interval should be allowed between injections for every mil of the mercurial solution injected in one dose. The "maintenance treatment," as distinguished from the foregoing "attack treatment," consists in intramuscular injection of eight to ten doses ascending from 0.03 to 0.1 gram. Care of the mouth, including the use of tablets of ammonium benzoate and potassium chlorate, are of value to prevent stomatitis and paregoric or extract of opium to allay or prevent colic and diarrhea. Venous irritation is reduced by using a freshly prepared, neutral solution and injecting very slowly. After the attack treatment, two or three weeks' rest is given and a Wassermann test

then made, which is usually negative. According to its result, three to five injections—0.015 to 0.75 gram—of arsenobenzol are given; then, after a month's rest, the usual pill treatment is ordered, interrupted at intervals by the maintenance treatment with ascending doses. In cases followed up through two years the Wassermann remained negative in spite of the fact that but one mercurio-arsenical course of treatment had been given. The author does not recommend simultaneous mercurial and arsenobenzol treatment, believing that their effects are more pronounced if applied separately; time should be given, before arsenobenzol is administered, for the system to recover from the slight debility induced by the mercury. The treatment advised causes disappearance of symptoms in any stage of syphilis as rapidly as novarsenobenzol. The mercurial attack treatment generally caused a quick drop in the syphilitic potential as measured by the sigma reaction.

A New Radical Treatment of Hallux Valgus.—Ernest Juvara (*Presse médicale*, July 17, 1919) asserts that, in the radical cure of hallux valgus, four conditions must be corrected, viz., the inward deviation of the first metatarsal bone; the deviation and luxation of the phalanx; the relaxation of the joint capsule, and the shortening of the extensor tendon. The last named condition is corrected indirectly, in the operation he recommends, by shortening the metatarsal bone itself. Under sto-vaine spinal anesthesia, the injection being made between the first and second lumbar spinous processes, the incision is carried out over the middle of the internal aspect of the first metatarsal from the metatarso cuneiform sulcus to the middle of the first phalanx. The metatarsal is then liberated with curved, blunt pointed scissors from the soft tissues and drawn out from between the margins of the wound by placing a retractor beneath it. The metatarsal is next sawed through obliquely, and a wedge-shaped piece of bone of five to eight millimetres thickness externally and three to four millimetres internally is removed from it. By this procedure, when the two remaining segments of bone are coaptated, the axis of the bone is deviated outward, the heads of the metatarsals are brought together, and the interosseous space is narrowed to its normal condition. The bone segments are fixed together either with a nail alone—a procedure applicable only where the bone section has been directed obliquely backward—or by means of a nail plus iron wire passed around the bone with a small curved needle and tightened. The bursa opposite the anterior end of the skin incision is now completely excised, and enough of the redundant inner portion of the joint capsule removed, over the head of the metatarsal, to bring the great toe back into good position. The skin incision is completely closed with sil' worm gut—the nail and wire, however, passing through it—and a dressing applied somewhat tight over the metatarsal heads. The sutures are removed on the tenth to the twelfth day and the nail and wire on the eighteenth to the twenty-second. In all cases treated by this method perfect results were obtained and x ray examinations showed that normal anatomical conditions had been restored.

An Operation Relegating Enucleation of the Eye to its Proper Position.—T. J. Dimitry (*American Journal of Ophthalmology*, September, 1919) advocates evisceration with the removal of a posterior segment of the sclera including the optic nerve head, leaving this opening not closed, and the insertion of a gold ball into the scleral cavity. The advantages are said to be: 1. Less traumatism than during an ordinary enucleation, less reaction, secretion, ecchymosis, and less likelihood of injury to the sympathetic. 2. It furnishes a filled in socket that gives a firm seat to a prosthesis, keeps the lids from sagging, and so provides for the normal escape of the lacrymal secretion and drainage. 3. It does not interfere with a natural face development in the young. 4. It leaves the recti muscles undisturbed and with an unimpaired power to function. 5. The posterior window permits of the easy severance of the optic nerve, as well as of ready absorption of hemorrhages and exudates, and obviates extrusion of the gold ball. 6. The retro-attachment of the conjunctiva furnishes a deeper retrofarsal fold which permits unrestricted excursions of the prosthesis.

The Administration of Tuberculin.—Wallace J. Durel (*New Orleans Medical and Surgical Journal*, October, 1919) says that tuberculin has proved in his hands a valuable adjunct in the treatment of tuberculosis. It ought to be administered carefully, and only by one who is thoroughly familiar with its action and effects upon the tuberculous body. The initial doses should be smaller and the interval between doses longer in active cases. The clinical method of giving tuberculin is not always free from danger, because of the possibility of overstimulation, the only gauge indicating the approach of the over-tolerant dose being the appearance of fever, headache, and pain. Another unfavorable factor for the clinical method is the likelihood of not causing any stimulation in the tuberculous foci if the doses are not increased rapidly enough, or if the interval between doses is too remote. He suggests the use of the neutrophilic index as the guide to the proper dose of tuberculin by the following method: If the neutrophilic index is ninety-four, that is ninety-four per cent. of polynuclear neutrophile leucocytes, with one solid lobule, and six per cent. of polynuclear neutrophile leucocytes with two separate and distinct lobules, then give tuberculin. If the neutrophilic index is very low, eighty to ninety-two, that is, eighty to ninety-two per cent. of polynuclear neutrophile leucocytes, with one solid lobule and twenty to eight per cent. of polynuclear neutrophile leucocytes with two or more distinctly separate lobules, double the previous dose. If the index is repeatedly ninety-four, increase the dose by one, two, or more tenths, according to the repeated index at ninety-four. Never give tuberculin if the neutrophilic index is ninety-six or above, that is, ninety-six per cent. of polynuclear neutrophile leucocytes with one solid lobule, and four per cent. only of polynuclear neutrophile leucocytes with two or more lobules distinctly separate. By this method the dangers of tuberculin are eliminated and the best results are derived. We have a fair gauge when to start it, when to repeat or increase the dose, and especially when not to give it at all.

Miscellany from Home and Foreign Journals

Deformities of the Upper Extremity.—Henry C. Dozier (*International Journal of Surgery*, October, 1919) asserts that there is something lacking in the treatment of bone and joint injuries in civil life. Less preventable deformities occurred in the orthopedic service than in the other divisions because more attention was given to function. Many men came back from the front from four days to fourteen weeks after they had been wounded wearing the straight Thomas arm splint with the arm in full extension, the hand pronated and traction applied to the hand and forearm. It was necessary to remove the splint, flex the elbow and supinate the hand in order to insure a more useful arm for the future. A faultless operation and rapid healing were not the only things to be thought about, for it was necessary to have the wound heal in a position best suited for the greatest function of the affected part. It must first be determined if it is possible to prevent the occurrence of a permanent disabling deformity. It is frequently impossible to prevent ankylosis in a joint after a severe crushing injury with infection, but it is advisable to have the member in a position best adapted for the function of the patient, considering his occupation.

If ankylosis occurs when a lesion of the shoulder joint has been treated by the arm being placed in a sling with the arm fastened by the side disability will follow. Abduction of the arm at the shoulder joint is initiated by the supraspinatus, and it also fixes the head of the humerus in the glenoid cavity for the action of the deltoid which accomplishes abduction up to about ninety degrees. Further abduction is accomplished by rotation of the scapula through the action of the serratus magnus, subscapularis, the trapezius and accessory muscles. It is also well to recall some of the other essential movements of the shoulder joint when called upon to treat crushing or lacerating injuries in this region which occur outside the joint, in railroad or industrial accidents. The position of choice is with the arm abducted to about seventy degrees, with the elbow slightly in advance of the coronal plane of the body. This position permits of the full range of scapular rotation and secures for the injured almost perfect function at the shoulder joint.

Good union in good position is the essential to good function. In addition to the necessity of having the fragments in the end-to-end position there should be no rotation of the distal fragment. The fragments should be kept in good apposition until union has been secured. The x ray must be used frequently and faithfully and the anatomical relations of the parts involved and their function, kept in mind. Considerable mechanical skill must be shown and frequently an open operation is required. The formation of scar tissue must be considered in large wounds. Extensive scar tissue on the posterior surface may limit extension by interference with the triceps, or the bound triceps may interfere with the action of the biceps and flexors of the forearm. Scar tissue may cause complete

fixation at the elbow joint. So the position of the elbow joint is important.

Intrarticular injuries of the elbow or certain metastases or local infections in this joint frequently result in fibrous or bony ankylosis. It is not always possible to prevent this and the position at which the articulation is fixed should be considered from the point of view of the man's occupation. The fixed position of greatest usefulness is with the forearm fixed at 110 degrees from the shoulder or flexed about seventy degrees from full extension. Other authors consider the fixed right angle position superior for if any improvement is noted it will be of service as it would be in the direction of extension. The pronation deformity at the elbow should be avoided for the forearm syostosed in a position of pronation is incapacitated for holding or receiving articles and is weakened for lifting. It is best to put the arm in a position midway between pronation and supination in order to separate the ulna from the radius and so prevent synostosis. This does not hold when the fracture is near the head of the radius. Here the position of almost full supination is advisable. The loss of pronation is partly compensated for by the internal rotation of the humerus at the shoulder joint. Any spontaneous change in position will be in the direction of pronation and if the arm were originally held in a mid-position any increase in pronation would increase the deformity.

A Physiological Investigation into the Dynamic Action of the Heart in Functional Cardiac Disorders.—Carl J. Wiggers and Harry D. Clough (*Journal of Laboratory and Clinical Medicine*, July, 1919) have made a study of the duration of the isometric periods and the entire systolic period in a series of twenty-five cases of functional cardiac diseases, and have compared the data obtained with that from twenty-four normal persons and thirty-three patients suffering from organic diseases in which the auricular action was regular and there was no decompensation. In the normal cases the isometric period was a little variable and did not bear any definite relation to the heart rate or the duration of systole, ranging in the majority of cases from .04 to .06 seconds. As the cardiac cycle increases the duration of systole becomes progressively greater. In the functional cardiac cases eighty-four per cent. of the patients had a pulse rate of over eighty a minute during rest. Like normal hearts, the duration of the isometric period varied from .04 to .06 seconds, and bore no definite relation to systole. These hearts do not show any demonstrable variation comparable to the compressed myocardium of experimental animals, in which the duration of this period is prolonged. In these functional hearts when the cycles range from .60 to .75 seconds the phases of systole are above the average length in normal hearts, .25. In cycles longer than .60 seconds the duration of systole may be reduced as the heart becomes very rapid. In the compensated or-

ganic heart cases the isometric period was within the normal range. If the cases in this group in which there is a rapid heart rate are compared with similar cases in which there are normal and functional hearts, a greater variation in the duration of systole is noted in this group than in the others. A majority of the patients had a systolic phase above .25, suggesting a prolongation of systole. On the other hand, the organic heart cases with a normal rate showed little variation from the other groups, so that these hearts have a systole of normal length, which however does not shorten as the heart accelerates. As a possible explanation of these facts the authors state that when the functionally disordered heart is accelerated above eighty a minute, its period of systole is not shortened as is that of the normal heart, so that the myocardium is exposed more frequently to a prolonged period of contractile stress.

The Diuresis Cure in Arterial Hypertension.—Carron de la Carrière (*Presse Médicale*, July 17, 1919) emphasizes the benefits obtained in both functional and organic hypertension by the systematic use of mineral waters which, causing diuresis, flush out the system in a more physiological manner than drugs such as digitalis and theobromine. The waters recommended as suitable for the purpose are those from Bains-les-Bains, Contrexéville, Martigny, and Vittel, in the Vosges; Amphion, Evian, or Thonon, on the banks of the Lake of Geneva; Aulus or Capvern, in the Pyrenees. Any lightly mineralized water may, however, be used, e. g., Deux-Reine, from Aix-les-Bains, Les Granges, from Saint-Nectaire; La Châtelaine, etc. In organic hypertension cases, the risk of thereby increasing the blood mass and causing further rise of blood pressure through water retention must first of all be eliminated by preliminary testing of the eliminatory power of the kidneys in the individual case. The induced diuresis test of Vaguez and Cottet, employed for this purpose, consists in observing how a given quantity of water ingested in the morning on an empty stomach and in recumbency is eliminated in the succeeding two hours, and, in comparing the output by night with that by day. Cottet, at Evian, found that in these patients there is no constant relationship between the degree of hypertension or the intensity of the clinical symptoms and the state of renal function. The diuresis test differentiates with certainty, between the sclerotics with hypertension and those whose renal function is satisfactory or at least sufficient, to permit of the mineral water cure. Martinet's sphygmohydric ratio, or ratio of daily urine output to the pulse pressure, is also of service in this direction. The treatment, thus applied in approximate cases, always gives good results. The daily urine output increases, nocturnal polyuria diminishes, excretion of urea and uric acid is restored to normal after a temporary increase, elimination of chlorides is greatly enhanced, albumin is reduced, and likewise the blood pressure. The diminution or cessation of vascular spasm improves symptoms such as erythema, dizziness, headache, tinnitus, and in particular, dyspnea on exertion. The

late results of the treatment are generally much better than might have been anticipated, especially in cases not as yet of more than a few years' standing. As Bergouignan has stated, even in the advanced cases the benefit is maintained for four or five months after cessation of the treatment; in some instances, indeed, the arteriosclerotic process seemed to have actually retroceded. Apart from its therapeutic value, the diuresis treatment is also of prognostic value.

A Test for the Judgment of Distance.—Harvey J. Howard (*American Journal of Ophthalmology*, September, 1919) reports the results of investigations made at the Medical Research Laboratory, Mineola, N. Y., concerning the judgment of distance, which has come to have an important and practical application through the advent of military and naval aviation. The voluminous literature on the subject is rich in theory, but very meager in experimental data, but it is the latter, and the practical phase, which is of interest at present. The stereoscopic test was found to be faulty and another had to be devised, which is described at length. It was found that of all the personal factors which aid in the judgment of distance the binocular parallax is the most important. By experiment it was found to possess twenty times the ability of the retinal image or visual angle which is the important factor in monocular judgment. Yet this should not represent the comparative depth judgment skill of two and one eyed persons, because in actual life the extraneous factors, by helping both equally, serve greatly to lessen the difference in ability of the respective personal factors. The minimal binocular parallactic angle varies greatly with individuals; it depends upon such factors as visual acuity, equality of visual acuity or visual balance, muscle balance, interpupillary distance, and probably some innate and acquired ability. Fourteen observers, twelve of them pilots, out of one hundred and six examined were found to possess judgment of distance to a remarkable degree. Their binocular parallactic angles ranged from 1.8° to 2.0° , with an average of 1.89° . To possess normal judgment of distance one's binocular parallactic angle should not be greater than 8° when the test is performed with an apparatus made on the principles of the one used for these experiments. Such an apparatus permits of the classification of individuals according to their discriminating ability. Its value is greatly enhanced, and much smaller discriminations are possible, by giving the observer a sudden impression of the objects to be judged; otherwise there is apt to be a disconcerting fluctuation of those objects. Most of our natural binocular judgments are more or less instantaneous. The binocular parallax operates in the judgment of objects maintaining the same horizontal or lateral separation, but not for superimposed objects, like telegraph wires; in the latter instance judgment is dependant upon the interpretation of the retinal images when all factors extraneous to the individual, like terrestrial association and aerial perspective, are excluded. To estimate correctly the position of an object one must know its direction and distance. Direction is judged more

accurately with one eye, but distance better with both. To be denied the privilege of using either one or two eyes at will would be a distinct disadvantage to an aviator. The reaction time required to make monocular judgments of distances is very slow, whereas binocular judgments are practically instantaneous. A tendency to project one image nearer than the other was found in twenty-three out of the 106 subjects; some showing this tendency to a marked degree. Although in some of these cases there was muscle imbalance, in others visual asymmetry, and in still others both these abnormal conditions, the phenomenon cannot be explained satisfactorily. The wide variations in the visual angle and binocular parallax angle thresholds make it evident that the two angles have nothing to do with each other; therefore it is a mistake to assume because the cones in one's retina are limited to a certain distance apart, that the binocular parallax angle must necessarily be limited to the size of the visual angle representing that distance. The effect of low oxygen on the depth perceiving sense is of little importance because there is no lack of oxygen at the critical time during the flight, which is the landing.

Clinical Studies of the Gastric Contents.—Mareel Labbé (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, May 22, 1919) in studies of gastric secretion among 100 dyspeptics, found fluid in the fasting stomach in ninety-one instances; in only five of the cases was this fluid the result of stasis, with food débris visible to the naked eye. The amount recovered varied from a few mls up to 100 mls or more. Sometimes it was neutral or only slightly acid; in others, strongly acid. In cases of hyperchlorhydria, from fifty to 125 mls of fluid were withdrawn in over one third of all instances, these constituting obviously cases of gastrosuccorhea. In one third of the cases, the amount of fluid was below thirty mls; whether such amounts of fluid in the fasting stomach should be considered abnormal is doubtful. In cases of hypo-chlorhydria or achlorhydria, fluid was nearly always found in the stomach,—in half the cases in amounts below thirty mls, in the others in larger amounts, exceeding 100 mls. Apparently, in contrast to the acid gastrosuccorhea in hyperpeptic and ulcer cases, there occurs also a hypoacid form of gastrosuccorhea. In dyspeptics with normal gastric juice, fluid was nearly always found in the fasting stomach, very often in amounts exceeding thirty mls. In a number of dyspeptic cases belated gastric secretion was noted upon hourly examination of the stomach contents. In some instances there was merely a prolongation of secretion, the acid content being, e. g., 0.2 per cent. one hour and 0.127 per cent. one hour and three quarters after taking food; in others, there was actual delayed secretion, one patient, e. g., showing 0.127 per cent. after one hour and 0.164 per cent. after one hour and three quarters. In some cases of hyperchlorhydria the patients showed an evanescent hyperchlorhydria; others, a prolonged digestive hyperchlorhydria; others still, a delayed hyperchlorhydria. Possibly some of the ulcer cases classed as hypochlorhydria are actually cases of

delayed hyperchlorhydria. This would also account for certain late pains met with in patients who as a result of examinations made one hour after food, were classed as hypochlorhydrics. The variations in acid content were found to depend largely on the content of free hydrochloric acid rather than on the combined acid content, which is relatively constant. Determinations of the free acid alone seem sufficient for clinical purposes. Repeated chemical analyses from time to time afford data of prognostic value.

Esophageal Catheterization.—Guisez (*Presse médicale*, July 7, 1919) states that in view of the precise methods of esophageal exploration now available, viz., esophagoscopy and radiascopy, the field of use of the simple esophageal sound is now somewhat restricted. Rigid sounds should no longer be used able. Certain definite precautions should be taken in using it. Under such conditions its employment is absolutely harmless and will yield information as precise as that afforded by radiascopy as to the at all. Only the soft, olive tipped bougie is service-seat of stenosis. It will even supply presumptive information as to the nature of the obstruction, inflammatory stenoses occurring at the upper and cardiac ends of the esophagus, while stenoses in the intermediate portions are almost certainly due to cancer. From the standpoint of treatment, sounds are of greatest service in inflammatory stenoses following severe spasm of the mouth of the esophagus and especially the cardia and in traumatic cicatricial stenosis. In all instances, however, an exact diagnosis of the lesions should already have been established by endoscopy. Introduction of a fitiform bougie under endoscopic control, and permitting it to remain for at least twenty-four hours, constitute the key to the treatment of these stenoses. Thanks to this procedure, the clinician no longer has to contend with any undilatable or impassable stenoses, and the more complicated procedure of retrograde sounding after opening of the stomach is no longer at any time necessary.

The Occurrence of Gastric Mucosa in a Case of Meckel's Diverticulum Producing Intestinal Obstruction.—Emil Goetsch (*Bulletin of the Johns Hopkins Hospital*, Baltimore, Md.) reports the case of a man nineteen years old who preoperatively presented symptoms indicating either an acute appendicitis or a partial intestinal obstruction. Six years before he had been operated upon for so-called stomach abscess. On operation the small intestine was found strangulated over a thick fleshy cord consisting of Meckel's diverticulum and some adherent omentum which fastened the former to a point on the anterior abdominal wall just below the umbilicus. Appendectomy and excision of Meckel's diverticulum with the adherent omentum were performed, the patient recovering promptly. On examining the open diverticulum in its distal third or fourth there was an area of thickened, irregular, granular, dark red mucosa which was sharply demarcated from the proximal, pale, finer mucosa, which in turn was intestinal in character. Microscopical study of the distal segment showed mucosa resembling in every way that of the region of the gastric fundus, show-

ing the characteristic zymogen granules of the chief cells and the eosinophilic granules of the parietal cells as characteristic in the glands of the stomach. A very complete review of the literature is made, and cases are described in which gastric mucosa has occurred at the umbilicus in the forms of polyps or fistulae. Of the hypotheses which have been advanced to explain the occurrence of this aberrant glandular tissue, the following is considered by Goetsch to be the best: "The original endodermal lining of the intestinal tube and omphalomesenteric duct possesses potentialities of development into any of the glandular structures of the adult intestinal tract or of its accessory glands, and under the influence of certain circumstances, which we do not understand, groups of cells may retain one or the other potentiality and develop into a glandular tissue very different from the surrounding glandular tissues and resembling the adult organ, such as stomach or pancreas, which may be far removed."

Case of Gastric Syphilis.—Galliard and E. Mendelssohn (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, May 22, 1919) report the case of a man aged fifty-five years who had contracted syphilis at the age of twenty-two. He began to complain of gastric pain at varying intervals after meals, with profuse diarrhea. The Wassermann test was repeatedly negative, and there were no tabetic symptoms. There was no hematemesis, melena, nor palpable tumor. X ray examination showed the stomach free of adhesions but almost bilocular in shape, apparently through fibrous tissue contraction. Under eighteen intramuscular injections of 0.01 to 0.02 gram of mercury benzoate administered in the course of four weeks the bilocular appearance completely passed off, and with it the gastric symptoms and diarrhea. A series of intravenous injections of mercury cyanide was subsequently given in order to prevent recurrence.

Encephalitis Lethargica.—C. M. Stafford (*Journal of Laboratory and Clinical Medicine*, August, 1919) reports a case of encephalitis lethargica in a man complaining of great languor and pains in the arms and chest. Laboratory examinations of blood and urine were negative, but the interest in the case lies in the fact that a gram positive diplococcus frequently occurring in short chains of three or four loosely joined cocci was isolated in pure culture from the spinal fluid on two successive withdrawals. Three spinal punctures were made, following each of which the patient's condition was temporarily improved.

The Correlation of Xray Findings and Physical Signs in the Chest in Uncomplicated Epidemic Influenza.—Arthur L. Bloomfield and Charles A. Walters (*Bulletin of the Johns Hopkins Hospital*, August, 1919) found that a series of x ray pictures made in sixteen cases of uncomplicated epidemic influenza during the febrile and postfebrile stages showed no changes in the lungs, which confirms the clinical impression that bronchopneumonia is a complication and not an essential feature of the disease.

Changes in Skin Sensitiveness to Tuberculin During Epidemic Influence.—Arthur L. Bloomfield and John G. Mater (*Bulletin of the Johns Hopkins Hospital*, August, 1919) studied the cutaneous tuberculin re-

action in nineteen cases of epidemic influenza. One patient gave a positive reaction during the febrile stage, and seventeen patients, or 89.4 per cent., showed a positive reaction during convalescence. It is interesting to note that this reaction occurs in epidemic influenza as well as in measles, and to hope for further studies of the changes in skin sensitiveness in other acute febrile diseases.

Primary Spontaneous Tumors of the Testicle and Seminal Vesicles in Mice and other Animals.—Maud Syle, Harriet F. Holmes, and H. Gideon Wells (*Journal of Cancer Research*, July, report two cases of primary tumor of the testicle in dogs because of the rarity of such conditions in the literature. In 19,000 mice, about half of which were males, and all of which died natural deaths and were autopsied, twenty-eight cases of primary tumor of the testicle were found. With one exception all the tumors occurred in the members of a single strain and its hybrid derivatives, which would corroborate the view that heredity influences the incidence of tumor development in different organs or tissues. Four of the tumors apparently resulted from trauma. Metastases were not observed, nor were any cases of teratoma seen.

Blood Staining of the Cornea.—Charles Maghy (*American Journal of Ophthalmology*, September, 1919) presents the following conclusions from the study of four cases:— 1. The highly refractile bodies seen in the corneal stroma in cases of blood staining of the cornea are pigment granules transformed from hemoglobin. 2. Hemoglobin gains access to the cornea through Descemet's membrane. 3. The discoloration is due principally to the pigment granules, although blood corpuscles may be associated; the degree of discoloration varies according to whether hemosiderin or other hemoglobin derivatives are present. 4. The staining never affects the extreme periphery on account of the efficient lymph circulation at the limbus, nor do we find pigment granules in this area. 5. The presence of an iron reaction seems to depend on the vascularization of the tissue.

Cancer in Hainan, China.—Nathaniel Bereovitz (*Journal of Cancer Research*, July, 1919) presents a preliminary statistical study of 131 operations with special reference to age incidence, anatomical distribution, and etiology. The proportion of cancer cases occurring in the early decades of life is unusually high, 50.3 per cent. of the patients being under forty years of age. Over twenty per cent. of the cases were carcinoma of the penis, and 22.1 per cent. were cancer of the skin. As a possible explanation of the high incidence of the latter it is suggested that the ulcers of the arms and legs, so common in China, are treated by the crude native methods of applying plasters of mud, leaves, etc., so that they eat deeply into the flesh, and may degenerate into malignant growths. The rays of the sun may also be a contributing factor. Cancer of the glands of the neck comes next in frequency in the series. Cancer of the stomach and uterus are infrequent; possibly they occur, but because of the Chinese woman's prejudice against male physicians, they are not often seen.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-Second Annual Meeting, Held at Cincinnati,
Ohio, September 15, 16 and 17, 1919.*

The President, DR. JOHN F. ERDMANN, of New York,
in the chair.

(Continued from page 692.)

Prenatal Care.—DR. SYLVESTER J. GOODMAN, of Columbus, Ohio, stated that prenatal care included the care of women who expected to conceive. The average obstetrician thought it more important to know the technic of applying forceps and of making Cæsarean sections than of prenatal care. Pregnant women too often received unsatisfactory information. Books or monographs on care during pregnancy were not advisable. There was no dogmatic diet for pregnant women and a diet to keep the baby small and its bones elastic was folly. Dancing was harmful. Gentle exercise and pleasant occupation should be encouraged. Harmless drugs might become potent oxytocics during pregnancy. The best remedy for vomiting was three months' time. Headache and abnormality of vision demanded attention. The urine must be examined at regular intervals. Blood pressure readings and blood counts had their place. The bowels should move daily and the stool be kept soft. Drastic purgation was harmful. The pregnant woman needed plenty of fresh air. Dress should be light, suited to the weather, and suspended from the shoulders, or lightly from the hips. The care of the breasts was important. The vaginal douche had its place. The capacity and shape of the pelvis should be known. Cæsareanized women needed hospital care. Attention should also be given to the teeth, luetic and skin diseases, varicose veins, the heart and lungs, mental and nervous diseases, rheumatism and rheumatoid conditions. Pregnancy was no contraindication to surgical treatment of goitre.

The Care of the Bowels During the Puerperal Period.—DR. ROSS McPHERSON, of New York, stated that taking the total number of cases into account there were 900 who were given routine catharsis and 911 in whom no catharsis was administered. In the 900 who had catharsis, there were eighty-four in whom at some time or other in their convalescence a temperature of 100.4° developed twice during twenty-four hours in their puerperium. Of the 911 to whom no catharsis was administered, there were fifty-three patients in whom the same temperature developed at the same time or 5.8 per cent. In other words, in approximately 1000 cases of each type, the febrile morbidity was about one-half as much in those receiving no stimulation to the bowels as those who did. In addition to this if one considered the lessened danger of infection caused by the spreading about the mother's soft parts of loose diarrhetic movements and the enormous amount of labor saved for the nurses as well as the comfort of

the patient, the necessity was realized for active thought on the part of the obstetrician for every move that he made, every drug that he prescribed, and for less habit and more individualization. The writer was far from believing that there was never any necessity for administering a cathartic in the puerperium, but quite the contrary. What he wished to emphasize was the danger and uselessness of routine drugging and the assigning of certain effects to conditions which had not been shown to be the cause of the symptoms exhibited. Since trying in the hospital the above outlined treatment, he had adopted it in private practice where the results had been equally satisfactory.

A Method of Placing Sutures in Immediate Repair of the Perineum.—DR. WILLIAM D. PORTER, of Cincinnati, Ohio, said that in simple longitudinal tears the usual method was to place the sutures transversely. Place the sutures longitudinally as follows. The torn surfaces being well separated, the needle was carried through the mucous membrane half an inch to the left of the apex of the torn surface, then carried longitudinally under the torn surface, keeping half an inch to the left of the gutter of the tear, the needle was brought out through the skin half an inch to the left of the deepest point in the skin tear. The needle was next removed and placed on the other end of the suture, which was then carried down in a similar manner half an inch to the right of the gutter. The next stitch was placed parallel to the first, and half an inch to the outside. In a complete tear, the first stitch was carried through the skin near the mucocutaneous junction in such a manner as to transfix the end of the torn and retracted sphincter muscle; then under the torn surface parallel with and near to the edge of the torn rectal mucous membrane up to the apex of the tear in the septum, and transversely through the septum and down on the other side until the other end of the torn circular muscle was transfixed and the needle brought out to correspond to the point of entrance. Succeeding sutures were placed parallel to the first.

Fundamental Repair of Partial and Complete Lacerations of the Perineum.—DR. ALBERT GOLDSPOHN, of Chicago, Ill., stated that mistaken conception about the anatomy of the female perineum had caused errors in technic of operations for lacerations and that these mistakes had not yet been wholly eliminated. The profession was now pretty well agreed that the formerly standard operations of Hegar, Martin, Emmett, and others, and their many modifications were merely vaginal resections of variable depth and extent, without restoration or improvement of real bearing structures beneath them. That a reunion of the bilaterally descending portions of the levator an with its fasciæ, near the median line, between the rectum and the vagina, was the chief desideratum, was generally admitted and striven for; but there was still much difference of opinion about the exact location and accessibility

of the levator ani, and the more superficial structures were often mistaken for it. Because of its laterally recceded position normally within the pelvis beyond the narrower introitus, the levator would not step out toward the median line into plain view within the lumen of the wound in any dissection; and that all who represented it thus in their illustrations were clearly mistaking for it the urogenital diaphragm (triangular ligament) which would present itself in such a manner. The anatomy of the female perineum was best studied as composed of three strata, the component parts of each of which were illustrated by exact drawings made of sections and dissections of specially prepared female pelvis that were made by Edward Martin and by Liepmann, under the supervision of Waldeyer.

All pursestring or figure of eight sutures that engaged the levator structures and also some structures in the outer portion of the wound or the skin, were wrong in principle and poor in effort. Efficient union of the most important parts (levator and urogenital diaphragm) could only be secured by direct apposition without any intervening tissues, by means of direct and transversely placed buried sutures. The technic of operations for both complete and incomplete lacerations of the perineum were described and illustrated.

Median Episiotomy in Primiparous Labors.—DR. JAMES A. HARRAR, of New York, said that median episiotomy was a simple operation of valuable assistance in preventing relaxation of the pelvic floor after labor, in shortening the second stage of labor, and in reducing the number of low forceps operations. It was better than the lateral incision, as it separated chiefly muscles in the raphe rather than in their continuity. Median episiotomy wounds healed better than lateral ones or spontaneous lacerations.

President's Address: Incidence of Malignancy in Gall-Bladder Disease.—DR. JOHN F. ERDMANN, of New York, said that he began with the first half of this year and recorded nine carcinomatous gallbladders in sixty-eight operations upon the gallbladder in an operative list of 502 patients. The second half of the year 1918 presented three malignancies in a series of sixty-three operations on the gallbladder in an operating total of 491 patients. The first half of 1918 presented but two malignancies of this viscus in forty-seven operations out of a series of 474 major operations. The last half of 1917 gave but one malignancy in forty-seven gallbladder operations out of a general operative list of 506. These figures and statements showed in the main the remarkable occurrence of malignancies in the early months of this year and went to prove his contention that the first portion of this year must be considered but a coincidence in malignancies.

The following summary of these cases for the past two years was given, as Doctor Erdmann believed that this period of time would be ample for a relatively satisfactory conclusion on the part of an individual operator:

June 15, 1917, to June 15, 1919, total number of

patients operated upon, 1903; operated upon for cholecystitis, 224; malignancies found in the gallbladder, fifteen; making a percentage of 6.7 of all gallbladder operated cases and 0.8 per cent. gallbladder malignancies found in his entire operative work during these twenty-four months. Doctor Erdmann wished to emphasize the fact that there were a number (thirteen) of operative cases of general abdominal carcinomatosis, in which the primary focus could not be positively demonstrated, but in the majority of these the point of greatest involvement was in the neighborhood of the gallbladder. The stomach and immediate structures were positively not the source of origin.

In the 1903 patients operated upon malignancies of all kinds, excluding the lip epitheliomata, were found 285 times. Recalling that fifteen of the 285 malignancies were of the gallbladder, the occurrence of gallbladder malignancies to the total number of malignancies was about six per cent. The malignancies positively specified in the collection were: gallbladder, fifteen; stomach, forty-three; breast, sixty-six; cecum, twelve; colon and sigmoid, twenty-eight; rectum and rectosigmoid, twenty-nine; not specifically classified, seventy-nine. This number, seventy-nine, included uterus, kidney, larynx, tongue, liver and thyroid. In all of the patients with carcinoma of the gallbladder recorded in this communication, stones were found in the gallbladder. It would seem, therefore, that the presence of gallstones or biliary sand was a provocative factor in the production of malignancy. Such being a fact, or even a hypothesis, the early elimination of such agents was advisable.

The operative treatment of this disease demanded rather weighty consideration. Doctor Erdmann had found personally that surgical interference with the gallbladder, unless a complete cholecystectomy could be done, was prone to be followed by a rapid death. By operative interference he wished to convey the idea of removing the stones since it was believed erroneously that they were the entire source of pain, or doing an ostomy or ectomy, if the growth began to be or was established in the cystic fissure or any suspicious metastases were in surrounding viscera. A satisfactory ectomy could be done in certain fundus and body of the gallbladder involvements. These cases were found accidentally, as a rule, in operations for cholecystitis. A close review of the statistics herewith presented would justify the advice that an established diagnosis of cholecystitis predicated the possibility of the occurrence of cancer almost double that of the possibility of mortality in case of operation.

Inversion of the Uterus.—DR. H. WELLINGTON YATES, of Detroit, Mich., stated that there were three varieties of inversion of the uterus according to the degree of displacement. First, consisting in a simple dipping in or a cupping of the fundus; second, where the fundus descended below the os uteris, and third, consisting in a complete descensus through the os and vagina with the whole fundus visible outside the vulva. This latter condition might be so exaggerated that the vagina was partly inverted and the uterus dragging down the tubes and

ovaries, making a complete uterine inversion with prolapse. Two or three factors were necessary for the production of this phenomena—pressure from above, traction from below, together with a localized atony or thinness of the uterine walls. Some of the exciting causes were the implantation of the placenta at the fundus, submucous fibroids which had become pedunculated during pregnancy, and manual extraction of the placenta.

Exceptional instances of spontaneous inversion had occurred as a result of intraabdominal pressure. Other causes were the mother giving birth while in a standing position; a short umbilical cord or the cord twisted about the child's neck or body; hard coughing, sneezing, etc., at the end of long wearisome labors. The two most important causes recorded in the order of their frequently, had purposely been placed last in this series: 1, Too early adoption of the Crede method together with its improper use; 2, traction upon the cord as a means for the detachment of the placenta or a combination of the two—traction from below and compression from above simultaneously. The greater majority of inversions were due to faulty technic.

As regards prophylaxis, it could not be too strongly emphasized, first, that the cord should not be dragged down; second, that Crede's method should not be injudiciously employed; third, that in no instance should the fundus uteri be so pressed down that indentation was made upon it; fourth, that Crede's method should not be employed except when the uterus was in contraction, this in Doctor Erdmann's opinion being highly important; fifth, the obstetrician should remain with the patient until a firm uterine retraction had been established. The more recent the inversion, the more surely and safely it could be reduced.

Caesarean Section: Its Indications and Technic.—DR. ARTHUR J. SKEEL, of Cleveland, Ohio, stated that in forty-eight of the cases the patients were operated upon in his home hospital where he could control the technic. Five of them were in other hospitals where the technic was not amenable to his direction. There were no deaths and no infected incisions among the forty-eight patients operated upon in his own operating room. There was one maternal death and one sloughing wound among the five patients operated upon outside. Whether the difference was due to operating room technic was of course impossible to say. There could be no doubt, however, that in many small hospitals, without a well organized surgical staff, the technic was so poor that one must question the physician's right to subject his patient to this uncertain factor. His preference was to operate after labor had started. The cervical dilatation thus secured permitted freer drainage, less operative pain, less vigorous uterine contraction, with less movement in the uterine wound. The abdomen was shaved, scrubbed with green soap and sterile water, dried, then scrubbed with ninety-five per cent. alcohol, with Harrington's solution, and again with alcohol. The incision had been either high or medium. In the later cases midline incision, with the navel at its middle, had been used. He did not know of any good surgical reason why the navel should constitute a landmark below which the incision should not extend. The umbilicus was

usually excised to secure a more favorable suture line.

The true extraperitoneal operation might have some advantages, but from the literature and the few cases the writer had seen, there was so much chance of tearing the peritoneum that it seemed to offer little certainty of not entering the cavity. The low transperitoneal operation, so much lauded as protecting the peritoneal cavity by suturing, was a true intraperitoneal operation so far as postoperative peritonitis was concerned.

Peritonitis following Casarean section was acknowledged to be wound infection. At postmortem and on opening for drainage the infection could be distinctly traced from the interior of the uterine cavity through the incision and along the suture lines. Careful stitching of the abdominal to the uterine peritoneum, overlapping of the layers of peritoneum, making the abdominal incision and the uterine incision at right angles to each other, all left the same condition when the operation was completed.

When a patient had had one section for disproportion, the writer believed that the abdominal route should be chosen for the next delivery. If the first section was for any cause except disproportion, the patient should be in the hospital with competent supervision and the method of delivery selected as circumstances might indicate. The repeated section was by no means so simple an operation as the first one. Adhesions were the rule. In the six cases of this series adhesions were numerous in five and absent in only one. The densest adhesions of omentum and gut were invariably at the upper end of the scar. The incision for the second operation was best made lower down than the first and lateral to it, going through the peritoneum first at the lower angle. In this manner one usually entered the free peritoneal cavity at once and could deal with adhesions advantageously. It has been the writer's practice to free the uterus thoroughly, but to leave the adhesions to the abdominal wall alone, if they presented no special reason for interference. In five of these six cases the uterine scar was firm and discernible with difficulty. Often it could be recognized only during a contraction.

Two Early Cases of Adenomyoma.—DR. OTTO H. SCHWARZ, of St. Louis, Missouri, stated that the first case was an adenomyoma arising in the rectovaginal septum; the other a case of adenomyoma of the ovary. The tumor of the rectovaginal septum was of particular importance because it represented a new growth in its earliest stage and it brought up the possibility of recognizing this type of tumor clinically at this early period. The adenomyoma of the ovary was a most unusual tumor, as only a few well described cases had been reported in the literature. These tumors had been thoroughly studied by Lockyer, of England, and Cullen, of this country. After a thorough search of the literature Lockyer found forty-seven cases reported in which were included four of Cullen's cases. Adenomyomata of the rectovaginal septum usually started just behind the cervix and on bimanual examination one could feel in this region a small, somewhat movable nodule scarcely over a centimetre in diameter.

Protective Changes in the Oviduct.—DR. JAMES E. DAVIS, of Detroit, Mich., stated that the proximal ostium was a short transition from the uterus to the tubal structure. Its very efficient long valve, constructed of strong muscle fibres and primary folds, was an interesting contrast with the ostium abdominale. It was a mistake to believe that this ostium was a valve consisting of a few narrow muscle fibres. Transections of the uterine cornu and first portions of the tube proved the extent of this ostium.

The outward, backward, downward, and inward position of the tube, as found in the great majority of pathological processes, if not associated with tubal pregnancy, was signally beneficial for protection. The first essential of tissue repair, rest, was obtained by splinting against the ovary and uterus. The abdominal ostium in this manner became intimately adherent to a peritoneal surface. This position facilitated a decreased blood supply and atrophic changes. Thirty representative cases, illustrating twenty-three types, were reported and intensively studied to portray the correlation of morphological and histological tubal changes.

The Treatment of Vaginal Discharge.—DR. GEORGE F. CHANDLER, of Kingston, N. Y., advocated the principle of treating ordinary discharges of the vagina by a so-called dry method. Six treatments were given. The first three treatments consisted of swabbing the cervical canal with pure carbolic acid and painting the entire vaginal mucous membrane with a weak solution of iodine, after which the vagina was packed with dry sterile gauze in sufficient quantities to straighten out all the folds. The last three treatments consisted of the application of a powder made of equal parts of stearate of zinc, starch, and boric acid, and packing the vagina with sterile gauze. The advantages alleged were that this treatment cured more quickly than any other method.

(To be concluded)

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Electricity in Medicine A Practical Exposition of the Methods and Use of Electricity in the Treatment of Disease, Comprising Electrophysics, Apparatus, Electrophysiology and Electropathology, Electrodiagnosis and Electropagnosis, General Electrotherapeutics, and Special Electrotherapeutics. By GEORGE W. JACOBY, M. D., Former President of the New York Neurological Society and of the American Neurological Association; Consulting Neurologist to the Lenox Hill Hospital, etc., and J. RALPH JACOBY, A. B., M. D., Fellow of the New York Academy of Medicine, Member of the American Medical and the American Medico-Psychological Associations, Chief of Clinic Neurological Department, Lenox Hill Hospital, etc. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1919. Pp. xxii-612.

This book is given over to the use of electricity in medicine and includes electrophysics, a description of appliances used, electrophysiology, electropathology, and electrodiagnosis. The book

was first written in 1901 for the *System of Physiological Therapeutics* edited by SOLOMON SOLIS-COHEN. Since that time the book has been rewritten to include the many changes and innovations which have since been introduced. The entire subject is thoroughly covered so as to enable the general practitioner who does not have an opportunity to make use of the various methods described, to realize the value of these measures so that he may make use of them in certain cases which are not amenable to other forms of treatment, or to realize the advantages which they have over ordinary medicinal therapeutics. Physiotherapy, and especially electrotherapeutics, has played an important rôle in the treatment of the wounded and diseased during the war and the interest that is shown by the medical men in rational electrotherapeutic methods should insure a wide circulation for the book.

Births, Marriages, and Deaths

Married.

DOLAN-GOOD.—In Cambridge, Mass., on Wednesday, October 8th, Dr. William Francis Dolan and Miss Ellen Eugenia Good.

Died.

ALLEN.—In Rensselaer, N. Y., on Sunday, October 4th, Dr. Charles Sanford Allen, aged ninety-five years.

DELONG.—In Brooklyn, N. Y., on Friday, October 3rd, Dr. William A. DeLong, aged seventy-nine years.

DINNAN.—In Meriden, Conn., on Saturday, October 4th, Dr. James Bernard Dinan, aged thirty-eight years.

FAULKNER.—In Cincinnati, O., on Sunday, October 5th, Dr. Charles M. Faulkner, aged fifty-seven years.

FOX.—In York Harbor, Me., on Wednesday, October 8th, Dr. Charles W. Fox, aged seventy-six years.

GASS.—In Knoxville, Tenn., on Thursday, October 16th, Dr. John M. Gass, aged eighty-three years.

GRABER.—In Royersford, Pa., on Monday, October 5th, Dr. James Donat Graber, aged thirty-nine years.

HEARST.—In Philadelphia, Pa., on Saturday, October 4th, Dr. John Alexander Hearst, aged forty-eight years.

HICKS.—In Bethel, Conn., on Thursday, September 18th, Dr. Samuel D. Hicks.

HOCH.—In San Francisco, Cal., on Thursday, September 25th, Dr. August Hoch, aged fifty-one years.

HOCKENBERRY.—In West Sunbury, Pa., on Wednesday, October 8th, Dr. Harvey D. Hockenberry, aged sixty-nine years.

KLEMM.—In Milwaukee, Wis., on Tuesday, October 7th, Dr. Louis F. Klemm, aged forty-nine years.

KNOX.—In Memphis, Tenn., on Tuesday, October 7th, Dr. Robert L. Knox, aged eighty-three years.

PARKER.—In Philadelphia, Pa., on Sunday, October 5th, Dr. George W. Parker, aged eighty years.

PENDERGRASS.—In Clovis, Cal., on Monday, September 29th, Dr. William C. Pendergrass, aged fifty-six years.

PICKEREL.—In Watertown, N. Y., on Tuesday, September 23d, Dr. Ivan Pickerel, of Benson Mines, aged fifty years.

SIEBERT.—In Easton, Pa., on Tuesday, October 7th, Dr. William Adam Siebert, aged sixty-one years.

SMITH.—In Buffalo, N. Y., on Saturday, October 4th, Dr. Lewis G. Smith, aged sixty-two years.

STATES.—In New York, N. Y., on Monday, October 6th, Dr. William Gaynor States, aged fifty-eight years.

WAKEFIELD.—In Manchester, N. H., on Saturday, October 4th, Dr. George L. Wakefield, aged seventy-two years.

WOLFE.—In Port Carbon, Pa., on Thursday, October 9th, Dr. Robert M. Wolfe, aged forty-five years.

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SIGNIFICANCE OF ARRHYTHMIA IN THE INFECTIONS OF CHILDHOOD.*

With Special Reference to Diphtheria.

BY CLIFFORD B. FARR, M. D.,

Philadelphia.

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I received my first ideas of heart diseases, in common with the majority of my colleagues, at the beginning of the present century, when the attention of the medical profession was rivetted upon the physical signs and symptoms of loss of compensation. It is true that we had the sphygmograph, but already it had been relegated to the background as it seemed to furnish no important clinical data. In the succeeding years I gradually became cognizant of the views of the cardiac mechanism championed by James Mackenzie, Wenckebach, Einthoven and Thomas Lewis. The problem however was not presented to me in an acute form until I was confronted in my service at the Municipal Hospital by hundreds of cases of diphtheria and saw children constantly dying from cardiac failure,¹ with few if any of the manifestations of ordinary valvular heart disease, but presenting variations in the frequency and rhythm of the pulse (bradycardia, irregularity) the significance of which was not entirely clear to me nor easily translatable into present day terms. What was the prognostic meaning of these pulse changes? Bound by tradition, were we not attaching too much significance to simple irregularities and overlooking others of grave import? In other words, I began to wonder with Henry Adams, "whether the education he had received bore any relation to the education he needed." This is my excuse for gathering the scanty information of a positive nature to be found in the literature and trying to determine what light it may throw on the diagnosis and prognosis of the circulatory complications of diphtheria and by analogy on the diagnosis and prognosis of similar complications in other infections of childhood.

While the great clinicians of the nineteenth century (e. g., Laennec, Flint, and Broadbent) per-

fecting the diagnosis of valvular lesions and attained considerable proficiency in prognosis those of the present day (e. g., Krehl, Vaquez, Mackenzie) have endeavored to discover the functional state of the cardiac muscle (upon which prognosis in heart disease largely depends) by the correlation of symptoms and signs with graphic methods of studying the rhythm of the heart. In passing it may be observed that these points of view are complimentary; there is no reason why clinicians of the newer school should disparage the work of their predecessors as some of them are inclined to do. The modern conception of the arrhythmias is based upon physiological and anatomical investigations (Gaskell, His, Tawara), but these need not detain us nor can we give more than a cursory idea of the principles involved. For a fuller exposition of the subject the reader is referred to the clinical monograph of Lewis, which is a model of clearness and conciseness and withal readable. The rhythm of the heart—in accordance with the myogenic theory—is primarily dependent upon fundamental qualities of the heart muscle itself and particularly on certain specialized conducting bands of primitive muscle. The extrinsic nervous mechanisms—the sympathetic and the autonomic (vagus)—exercise a modifying but essentially secondary rôle. Thus the vagus may slow the heart by its action on the "pacemaker" (mentioned below) but does not alter the fundamental rhythm. The muscular conduction system begins in the sinoauricular node or pacemaker (Lewis) at the origin of the superior vena cava and passes downwards in the intraventricular septum (bundle of His) and gives off a branch to each ventricle. Impulses normally originate in the node at regular intervals and pass downward through the bundle of His to the ventricles. The orderly sequence of the resulting contractions as they pass from auricle to ventricle is revealed by comparing the time relations of the pulsations in the veins of the neck (due to the contraction of the auricle) with those at the apex or in the peripheral arteries (due to the contracting of the ventricles). Under certain conditions impulses may originate elsewhere (ectopic); in the auricle, in the ventricle or midway between (nodal).

Mackenzie, at the time a busy general practitioner, was able to demonstrate these fundamental time relations by means of a relatively simple clinical instrument, the polygraph, which records simultaneous tracings from the jugular vein, heart, ar-

* Read before the Section in Pediatrics of the Medical Society of the State of Pennsylvania, Harrisburg, September 25, 1919.

1. Between February 1 and July 31, 1919, 1291 cases of diphtheria were admitted to the hospital (twenty-four hour cases not included). There were 126 deaths, a mortality of ten per cent. In the laryngeal cases bronchopneumonia was the principal cause of death; in the pharyngeal and tonsillar cases, cardiac failure (toxemia was responsible for approximately three fourths of the deaths).

tery, etc. Einthoven, by means of his electrocardiograph (for string galvanometer) enormously facilitated the accurate study of the cardiac mechanism.* While these instrumental means have aided in the elucidation and classification of the irregularities of the pulse and heart the findings would be of little value to the practitioner if he were entirely dependent upon instrumental observations. Fortunately, as Lewis points out, clinical observation guided by the results of investigation is sufficient to identify most of the important types of irregularity. This is of great importance because, according to Mackenzie, the general practitioner is the only person whose opinion can be of any value in prognosis since he alone can follow individual patients sufficiently long and closely to determine the course and ultimate termination of their cardiac lesions.

It does not fall within the province of this paper to discuss in detail the classification and methods of recognition of the arrhythmias of childhood, though this is essential to a full understanding of the subject. For this the reader is referred to the monograph of Lewis mentioned above, the textbooks of Mackenzie and Sutherland, the lectures of Vaquez, or the articles of Hecht, Krumbhaar and Jenko. It will suffice to enumerate the important forms of arrhythmia and discuss briefly their incidence in childhood.

The principal forms of arrhythmia according to Lewis are as follows: Sinus irregularities, heart-block, premature contractions, simple paroxysmal tachycardia, auricular flutter, auricular fibrillation, and alternation of the pulse. Only the first three types mentioned have been repeatedly encountered in diphtheria.

Sinus (physiological) arrhythmia is a condition in which the whole heart is involved, as the impulse, while modified at its point of origin (sinoauricular node of auricle) is transmitted normally. The pulsations in the veins of the neck, over the heart, and in the peripheral arteries all occur in proper sequence. In susceptible persons the pacemaker or node may be unduly influenced by increased tone of the vagus (autonomic) or conversely by diminished tone of the sympathetic (Hecht). Children are slow in developing automatic heart control, just as they are slow in developing control of the temper and bladder (James). In later life a similar nervous irritability is found in neurasthenics and convalescents. In the vast majority of cases of sinus arrhythmia the irregularity is associated with the respiration. The pulse increases in frequency and lessens in amplitude during inspiration and slows down and increases in amplitude with expiration. Sometimes the retardation is so marked as to suggest an intermission.

This relation to respiration is explained by the common distribution of the vagus to heart and lungs. The simple or sinus types of bradycardia and tachycardia may also be identified by the respiratory rhythm that develops on deep breathing. Pulsus paradoxus, in which there is inspiratory arrest of the pulse, is the reverse of the sinus type and

pathologically is usually caused by pericardial adhesions. Sinus or respiratory arrhythmia is by far the most common arrhythmia in children, even after the slighter forms have been excluded. If other means fail this arrhythmia may be distinguished by the atropine test (one to two milligrams) which paralyzes the vagus and restores the regular rhythm.

In children sinus arrhythmia has no pathological significance, certainly not as regards the heart. Thus Mackenzie says that the "presence of the youthful type of irregularity after a febrile illness may be taken as an indication that the heart has escaped infection." Vaquez also warns us not to consider it as evidence of the existence of myocarditis, particularly after diphtheria. Sutherland points out that even in meningitis and brain abscess, this type of arrhythmia is not an evidence of cardiac trouble, but of associated disturbances (central) of the respiratory rhythm. Finally, Hecht in a careful study of forty-two cases of diphtheria by the electrocardiograph found well marked sinus arrhythmia in six—practically the same proportion found in healthy children. These were mostly mild cases, with one exception, in which sudden death occurred as the result of dilatation. He considered this a symptom of no value in the diagnosis of post-diphtheretic heart weakness, but says we are not in a position to exclude involvement of the vagus. Most of the irregularities that I have personally observed in diphtheria convalescents have borne a close relation to respiration and were doubtless of this type. Hence I have been inclined to discount their importance and leave them out of the question in estimating the gravity of the myocardial lesion when such was suspected.

Extrasystolic arrhythmia (premature contraction) is the most common type of irregularity in adults and in them seems to have very little pathological significance. In children it is less usual, yet takes the second place in frequency. This type of arrhythmia is characterized by the occurrence of premature beats, each of which follows a regular systole at an interval shorter than the normal and is succeeded by a long compensatory pause, the next regular beat failing to occur on account of the refractory state of the cardiac muscle at the time. Depending on the force of the beat there are one or two sounds over the heart; at the radial the extra beat may be weak or absent. If the beats occur regularly the pulse is bigeminal but all sorts of combinations occur which may be so complex as to suggest total arrhythmia. Premature beats may originate in the auricle, ventricle, or at an intermediate point (nodal). This can be determined by the electrocardiogram. In children they are almost always auricular (James). Ventricular extrasystoles are seen occasionally in children as the result of digitalis (Halsey). Auricular extrasystoles have been reported in diphtheria by Hecht and Hume; also in association with heart block by Rohmer, Aviragnet and others. Death occurred in Hume's case, but there were no lesions in the heart to suggest that it had any relation to the arrhythmia observed. Aviragnet thinks that slight myocardial lesions may cause irritation and provoke extrasys-

* Variations in the form of the waves in the electrocardiogram, while significant, cannot be correlated with clinical signs, and hence are ignored in the present summary.

toles. While this form of arrhythmia is not distinctly pathological in children it is perhaps suggestive of cardiac involvement and pending further information should be regarded with suspicion. Lewis states that "premature contractions are not an uncommon accompaniment of infectious disease; thus in scarlet fever and diphtheria they may cause irregularity of the child's pulse."

The most important pathological disturbance of the heart beat in children with diphtheria is heart block. It should always be suspected if the pulse becomes very slow (30 or 40) and particularly if the fall in rate is abrupt. It may be present, however, with a pulse of 60 or over. On the other hand, a pulse below 60 in childhood may be simply a sinus bradycardia (influenced by respiration). Partial heart block may be simulated by other arrhythmias. Heart block or dissociation of auricles and ventricles may frequently be diagnosed by careful observation of vein, pulse, heart sounds, and symptoms but frequently requires a polygram or electrocardiogram for positive identification. In heart block there may be either, 1, delay in the transmission of impulses from the sinoauricular node through the bundle of His to the ventricles; 2, partial block in which one impulse in two, three, etc., fails to pass; 3, total heart block in which no impulses pass and the auricles and ventricles pursue their own rhythm independently of each other. The establishment of an independent rhythm of the ventricles requires an appreciable time and during the momentary suspension of circulation unconsciousness and convulsions, due to anemia of the brain, may develop. Such attacks may occur at frequent intervals. In chronic heart block of adults lesions of the bundle of His are the rule, though not invariable. In the heart block of diphtheria they may be absent or at least not demonstrable, the lesion being assumed to be functional or toxic. I have found records of eight cases of heart block in diphtheria, i. e., in children, demonstrated by instrumental means and of several others identified by clinical observation. In addition autopsy records showing involvement of the bundle of His but without definite clinical data have been published. (Monckeberg, e. g., quoted by Rohmer and Hecht). This type of arrhythmia is of serious import (death in six out of seven cases in which full data are available). It probably corresponds with the ominous sudden onset of bradycardia long ago pointed out by Frank and Naumyn (quoted by Hecht). It should be distinguished from false or sinus bradycardia.

In many cases, as already described, there are compound arrhythmias—heart block combined with sinus arrhythmia, with extra systoles or with fibrillation. Bradycardia and tachycardia may be due to multiple causes as indicated above. Bradycardia is more common in diphtheria than in other infections though sometimes observed, in meningitis in the convalescence from typhoid, etc. If extreme, below 40, it is usually due to partial or complete heart block; if moderate, below 60, it may represent a vagus effect. In the case of heart block, failing definite lesions, there is probably a functional interference with the conduction fibres, in the sinus

type the myocardium is probably not a factor, rather an increased irritability of the vagus or a depression of the sympathetic may be assumed. Rapid heart is also common in diphtheria. Ordinarily it is attributable to toxic or other effects on the controlling nervous mechanism; in occasional and rare instances, as noted above, to paroxysmal tachycardia or auricular flutter. Gallop rhythm, so often noted in toxic cases, is an auscultatory finding, dependent on a third cardiac sound, presystolic or protodiastolic. It has no necessary relation to the true arrhythmias.

In a study of irregularities a distinction must always be maintained between mere pulse observations to which many old names refer and observations based on a study of the heartbeat, venous pulse and arterial pulse. Thus an apparently intermittent pulse may be due to totally different causes—sinus arrhythmia, extra systoles or heart block.

The cardiac complications of diphtheria, with which the pulse irregularities we have been considering are associated, chiefly concern the myocardium, almost never the endocardium. The diphtheria poison has a peculiar affinity for the heart muscle, the extrinsic and intrinsic cardiac nerves, and the bloodvessels (hyaline degeneration, thrombosis, and embolism). Like other toxins it is also prone to cause paralysis of the vasomotor centre.

Cardiovascular symptoms in diphtheria occur principally at two periods: Early, that is, at the end of the first fortnight at a time when the local lesions (membranes, etc.) are clearing up, and frequently coincident with or just preceding palsies; late, in the midst of convalescence (third or fourth week or even later). Almost all authorities (Rohmer) are agreed that myocarditis (parenchymatous, fatty, and hyaline degeneration, round cell infiltration, etc.) is one of the chief, if not the chief (Hecht) cause of the circulatory manifestations, both early and late.

Most authorities, following Romberg, consider toxic vasomotor disturbance to be an important contributory or even a principal factor, in early deaths. Until recently Charcot (quoted by Rohmer) in his conception of vagus injury with resulting respiratory, abdominal and circulatory symptoms, as an explanation of late cases, held a similar position. Some of the cases included under this latter head may now be more satisfactorily explained by the assumption of functional or organic lesions of the conducting media in the heart side by side with the more diffuse myocardial changes. As we have seen, this explains the sudden fall of the pulse in several reported cases. No doubt we shall be able to recognize many similar examples if we keep the matter in mind. With many excellent descriptions at hand it is a temptation to picture anew the dramatic symptoms which accompany early and late cardiac death in diphtheria, but I fancy we are all sufficiently familiar with them for the purposes of the present article. Such descriptions are available in English in the textbooks of Ker, Holt, and others, though perhaps not equal to those contained in some of the French and German authorities to which reference has been made.

TABLE OF CASES OF HEART BLOCK, ETC., IN DIPHTHERIA.

No. Reported Date	Reference	Age—Sex	D of D Onset	Rate and Rhythm	Instr. No. 1 Diagnosis	Result D of D
1. 1909 Magnus-Alsleben	Zeitschr. f. klin. Med., '10-69-82	8 m.	4th	Compl. dissoc. alt. with norm. rhythm. Pulse 24-38	Tracings	Died 9th D. of D.
2. 1910 Flemming and Kennedy	Heart, '10-2-77	10 f.	6th	Complete heart block. Pulse 40 to 52	Tracings	Death, 10th
3. 1911 Rohmer	Verhandl. d. Gesellsch. f. Kinderkrankheit, '11-28-279	7	?	Complete dissoc. Pulse 42-67	Electro-cardiogram	Died (?)
4.	Jahrb. f. Kinderheilk, '12-76-391	5	?	Prob. dissoc. Pulse 31	Electro-cardiogram	Died
5. 1912 Price and Mackenzie (I.)	Heart, '12-3-233	9 f.	6th	Dissociation. Pulse 40	Tracings	Died 10th day
6. 1912 Hecht	Zentralbl. f. Kinderheilk, '12-17-309 (abstr.)	3 m.	3d	Heart block (2-1). Pulse 70	Electro-cardiogram	Recovery. Arrhythmia still present 4 mos. later
Frank, Not incl.	Ergebn. d. inn. Med. u. Kinderheilk, '13-11-413	14 mos.	?	Adams-Stokes Complete dissoc. Pulse 28	Clinical	Recovery Died 8th day
Jehle, Not incl.	Case of quoted in table In discussion in table	?	7th		Clinical	
7. 1913 Hume	Heart, '13-5-25	7 m.	12th	Heart block (2-1). Pulse 97	Tracings	Died 14th day
Not included as adult.		22 m.	22d	Complete heart block. Pulse 50	Electro-cardiogram	Recovery
1915 Parkinson	Heart, '15-6-13					
8. 1918 Aviragnet et al.	Arch. d. Mal. d. Cœur, Par., '18-11-241	14 m.	11th	1:4 and later Complete heart block	Tracings	Death 22d day

EXPLANATORY.

D of D signifies day of disease.

Instr. signifies instrumental means used to verify findings.

References quoted Title—Year—Volume (underlined)—page.

? signifies that no data are given in original.

Attached are clinical notes corresponding to cases.

NOTES TO TABLE OF CASES—HEART BLOCK IN DIPHTHERIA.

1. Case of nasal and faucial diphtheria. Sudden drop of pulse with fainting on fourth day. Death in similar attack later. Histological examination showed spots (or areas) of waxy degeneration in bundle of His.

2. Severe tonsillar and faucial diphtheria. Onset of dissociation preceded palatal palsy by three days. Each day pulse fell at intervals from about 80 to 40 or 50. Histological examination showed focal round cell infiltration of auricular node and bundle of His. Vagi negative. Myocarditis also present. Demonstrates that death in diphtheria, when the heart rate is slow and when signs of palatal paralysis are present is not necessarily the result of inhibitory cardiac impulses.

3 and 4. Malignant faucial diphtheria. Bundle uninvolved in widespread myocardial degeneration. Doubtless toxic injury to bundle without anatomical lesions. Clinical picture: With disappearance of local lesions come sudden dilataion of heart, sinking of blood pressure, pulse changes, abdominal pain, vomiting or diarrhea, restlessness or apathy, and death towards end of second week. After death heart found large and relaxed.

5. Faucial and tonsillar diphtheria. Tracings suggest that auricle was in a state of fibrillation. There was (histologically) degeneration and infiltration of heart muscle but not of bundle. Prominent symptoms: vomiting, cold extremities, albuminuria, sudden fall of pulse rate, enlargement of liver, cyanosis, low tension pulse.

6. Malignant laryngeal diphtheria. Atropine increased pulse rate moderately but did not abolish the block: auricles 160, ventricles 80. Parkinson's case of pharyngeal diphtheria not only had heart block (which later disappeared) but was first undoubted case in which auricular fibrillation was recorded in diphtheria. There was also slight sinus arrhythmia.

7. Faucial and nasal diphtheria. Inflammatory and fatty myocarditis but no involvement of bundle. Hume noted extrasystoles in this case. Also in three other cases of diphtheria, in one with auricular flutter and in two with an unusual form of irregularity.

8. This was a case of malignant diphtheria. Extrasystoles were also present. Heart block has been noted in several other acute infections: rheumatic fever, influenza, typhoid fever, pneumonia, gonococcus infection, ulcerative endocarditis, pericarditis, etc.

SUMMARY.

Sinus arrhythmia is of no prognostic significance in diphtheria. Premature contractions are of uncertain significance but may suggest beginning myocarditis with increased irritability. Heart block of all degrees implies toxic injury or inflammatory infiltration of the conducting fibres. It frequently accounts for the sudden and ominous fall of the pulse rate in diphtheria. These forms of arrhythmia

may be variously combined. Auricular fibrillation is rare in diphtheria.

Auricular fibrillation (formerly called nodal rhythm, pulsus irregularis perpetuus, etc.) is the most important of the purely pathological arrhythmias. It is never to be lightly regarded and is generally of serious prognostic significance. It is common in failing hearts of chronic endocarditis (rheumatic or otherwise) in adolescence and in adult

life. It is not, however, a frequent finding in diphtheria and other acute infections. I have found it described in association with extra systoles (nodal) in two cases (by Hume) and in two cases (one each by Price and Mackenzie and Parkman) in association with heart block. In auricular fibrillation the distended auricles do not contract but quiver rapidly under the influence of a rapidly recurring series of fruitless impulses. The ventricle is unable to respond uniformly to these tumultuous stimuli nor yet to assume its own pace as in heart block. As a result it contracts in a totally irregular fashion, abortive, weak and strong beats succeeding each other rapidly in hopeless confusion without any semblance of fundamental rhythm. If a condition of impaired conduction or heart block is induced by drugs of the digitalis group, the pulse becomes slower and often quite regular though the condition of the auricles is unchanged. Auricular fibrillation may be temporary as in acute infections (toxic) but is usually permanent and indicates serious myocardial weakness or exhaustion. In diphtheria it may be due to a toxic injury to the myocardium, possibly temporary, or to antecedent cardiac disease.

Pulsus alternans, one of the rarer forms of irregularity, is characterized by alternate strong and weak beats at equal intervals (in contrast to bigeminy) and is indicative of serious myocardial weakness. It has been seldom or never observed in childhood and no cases of this type of arrhythmia have been recorded as occurring in diphtheria.

Auricular flutter, one of the rarer forms of arrhythmia, is characterized by an extremely rapid (300-550) though regular contraction of the auricles which are registered by the electrocardiograph. It is one of the causes of paroxysmal tachycardia. Frequently the ventricles contract at a much slower but regular rate, due to a condition of partial heart block. In other instances auricular fibrillation is simulated. Hume reports one case of paroxysmal tachycardia associated with auricular flutter occurring in diphtheria. In this case recovery followed.

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THE IDEAL SANATORIUM, THE IDEAL PHYSICIAN, THE IDEAL NURSE, AND THE IDEAL PATIENT*

By S. ADOLPHUS KNOPF, M. D.

New York.

Among the ideals, hopes, and dreams to the realization of which I look forward now that our victorious war for right, justice and the liberation of the oppressed has come to a close, is the eradication of tuberculous disease and I am grateful for this opportunity to give expression to these thoughts for which I could hardly have a better occasion than the anniversary of the founding of a sanatorium which is among the institutions that have always striven towards the goal of the ideal. May I therefore hope that you are willing to consider for a few moments my conception of what is to be understood by an ideal sanatorium as an institution for the tuberculous, an ideal physician for tuberculous patients, and an ideal patient who is or has been afflicted with tuberculosis and who may or who may not have passed through a sanatorium.

The ideal sanatorium is one which in proportion to its capacity, that is to say, the number of patients it can accommodate, accomplishes the greatest amount of good for the greatest number of people. The good which it accomplishes is manifest by the manner in which the institution deals with its patients and the interest it takes in their physical, mental, and even spiritual welfare during their sojourn within its precincts; and also by the continued interest it takes in the economic as well as the physical well being of the patients discharged from the institution. The typical sanatorium strives to live up to its name. It is called sanatorium from the Latin word *sanare*, to heal, and is a healing institution. It is not a sanitarium, which, derived from the word *sanitas*, health, rather means a health resort where people often go for more or

* Address delivered at the fifteenth anniversary of the founding of the Gaylord Farm Sanatorium, Wallingford, Conn., September 13, 1919, where, beside a large number of physicians and laymen interested in sanatorium work, from 250 to 300 ex-patients had gathered from all over the State for the celebration. The oldest sanatorium graduates present were those of 1905, and all subsequent years had a correspondingly large presentation.

less nervous and often only imaginary ailments. The primary function of the ideal sanatorium for the tuberculous is to heal the patient, to completely heal all those for whom it is possible. For those who have not arrived at the sanatorium early enough to become completely healed, it strives to arrest the disease and improve the condition of the patient and to accomplish an economic cure; that is to say, build up the patient's physical and mental condition and give him the necessary training by teaching him what he can and what he can not do so that he may safely be trusted to go out into the world again and earn his living.

Since the majority of tuberculous patients are recruited from the laboring classes, it has always seemed to me best, and experience has borne it out, that we should treat and cure these patients in the same or nearly the same climate in which they will have to live and labor after their restoration to health. While the cure of the consumptive individual in his home climate may often require a longer time, in the end there is an advantage from this. As a rule, relapses are fewer and the cures more assured and lasting than those obtained in milder climates. We need not therefore look far away for the location of our ideal sanatorium. The best climate for the average pulmonary patient in the earlier and more hopeful stages of the disease, is the one where the extremes of temperature are not too great, where the air is pure with relatively little humidity, much sunshine, and all the conditions which permit the patient to live comfortably out of doors the greatest number of days of the year and the most hours out of the twenty-four.

The ideal sanatorium should of course be well built and well equipped. Experience in the United States has demonstrated that the cottage and small pavilion plan, originated by Trudeau, with special infirmary and administration building, is far superior to the one house system in vogue in European sanatoria for all kinds of cases, early and advanced. The ideal sanatorium is of course also supplied with all the modern appliances for diagnosis and treatment.

The modern conception of the tuberculosis problem, however, requires the ideal sanatorium also to provide work for the prevention of relapses after an arrest of the disease has been obtained. To this end, a department for what we may call the after-cure, should be established in connection with the sanatorium. Here the patient should be specially prepared for resuming his former occupation and trained to withstand the less favorable environments or conditions to which he will be inevitably exposed when again going out to earn his living. To overcome the flabby muscular condition which results from a prolonged rest cure, the patient should be given a course of massage. His respiratory function may also have become indolent through the necessarily enforced quiet breathing during the active stage of the disease, so his breathing should also gradually be developed anew by means of carefully graded breathing exercises. The hematosis and circulation in general will be vastly improved thereby. If the patient has not become

thoroughly accustomed to the daily use of cold water on his body, the aftercure division would be a splendid place to train him for this which is the best means to strengthen the cutaneous and nervous systems and thus cause the patient to become less susceptible to the invasion of microorganisms of ordinary colds and gripes. To this end, a judicious application of cold water should be instituted in the form of an abluion or spray, beginning with 85° F., going down gradually 5° every few days to 40°. The temperature that usually comes out of the cold water faucet is 40° to 45° F. Of course, one should always be watchful for a quick and complete reaction after the application of the cold water and when this reaction is retarded a return to the warm bed long enough to overcome any chilly sensation is advisable. To become chilled by using the cold water at too low a temperature or for too long at a time should be avoided. This is as important as to avoid the direct causes of colds, such as the taking in of the microorganisms known as the *Bacillus catarrhalis* and the *bacillus of gripe*. In times of gripe epidemics one should avoid the careless sneezer and spitter as individuals principally responsible for spreading colds, and the recovered tuberculous patient should be doubly careful.

To the massotherapeutic, respiratory, and hydrotherapeutic measures just described, may of course be added heliotherapy in the form of sunbaths, by exposing the chest or the entire body to the rays of the sun, under the direction of the physician.

Beside the reconstructive value of these physiotherapeutic means, there is another incontestable advantage to be gained from the massotherapy and respiratory therapy. After having been massaged for a short time, the patient should himself help toward the redevelopment of his muscles by certain calisthenic exercises. These as well as the respiratory exercises, done under careful medical supervision, will show whether or not the patient's disease has really been arrested. We might just as well confess that relapses occur even in cases where the physical examination did not reveal any activity and the symptoms had disappeared. I have made mistakes in this respect and I believe others have had the same misfortune. But now, instead of telling the patient to go to work as soon as all the active symptoms have quieted down and only the physical signs of an arrested case remain, I start gradual breathing exercises and calisthenics and the patient is examined frequently, so as to determine whether or not an activity is reawakened. If after four to six weeks of preparation by massage, hydrotherapy and respiratory therapy, repeated examinations do not reveal any renewed activity, we may be reasonably certain that the disease is sufficiently arrested to allow the patient to resume physical labor without fear of relapse.

As long as the patient is on the reclining chair he breathes but little and very quietly. Any physical exertion will accelerate the respiratory movements and it would seem unwise to allow the respiratory systems to be submitted abruptly to so great a change as is inevitable when the patient begins to do physical labor which can not be regu-

lated as accurately as breathing exercises, especially away from the sanatorium. Thus even for graded labor, which is of great advantage, the careful preparation by breathing exercises is a safe and valuable procedure, because the patient can begin very slowly while yet on the reclining chair.

It is not polite to become personal, but since my own share in the achievements of the Gaylord Farm Sanatorium have been *nil*, and I have only been attached to its staff by courtesy as an honorary director, I feel that I have a right to speak of the achievements of this institution. Up to the tenth anniversary of the Gaylord Farm Sanatorium, at which it was my privilege to be present, this institution had expended \$800,000. Now, what have the patients given back to the State in return for these expenditures which made them breadwinners again and supporters of their families? Doctor Lyman, who has kept a careful record of the earning capacity of those who have left the sanatorium as cured or partially cured, finds that they have added something like \$2,000,000 to the wealth of the country since they left this institution. That pays surely even if the elimination of a certain number of state liabilities and the decrease of the total sum of unhappiness are not taken into account. Ninety per cent. of the graduates who went to Gaylord Farm in the early stages of tuberculosis are in good health after ten years of work. That percentage cannot be exceeded outside of sanatorium ranks. If the first thousand men passing a given corner were caught and earmarked today it is not likely that 900 of them would be alive and vigorous ten years later. In the moderately advanced cases sixty per cent. of the patients were restored to health at the sanatorium, and ten per cent. even of the dying were turned out well men. That is a statement of literal fact. An "advanced" case of tuberculosis is a "dying" case, if the disease is left to itself, yet one man in ten has been restored to fairly good health and earning capacity.

There must be and fortunately there are sanatoria which take care of patients in advanced stages of the disease, try to improve their condition, make them comfortable, and prolong their lives by judicious care and treatment. They become a haven of rest for the more advanced and less hopeful cases among the tuberculous.

Next to its mission of healing, the ideal sanatorium for the tuberculous has a mission to teach. It is a school, a college where the patients can and must learn many things. Any institution for instruction is composed of teachers and pupils, and in the ideal sanatorium for the tuberculous the physician is the teacher, the nurse the assistant teacher, and the patients are the pupils. The function of the physician, presiding over and directing the medical care, is thus a double one. Of course he must primarily be a practitioner in medicine well trained for his specialty. This training he must have received first through a general medical education in a good medical school, followed by an internship in a good hospital and a few years as a general practitioner, where he has had opportunity to see all kinds of diseases and to acquire the tact,

patience, perseverance and sound judgment so essential to the success of a family physician. Undoubtedly, as a general practitioner he will have come across a good many cases of tuberculosis, and when his interest in this disease is aroused to a degree that he feels he would wish to devote his knowledge, experience, nay even his life, to the relief of those suffering from it, if, so to speak, he feels the call within him to minister to the needs of the tuberculous, even as a young man feels the call of God to enter the ministry, then he is started on the fair road to become one day the ideal physician for the tuberculous. Nevertheless, all the knowledge a tuberculosis specialist should possess can only rarely be attained in general practice. The best tuberculosis specialists are those who have had training as assistants in good sanatoria, and if to this they can add a special course, such as that offered in the Trudeau School at Saranac Lake, their medical equipment for tuberculosis work will be about as good as it can be made.

Medical knowledge, that is to say, being well versed in phthisiotherapy and the diagnosis of tuberculosis, however, will not alone suffice for the ideal sanatorium physician or tuberculosis specialist. There is no disease which has so large a social and psychological aspect as tuberculosis, and the physician who wishes to be a specialist in this line and neglects to study the social aspects of the disease and the soul life of the tuberculous patient will never become the ideal physician. Those of us who have endeavored to study the social aspects of tuberculosis as a disease of the masses have long since learned that it is as important as the medical aspect.

Thoughtless procreation; women working often up to the time of confinement and forced to the resumption of work shortly after confinement; child labor; unsanitary schools; an overcrowded curriculum in schools and colleges to the detriment of the physical well being of our children and young men and women; marriages among the physically unfit and mentally disabled; unsanitary housing; unsanitary factories and workshops; underfeeding; intemperance and the ignorance of ordinary sanitary laws and a disinclination to obey them; lack of facilities to take institutional care of early, moderately advanced, and far advanced cases of tuberculosis; lack of preventoria and open air schools for predisposed children; lack of sanitary workshops for the recovered tuberculous invalids; all these involve vast sociological problems which must be studied by the tuberculosis specialist in order that he may help to combat the predisposing causes. To do this must be as sacred a duty to the real tuberculosis physician as his endeavor to cure and restore to health and happiness each tuberculous individual.

Next to being a sociologist the ideal physician for the tuberculous must be a psychologist, but not one who merely studies abnormal phenomena, or even the wondrous working of a normal intellect. He must be also the sympathetic physician of the suffering soul, the worried mind, the saddened heart. I feel deeply sorry for the physician whose experi-

ence in tuberculosis has not convinced him that the tuberculous patient is just like any other patient with no particular mental and psychic characteristics, and it grieves me deeply when I read statements to the contrary, such as made by Maurice Fishberg in his latest textbook. Here is what he writes on page 206: "A psychic trait of the consumptive which has been noted by most writers is selfishness. He becomes egotistical and egocentric. He is interested in the welfare of but one person—himself—to the exclusion of all who have depended on him before. He will eat costly food while his children starve; he will make unreasonable demands on his relatives and friends and show no gratitude." Doctor Fishberg then quotes Saxe as an authority, endorsing the following astounding statement: "The ascendance of selfishness plays the most important rôle in the molding of the mental traits of the tuberculous." Doctor Fishberg seems to be entirely oblivious to the fact that our greatest authorities on tuberculosis, such as Laënnec and Grancher of France, Brehmer and Dettweiler of Germany, Trudeau and King of this country, were all tuberculous and distinguished themselves by their unselfishness and devotion to suffering humanity. The vast majority of tuberculosis specialists in this country who volunteered and served in the American army in the great world war have been or still are tuberculous, our own David Lyman not the least among them. Who would dare to ascribe to these noble men anything but self sacrifice and devotion to the highest ideals of humanity and patriotism? Not a few of the heroic tuberculous invalids in our own and allied countries even made the supreme sacrifice. Let me recall only one name, that of the noble Frenchman, Captain Georges Guynemier, who fought 800 battles in the air and brought down seventy-four enemy air planes, of which fifty-four are officially recorded, and thus became the famous ace of aces before his death in action over the German line.

It is to be regretted that Doctor Fishberg has not had the privilege which other tuberculosis specialists have had, of meeting countless tuberculous patients who are full of gratitude and unselfishness, who do not think of themselves more than of those depending upon them, men and women who, though ill and suffering, have worked and sacrificed themselves so that their loved ones should not want. My first experience as a young intern in one of the European sanatoria taught me two things. The first was that the tuberculous patient has no special mental characteristic and can be as bad and as good as any other patient or any healthy man or woman, and that the disease in itself never, except perhaps in the very last stages and even then very rarely, clouds his judgment or causes him to be less thoughtful of others. I well remember the second lesson which this early experience taught me. It was the necessity for the true physician not merely to look after the physical but also the mental welfare of the patient. In the division which was assigned to me I had a man of unusual refinement and culture, a dutiful patient who obeyed me implicitly in spite of my youth and inexperience. He was doing splendidly; he had gained in weight;

his lesions had become less active, in short he was on the road to recovery. At the next examination, however, I found he had lost in weight and was not in nearly as good a condition as four weeks previously. I prescribed a tonic to improve his appetite, advised more rest, and still he did not improve. I reported the condition to my chief, the great Dettweiler, and all he said to me was: "My son, see if there is anything on his mind." To be brief, I discovered that the man had worried because the pension which his former employer had granted to his family while he was absent had been cut down and only the amount necessary to keep him in the sanatorium was given him. He knew that his loved ones suffered and were depriving themselves of the very necessities of life so that he might stay in the sanatorium and complete his cure. Had I the time I could record hundreds of similar instances which showed me beyond doubt that the tuberculous invalid is not egotistical, not egocentric, will not eat costly food while his children starve, and that he is not ungrateful. How many well-to-do dying consumptives have provided large sums in their last will for the care and treatment of the consumptive poor, and how many patients, rich and poor alike, prior to their passing away have pressed the physicians' and nurses' hands and thanked them for what they had done to alleviate their sufferings!

To return for a moment to the patient into whose soul life I had failed to enter until my venerable teacher called my attention to my neglect. A letter addressed by the sanatorium authorities to the employer of my patient resulted in the continuance of the complete pension which assured provision for the family of the patient as well as payment of his sanatorium bills. The patient's appetite again improved, he again gained in weight, and after a few months we could discharge him as an arrested case happy to be able again to assume the responsibility of providing for his family.

This as well as many similar cases in which entering into correspondence with the family was helpful in restoring the patient to health and happiness, taught me that it was well for the sanatorium and private physician, who had the welfare of his tuberculous patients at heart, to try always to know something about the family of the patient, and if possible to be in communication with them. Much can be learned thereby of how best to manage the case and indirectly one can also, as far as possible, instruct the family of the patient. Educating the family is particularly timely and important prior to the return of the patient to his home. Your always up to date superintendent, Doctor Lyman, has presented the situation very clearly by the following statement: "We often speak of our institutions as training schools, claiming that the educational feature of their work is the most valuable of their functions. This is true, but it is also true that in order to secure permanent results it is fully as necessary to educate the family as the patient, and so far we have made but little effort to do this." Lieutenant Colonel Jabez H. Elliott, of Toronto, in an interesting article on Diseases of the Respiratory System as Medical Problems in Rehabilitation (1), makes the following suggestions regarding the

necessity of postsanatorium care of the patient, including incidental visits and inspection of his family. Here are Doctor Elliott's suggestions which I gladly endorse as an ideal for us physicians to follow: "To make our results as permanent as possible we must follow the patient to his home and establish a supervision which will aid in, 1, the prevention of relapse; 2, the detection of symptoms of relapse before serious damage is done; 3, the establishment of sanitary measures in the home, which includes education of the family, lessening the possibility of contact infection; 4, the supervision of the members of the family, and especially the children, who are to be treated as contacts. For this we require the services of a nurse trained in social work, and the services of skilled physicians. In the larger centres special chest clinics are available, others could readily be established where needed, and in rural communities the services of the local physician or a traveling special physician could be arranged for." In some States, such as New York, Massachusetts, and Vermont, such traveling clinics under expert direction are already in operation. Personal experience with such clinics in the State of New York has shown me the invaluable service they can render in the discovery of early cases, the prevention of relapses among old sanatorium patients, and in the education of the families in tuberculosis prophylaxis.

"The visiting nurse should begin her work while the patient is still at the sanatorium, where she meets him and secures his interest and cooperation. With a visit to the family before his return she can begin their education in cooperative measures, so that when he reaches his family they will have the facilities for his aftercare and will be ready to help him by having a proper attitude toward him and his practice of those measures essential to his further progress. The nurse should not only have knowledge of sanatorium routine and prophylaxis, but must have training in social service work as related to public health, and above all must have tact, patience, and resourcefulness to deal with difficult situations."

To these qualifications of an ideal tuberculosis nurse, may I add that she must be physically well and strong and mentally alert, able to inspire her patients by her healthy and cheerful appearance. If she herself has had tuberculosis and is an arrested or cured case, she should not hide this fact, for it will rather add to her powers of assuring the patients of the curability of the disease. She must have the same fine qualities of mind and heart which are expected of all physicians, but particularly of the tuberculosis specialists—cheerfulness, helpfulness, and sympathy, but firmness when this is required. The tuberculosis patient is often one who has contracted the disease in the battle of life or struggle for existence. The late Professor Landouzy of Paris, when speaking of the soldiers who had contracted tuberculosis, called them *blesés par la tuberculose*. To the wounded by tuberculosis as well as to the wounded in battle in the world war, our American nurses and those of our allied nations proved to be veritable ministering angels. The ideal tuberculosis nurse should be the same in peace

time as she was on the battle field and in our military hospitals. She must be phthisiophilic, not phthisiophobic; no matter how skillful and well trained a nurse may be, if she is afflicted with the slightest degree of phthisiophobia, she should never become a tuberculosis nurse. Just as the best tuberculosis specialist is he who, after general practice, feels the call to devote his life to this difficult specialty, so will the nurse who, after general training and experience, believes that she can accomplish the greatest amount of good by choosing tuberculosis as a specialty, become the ideal tuberculosis nurse.

After having given our conception of the ideal sanatorium, the ideal physician, and the ideal tuberculosis nurse, we will now say a final word regarding how the tuberculous patient may become the ideal patient. To the patient knowing and realizing that he is tuberculous, I would say first, be true to yourself and to your physician. When he takes your history, tell him everything. Don't hide anything from him, even tell him your family and your personal affairs, and your love affairs and business troubles, if you have any, as they may have a bearing on your physical and mental welfare; tell him your symptoms, your physical sufferings if you have any, and also those of your mind if that is disturbed; tell him of your financial condition, your mode of life, and what you think are your own shortcomings. After his examination, about the first advice he will probably give will be the exhortation to work and to rest with the object to get well. By working to get well is understood keeping your rest hours, keeping your sleeping hours and your eating hours with religious punctuality, exercising only as you are allowed to exercise; taking medicine only when and as it is prescribed for you and never taking medicine when not prescribed. Report any intervening symptoms or irregularity to your physician; if something worries you call on him. The ideal physician will be to you as much a physician of the soul as of the body. Trust him; have confidence in him. Don't talk about your troubles or symptoms to your fellow patients, nor listen to the recitation of their symptoms or the recounting of past history. Be sympathetic to their sufferings and their troubles, but content yourself with cheering them up and telling them to trust in their physician and in God and not to worry. By strictly complying with the rules and regulations of the institution or those given to you by your private physician, you give the best example to other patients. Be charitable to the shortcomings of the less educated, less refined, and less cultured; treat them as you would wish them to treat you were the conditions reversed.

When you have recovered and have returned to your former home or gone to another community, keep in touch with the sanatorium authorities or with the physician who took care of you while you were away from home, in a health resort or elsewhere, and have yourself reexamined from time to time. Remember all that you have learned from the sanatorium authorities or your physician and consider yourself an apostle of the prevention of tuberculosis and the prevention of disease in gen-

eral. Teach those who do not know the value of fresh air, deep breathing, clean teeth, and sanitary living in general; teach the blessing of spending as much time as possible out of doors, and the value of cold water inside and outside and of a sober and well regulated life as the best means to prevent disease. Spread the gospel of the preventability and curability of tuberculosis and the necessity of an early diagnosis so that a cure may be expected with reasonable certainty. In communities where no antituberculosis committees or antituberculosis societies exist try to establish such associations. Where open air schools and tuberculosis clinics, hospitals and sanatoria are wanting, stir up the authorities and show them where their duty lies. Convince them that it is a financial and moral gain to the community to take care of its consumptive poor at the right time and in the right place, and not at the wrong time and in the wrong place. When you yourself come into the presence of a suspected or already diagnosed case without medical care, tell the patient what you know of the prevention of tuberculosis and take him to a physician, a dispensary, or hospital so as to give him the best possible chance for recovery. If a kind fate has made you prosperous, remember that tuberculosis is a costly disease, that state and municipalities alone cannot cope with the tuberculosis problem and that money is needed in most communities to help the consumptive poor. For this reason I beg you to render personal service where you can and add to this your financial help to the best of your ability. Show your gratitude for improvement and for being cured by helping others to be cured.

Few, if any of you patients, and I am sure none of us physicians, may ever become as rich and as prosperous as the late Andrew Carnegie, yet, because he was an ideal philanthropist, a true lover of his kind, he may well serve as an example for us to follow. Mr. Carnegie found his greatest happiness in sharing his fortune with others; his benefactions run into millions of dollars, all intended for the betterment of the physical and intellectual welfare of his fellowmen. He did not believe in creeds, but in deeds, and well may we all subscribe to one of his favorite sayings and adopt it as our life's motto and guide,

"Service to man is the highest service to God."

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16 WEST NINETY-FIFTH STREET.

Rapidly Fatal Spinal Caries.—J. Ruppert Collins (*British Medical Journal*, August 30, 1919) reports three cases of spinal caries in soldiers, developing abruptly during health and in the absence of traumatism, and running very rapid courses to death. Death resulted in six, nine, and fifteen days after the onset of the symptoms. At necropsy in each of the cases there was found a marked caries of one or more of the vertebral bodies in the thoracic region, with profuse pus formation.

MALIGNANT NEOPLASMS OF THE THYMUS GLAND.

With Report of One Case.

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In reviewing the literature dealing with this subject one is struck with the fact that this pathological phenomenon is a comparative rarity and, due to this lack of material, the more theoretical questions involved have been poorly worked out. To understand at all clearly the nature of these neoplasms, it is necessary to have an idea of the origin of the gland elements. It is accepted at the present day that the gland is originally purely of entodermal origin.

In Bailey and Miller's *Embryology* is the statement that the "gland appears in six mm. embryos as an entodermal evagination from the ventral part of the third branchial groove on each side." M. Simmonds (1) says that the gland is absolutely epithelial in origin and that the typical round cells of the adult organ are only modified epithelial cells. Stohr (2) believes that the entire gland is originally composed of embryonic epithelial elements. A. M. Pappenheimer (3) states that the origin of the thymus as a paired outgrowth from the entodermal epithelium of the third branchial clefts, has been conclusively proven by the classical studies of Kolliker (4) Stieda (5) Born (6) Fischelis (7) Kastschenko (8) Bell (9) and Fox (10). These outgrowths of epithelium become separated from their point of origin finally and continue their growth independently and in the older embryos the gland is found composed of this paired epithelium lying between the upper limit of the pericardium and the isthmus of the thyroid. At no time is fusion absolutely complete and the gland always maintains its bilobar character.

So much for its origin. Two other questions immediately present themselves. The first deals with the history of the gland after birth, and the second with the explanation of how the apparently changed appearance of the adult gland tissues has occurred. It has been customary to consider the normal gland as growing up to the second or third year, when it begins to atrophy, until at puberty nothing is left to mark its presence. But recently this view has been greatly modified. Bosanquet (11) states that usually no trace is left at the age of twenty, though it is asserted that traces can be found microscopically up to old age. Some have said that it enlarges until puberty and then begins to atrophy, but does not entirely disappear until the fortieth year. Others state that it begins to atrophy at birth but persists until the fortieth year. Pappenheimer believes that the gland reaches its maximum growth at about the fifteenth year when it undergoes involutional changes; at first quickly, later slowly, but the presence of certain amounts of thymic parenchyma may be demonstrated into senescence.

In answer to the question of the origin of the apparently lymphoid cells of the mature glands, equally conflicting views are found. It was at first believed that the thymus, originally an epithelial mass, underwent a "pseudomorphosis", i. e., the epithelial elements were replaced by lymphocytes which wandered in from the neighboring blood-vessels and that the Hassall corpuscles were in the adult gland the sole epithelial survivors. But Pappenheimer believes that the gland is an epithelial organ composed of two types of epithelial cells; the first designated by the term reticular epithelium, serves as a supporting structure. The Hassall bodies are formed by cell complexes of hypertrophic reticular cells which may be formed anew through the growth of the gland and later, when fully developed, undergo necrosis and calcification. The second type are the small cells which so closely resemble lymphatic tissue. As the gland grows older the division between the cortex and medulla becomes less and less sharp and the Hassall corpuscles become fewer in number. Sultan (13) describes four cases in patients aged thirty-four, forty, forty-four, and forty-four, in which no Hassall bodies were found although he was able to demonstrate epithelial cells both spindle-shaped and cylindrical.

The latest researches do not prove the origin of the lymphoidlike cells but do show that the epithelium is transformed into the reticular tissue of the thymus in which the lymphoid cells, whatever their origin may be, undergo mitotic division, the Hassall corpuscles possible representing compressed parts of the reticulum. M. Simmonds immediately raised the point that if the thymus is regarded purely as epithelial, one would have to call carcinomata all growths which previously were named sarcomata and lymphosarcomata, but he himself agrees that a purely genetic classification of neoplasms is unsatisfactory and that the morphology of the mass is the deciding factor. And indeed one must accept this point of view. As Adami says (14) it is obvious that the terms carcinoma and sarcoma must be given a *purely morphological significance*. It is impossible nowadays to attach to them any histogenetic significance, once we recognize that tumors of identical type may originate from any of the germ layers.

In reviewing the cases, one is impressed not only by their rarity but by the fact that by far the great majority are sarcomatous. Osler (15) states that sarcomata and lymphosarcomata have frequently been described. Again Edwards (16) says that the most frequent tumors are sarcomata and lymphosarcomata. Less frequent are dermoids and granulomata. In neither case is any mention made of carcinomata. Pappenheimer said that for lack of personal material he would not attempt to consider the interesting subject of thymic tumors. Besanquet says that sarcoma is considerably commoner as a primary tumor of the thymus than is carcinoma. He states further that the small round celled sarcomata are the most frequent, and the spindle celled sarcoma is less common. He also says that both carcinoma and sarcoma are met with, the former late in life, and the latter early and even in children.

Rubaschow (17) who has reviewed the cases thoroughly could find only sixty-three cases of malignant thymus growth of which only twelve were carcinomata, and strangely enough, every one of these latter cases was reported by French observers. In this connection an article by Thiroloix and Debre (18) proves of great interest. According to Grandhomme (19) all malignant growths are thrown together into one class and are considered as malignant growths arising from the embryonal elements of the gland, which cells may be cubic, rounded, elongated or cylindrical. This applies also to the benign growths. They are classified entirely histogenetically and under a classification of this kind they would be likely to call all malignant growths carcinomata. There are some cases, however, the carcinomatous nature of which is positive. Rubaschow reports one, M. Simmonds reports one, and further states that he knows of two others reported, one by Benda and one by V. Orth.

It would appear from the figures given above, that there must be great difficulty in classifying and naming the neoplasms of the thymus. For example, in Aschoff's textbook the chapter on thymus is written by Schridde (20) and it is to be noted that he avoids this question and does not distinguish at all between the various types, but includes them all under the term "malignant thymus growths".

The only satisfactory classification I have been able to find is one by Simmonds, who urges that those growths composed of small round cells like those of the cortex of the gland be called thymoma, and that those growths which are characterized by a rich connective tissue stroma and show the presence of spindle cells be called sarcomata; while those growths containing outspoken epithelial cells or Hassall corpuscles be designated carcinomata. It would seem that the growths included by Simmonds under the term thymoma, could be better classified as the lymphosarcomata, not because the small cells are actually lymphatic in origin, but because they so resemble them that the term lymphoidal seems to me to be justified.

In order to surely diagnose a thymic growth, one must take into consideration 1, the position of the growth; 2, its form; 3, any possible connection with remnants of the thymus gland, and 4, the structural elements of the growth.

1. The position of the growth is the place usually occupied by the thymus, is surely no reason for saying that the growth is absolutely thymic in origin, for, particularly in the larger neoplasms where other structures are involved, the point of origin is impossible to determine.

2. The form of the growth is even less useful as a diagnostic point, for all malignant growths are peculiarly irregular in their path of extension.

3. The demonstration of thymus remnants in the growth is also no proof, for often the neoplasm starts outside of but finally includes the thymic rest.

4. The morphology of the cell elements of the growth is the one criterion upon which a diagnosis can be made, and here it is important to say that, although the presence of the Hassall corpuscles in the mass determines absolutely its thymus origin, their absence does not prove anything, for it must

be borne in mind, that they are at best not easily found, that they occur chiefly at the periphery of the gland and are best demonstrated only in the fresh specimens, and, as the gland matures, the Hassall bodies grow less and less numerous.

The case which I observed in the Lenox Hill Hospital, New York, came to partial autopsy. The contents of the entire mediastinum were removed. Over the base of the heart, exactly in the position normally occupied by the thymus, was an irregularly shaped mass which measured about five centimetres square. The heart was slightly enlarged, and the musculature was uniformly hypertrophied. On opening the right auricle it was found that the lumen of the superior vena cava had been entirely obliterated by compression from without. It was found further that the growth had extended into the musculature of the interauricular septum. The bronchi were not at all disturbed nor were any of the other mediastinal structures. A normal thyroid gland was found in its proper place. The diagnosis by the pathologist of the section was clearly that of a squamous celled carcinoma. No Hassall corpuscles were demonstrated. Unfortunately a search for metastases was impossible, as a full autopsy was not permitted.

The patient was seen four months before his death when he complained that his face and neck had become swollen, that he had lost weight rapidly for some time past, and that he had some difficulty in swallowing and speaking. A month later he was seen again when it was found that his heart was slightly displaced downward. Two months later he was admitted to the hospital when a complete physical examination showed the following:

CASE—Patient, M. B., white, male, aged sixty years; no general skin eruption, icterus or edema; entire skin loose, dry, and somewhat distended. Marked caput medusa. Face and neck were somewhat cyanosed. General adenopathy was present, especially in the left axilla, and in both inguinal and femoral regions. Eyes: Pupils were equal and reacted normally to light and accommodation; sclerae were not icteric; some exophthalmos as well as a slight Möbius sign and some lateral nystagmus. Ears and nose were normal. Mouth, teeth were in fair condition. The tongue was slightly coated and dry. The tonsils and pharynx were markedly congested. No tracheal tug was obtained. Thorax, symmetrical except for a slight prominence to the right of the sternum in the first and second costal spaces, which was somewhat tender but not discolored. This area showed dullness to percussion for five cm. to right of sternum which extended down to and was continuous with the liver dullness. No thrills or pulsation were felt. Heart sounds were slightly accelerated but were otherwise normal. The radial pulses were synchronous, equal and regular. The lungs were slightly emphysematous with signs of bronchitis over the right base, posteriorly. The abdomen showed no masses or tender areas. The liver was just felt beneath the costal margin. Tendon reflexes were all present and normal and equal. Laryngoscopic examination showed that the right vocal cord was immoveable in a partially abducted position; the left cord was

only slightly moveable, showing that pressure was exerted on both recurrent laryngeal nerves.

An x ray examination showed the presence of a mediastinal growth over the base of the heart. Ten days before his death, a tracheotomy was performed to relieve an attack of severe dyspnea. Blood count showed a slight leukocytosis with some secondary anemia. The temperature ranged between 99° F., and 101° F., the pulse between 100 and 110, and the respiration between 20 and 30. The patient died on January 19, 1913.

I have been able to find only one other case of a thymic neoplasm which invaded the heart muscle. It was reported by V. Gravit (21) and occurred in a twelve year old girl. The growth was a lymphosarcoma which penetrated the wall of the right ventricle. The condition in my case, namely that of complete obliteration of the superior vena cava, is reviewed by Osler (22), who says it is extremely rare. He was able to collect only twenty-nine cases only one of which was due to mediastinal carcinoma. The collateral route he suggests is from the subclavian veins into the cutaneous vessels, from there to the superior epigastrics and back through the iliacs and the inferior vena cava. This route was probably the one which existed in my case.

CONCLUSIONS.

1. That the thymus is entirely an entodermal epithelial structure.
2. That remnants surely persist to forty, probably longer.
3. That malignant neoplasms arising from the gland may be divided into sarcomata and carcinomata, but only if one adheres to the morphological classification.
4. That the diagnosis of thymic origin may be made in spite of the absence of the Hassall corpuscles in the growth.
5. That in the presence of mediastinal new growths, the possibility of thymic origin must be considered even up to an old age.
6. Sarcoma is more frequent than carcinoma in the young, carcinoma more frequent in the old.

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GASTRIC DISORDERS AS AN EARLY SIGN IN PULMONARY TUBERCULOSIS.

BY JOSEPH KATZ, M. D.

New York.

The importance of the subject which I have chosen for my article is beyond doubt, yet it is overlooked and neglected, not only by the general practitioner, but the specialist as well. I shall therefore try to impress upon the reader the importance of a careful and painstaking examination of the lungs in cases of gastroenteric disease. It is the stumbling block of every physician, a fact which I learned in my early days of gastric work. To bring more clearly before you the importance of pulmonary examination in gastric ailments I present here some interesting clinical data obtained in private and hospital cases.

CASE I.—Miss J., aged twenty-seven, single, operator on ladies waists. Came under my care at the New York Post-Graduate Hospital clinic. Family history negative; personal history, never had been sick except for measles when a child. Present complaint began about five or six months ago, suddenly, with constipation alternating with diarrhea; nausea; a lumplike feeling at epigastrium; appetite fair; tired feeling all day; patient did not feel refreshed on awakening in the morning; sleep not as restful as previously; menstruation normal; irritable; no cough. She had been treated by many physicians, some of whom diagnosed the case as a nervous condition, while others treated the patient for gastric disturbance; none gave her any relief.

Upon examination the patient appeared to be suffering from an organic lesion of some kind. The face was somewhat flushed (time of examination 4 p. m.); there was slight emaciation, proved later by loss of weight. Palpation and percussion of chest revealed nothing abnormal. Auscultation showed bronchovesicular breathing over left apex a few dry râles and acromian breathing (Abraham's sign). Examination of heart showed slight accentuation of pulmonic second sound. Temperature by the mouth, 99.6° F.; normal in the morning, rising in the afternoon. Analysis of the gastric contents, which I made five or six times on different days and at various hours of the day, with stomach full and empty, revealed nothing abnormal except a variation in acidity ranging from high to very low acid reaction. Blood, sputum and urine analysis negative.

I finally decided that I was dealing with a case of early pulmonary tuberculosis and prescribed for her tuberculosis treatment, viz., little work, plenty of rest in the open air, good food and no worry. I saw her every other day, making general examinations of the lungs, and also of the sputum, and found nothing more than in previous examinations until two months later when cough and bloody expectorations made their appearance and the sputum showed tubercle bacilli. Her gastric condition improved, however, and under regular treatment for tuberculosis, with change of climate, she made a complete recovery.

CASE II.—Mr. G., aged twenty-four, single, book-keeper, private patient. Family history, negative; personal history, had pneumonia ten years ago, otherwise negative up to one year ago. At that time his stomach began to *strike* (patient's words), i. e., soon after meals he became nauseated and sometimes would vomit. He complained of pain in the epigastrium after meals which was relieved by food, bowels changing from normal to constipation, then to diarrhea, appetite fair, belching, headache; sleepy all the time, yet not refreshed on awakening; disinclination to effort, although ambitious, and has to force himself to do his work; no cough, but patient began to lose weight and perspired profusely during early morning hours.

The patient had seen many physicians, all of whom had treated him for a gastric disorder of one kind or another. Upon examination a nasal obstruction was observed. Auscultation revealed prolonged expiration over right apex approaching the bronchial type with râles. Heart examination showed marked accentuation of pulmonic second sound with no heart lesion. Temperature, afternoon rise with morning remission. Blood, sputum and urine examinations were negative. Gastric contents analysis four or five times showed hyperacidity.

I advised a change of climate, rest in the open air, good food, little work, mental or physical, and no medication of any kind. The patient improved in a short time, but remained in the country where he found employment, and now informs me that he feels entirely well.

These two cases will suffice to emphasize the necessity of a complete physical examination, especially of the lungs, in cases of gastric complaints, using all means and methods at our command to determine whether or not we are dealing with a case of pulmonary tuberculosis.

1309 MADISON AVENUE.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,

Geneva, Switzerland.

SYPHILITIC CIRRHOSIS OF THE LIVER.

The recent clinical lectures of Professor Debove, of Paris, and the researches of Castaigne and Letulle, have placed this morbid process on a solid pathological and clinical basis.

The onset of syphilitic cirrhosis of the liver, which sometimes simulates alcoholic cirrhosis, is usually slow, with digestive disturbances, such as nausea, difficult digestion, morning vomiting, abdominal distention, a feeling of weight in the epigastrium, the latter indicating an irritation of some sort, usually the result of ethylism. There is pain in the lumbar region or in the right hypochondrium which is sometimes so sharp that the patient is obliged to cease work.

In most instances there are few hepatic symptoms in the prodromes and attention is not called to the liver where the treponema is secretly at work.

After a variable lapse of time an increase in the circumference of the abdomen is noted and at the same time emaciation becomes evident. Fleeting edema and epistaxis, hematemesis or hemorrhoids indicate a disturbance of the portal circulation.

Ascites, which is almost always present, develops rapidly or slowly and varies in amount, but it is of more importance in the atrophic form of the process, where morbid changes in the hepatic cell are more marked than in the hypertrophic type. The ascites returns quickly after puncture, an operation which is required at frequent intervals on account of the dyspnea caused by the collection of fluid in the abdomen, and in some cases may finally end in cachexia and death. Whether alcoholism or syphilis be the cause of the trouble, they unquestionably simulate the same pathological process. Lesions of the terminal ramifications of the portal vein, or their constriction, may likewise hinder or stop the circulation and favor the development of a serious collection.

A subcutaneous network of veins, edema of the malleolæ which extends up the leg after a time, paleness of the face, rarely jaundice, are a prelude to the appearance of the signs of hepatic insufficiency. A decrease in the daily output of urine with a decrease of urea, urobilinuria very frequent, albuminuria not constant, no bile pigment in the urine, food glycosuria giving variable results, and disturbances in the elimination of methylene blue, all denote the occurrence of hepatic insufficiency. Usually there is no rise in temperature unless there is some concomitant inflammatory process going on in some other organ. At this phase of the process the gastrointestinal disturbances may persist, namely, repeated vomiting, and diarrhoea alternating with constipation. Intestinal hemorrhages or hematemesis occur sometimes, especially when there is an exaggerated portal hypertension; by their suddenness and severity death may ensue. The liver is atrophied or hypertrophied; it is often painless, hard, smooth or lumpy, with rounded or sharp edges. The spleen is invariably enlarged and may attain large dimensions; it is hard and regular in outline, although it may be notched.

When syphilitic cirrhosis is left to itself other symptoms, in the form of general disturbances common to all major hepatic cirrhoses, will ultimately develop. These cases, from multiple auto-intoxications and from bankruptcy of the functions of the liver and of the other organs later on, rapidly reach the state of hepatic uremia, so well described by Debove. Bronchopneumonia or icterus gravis, hematemesis or intestinal hemorrhages, may shorten the patient's agony. Sometimes the evolution is rapid, recalling that of alcoholic cirrhosis, but the latter process may also take several years for its evolution.

When treated, the affection is susceptible of cure, especially if the general state of health is good. What can be cured in cirrhosis is the ascites and the accessory symptoms which for the most part depend upon it. The condition of the liver and spleen can be improved but *restitutio ad intergrum* of a cirrhotic liver is difficult to conceive. Therefore, the prognosis will vary according to the state

of the liver. If hypertrophied, it denotes a reaction of defense and in these circumstances the lesions are more constantly and durably influenced by treatment than in the atrophic form of the process. If the sclerosis has invaded only a small portion of the hepatic parenchyma the subject may escape hypothermic coma which results from hepatic insufficient or from serious anemia, the result of frequent withdrawal of the ascitic fluid; but if gastroesophageal varices have developed in this form of cirrhosis the patient dies from an excess of organic defence, as Gilbert has well said.

The pseudocirrhotic clinical syndrome of hepatic syphilis does not appear to answer to such a definite type viewed from the viewpoint of pathology. The fairly numerous autopsies in these cases, which have been made in Paris and elsewhere, seem to show that the lesions vary considerably in different cases. In some, vulgar sclerogummatous lesions of tertiary syphilitic hepatitis were only found with irregular bands of sclerotic tissue and more or less softened nodules, but during life the patient nevertheless offered the clinical picture of alcoholic cirrhosis. On the contrary, in other cases the liver was perfect in shape and not deformed but atrophied or hypertrophied, while in two instances it offered the exact appearance of an alcoholic hobnail liver, atrophied with a granular surface. The diagnosis would not have been made at autopsy were it not for the fact that during life the patients were greatly benefitted by antisyphilitic treatment. The latter pathological type would seem to answer to the more diffuse lesions of sclerosis. Unquestionably, from the pathological viewpoint, very numerous intermediary forms may exist between the ordinary types of syphilitic hepatitis with partial sclerosis in the form of islands or bands between which the hepatic parenchyma is little, if at all, pathologically changed, and those types of diffuse sclerosis involving the major part or the entire mass of hepatic cells.

Syphilitic hepatitis is not always as sclerotic as might be supposed and probably early treatment may have something to do with this, so that it is incumbent upon the medical man to always bear in mind the question of syphilis of the liver. From the microscopic viewpoint, the periarterial localization of the cirrhotic process at the onset—so characteristic of syphilis—obliterating endarteritis followed by periarteritis extending progressively into the surrounding tissue are all seen. Later on, when the lesions are more advanced, the sclerosis invades the portal spaces and the suprahepatic veins. The hepatic cells are often filled with fat, sometimes atrophied in the neighborhood of the connective tissue septums, or they may be normal or only increased in size. Glisson's capsule is thickened and adhesions binding the liver to other organs or the diaphragm attest to a peripheral initiation.

The symptoms of the forms of syphilitic cirrhosis under consideration are nearly identical with alcoholic cirrhoses, as has been pointed out, but occasionally there are small signs, which, if looked for and found, will help to make the diagnosis.

In the first place, given a patient with an hepatic cirrhosis of doubtful nature, all the stigmata of

hereditary or acquired syphilis should be most carefully searched for. The prodromes may be discrete, since the evolution of the process is usually slow. The digestive disturbances, for example, may be very slight and transitory, especially if the patient has no alcoholic antecedents. Nervous disturbances should be searched for, such as tingling, cramps and broken dreams, due especially to tryptic intoxication. Emaciation and the appearance of ascites are less rapid in syphilitic cirrhosis, while treatment has a happy effect on the reproduction of the fluid after puncture. Pain due to perihepatitis is more common in syphilis.

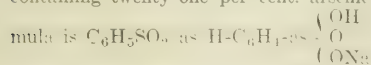
As I have pointed out, the shape of the liver varies and taken by itself it cannot offer any diagnostic data since both alcohol and syphilis can produce the same macroscopic lesions. Percussion and palpation are usually insufficient but they should be resorted to after puncture, in which case they may give some clues. A marked hypertrophy of the liver is more common in syphilis. As to the disturbances of hepatic insufficiency they occur later in syphilis and are apt to be less pronounced. But let me insist upon the fact that oftentimes these differences are so little marked that they may escape the notice of even the most informed clinician.

Examination of the ascitic fluid will not give any decisive data, but the application of Wassermann's reaction for the search of syphilitic antibodies in the blood and ascitic fluid has given very interesting results to Esmein and Parvu.

When searched for only in the blood the Wassermann will not allow one to affirm the syphilitic nature of a cirrhosis of the liver, but when a predominance of antibodies is found in the neighborhood of the liver it should be regarded as favorable to the diagnosis of hepatic syphilis, because the fluid of ascites due to other affections never presents a positive Wassermann. Therefore, this test should always be resorted to when the nature of a hepatic cirrhosis remains doubtful. When positive it indicates that the organism is syphilitically active, but a negative result should not lead one to reject the diagnosis of syphilis and by resorting to antisyphilitic treatment, the riddle will at last be solved.

The treatment in some cases has been very effective but only when commenced early in the process, before the sclerosis has invaded the entire hepatic parenchyma; otherwise the result will be *nil*. Arsenic and mercury should always be given in combination. Hectine in the daily dose of twenty cgm. should be exhibited for ten days and then a daily dose of two cgm. of either the biniodide or benzoate of mercury should be given for ten days, and so on.

In closing I wish to say a word in reference to hectine which, although not a new preparation, is not, I fancy, as well known in the United States as it should be. It is an organic arsenical derivative, containing twenty-one per cent. arsenic. Its formula is



It is given in the form of pills, solution, or intramuscular injections. Given in pill form in doses of

ten to twenty cgm. daily it shows very marked anti-syphilitic properties and quickly controls the secondary manifestations, even when malignant in type. Tolerance for the drug is usually satisfactory and if the ordinary doses are employed and not more than ten days' treatment at a time be given, whether by pills or intramuscular injections, the point of toxicity is distant. The drug is contraindicated in serious renal lesions, retinitis and neuritis of the optic nerve. I have given hectine internally to syphilitics over fifty years of age, because salvarvan and neosalvarvan given intravenously, are to my mind, decidedly dangerous in subjects having passed the fifty year limit. I have found the internal exhibition of this arsenical product which is made in France, very satisfactory.

3, RUE DE BELLOT.

Biometric Diagnosis of Varicose Conditions in the Lower Extremities and Its Bearing on Treatment.—

Léon Mabile (*Bulletin de l'Académie de médecine*, July 9, 1919) establishes a distinction between varicose states due to actual valvular insufficiency in the veins and pseudovarices due to hyposphysic disturbances of endocrine or nervous origin, including disorder of the sympathetic system and vasomotor asthenia. Clinically this distinction is made by the use of the Pachon oscillometre and estimation of blood viscosity with the Hess viscosimetre. A cuff measuring eight by twenty-four centimetres is applied above the ankle and the oscillometric pressure taken in four positions, viz., in recumbency; with the lower extremity held up perpendicularly; in the sitting posture, with the leg vertical, and in the standing posture, with both the leg and thigh vertical. The blood for viscosity estimation is obtained from the finger and is examined promptly. A study of over one thousand subjects, normal and abnormal, showed that under normal conditions, the differential pressure—pulse pressure—and the oscillometric index remain the same in the four positions; the change in the systolic and diastolic pressures in the sitting and standing positions as compared to recumbency never exceeds forty millimetres; the pressures in the two lower limbs are the same, and the systolic in recumbency is generally twenty millimetres higher than that obtained at the arm, while the diastolic is often the same. In cases with true varix or saphenous valvular insufficiency, the differential pressure and oscillometric index are no longer constant in different postures, and the change in pressures in the sitting and standing positions as compared to recumbency greatly exceeds the norm and may reach 150 millimetres; the index is likewise greatly augmented in the sitting and standing postures; the tension in the two limbs is no longer the same, the varicose limb exhibiting one or both the differential, systolic, and diastolic pressures, as well as of the oscillometric index. These findings are certain evidence of valve inadequacy, even where there is no apparent vein dilatation; these occult varices, often mistaken for deep varicosities, give rise to all the usual complications—trophic disturbances, eczema, and ulcers.

Editorial Notes and Comments

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THE MEDICINE OF THE FUTURE.

It has been confidently predicted that the medicine of the future will be preventive medicine. It seems that this prediction is based on some sound premises. Owing to the intelligent and vigorous conduct of carefully devised preventive measures certain formerly destructive diseases have been eliminated or are in the process of being eliminated. In fact, it may be said that there is no boundary to the scope of preventive medicine provided that its most effective methods can be carried out. While preventive medicine is exerting so great influence in the checking and extermination of disease and promises in the future to be an even more potent factor in this direction, curative and remedial treatment will still be necessary. It is well, therefore, to regard the situation from all aspects and not arrive at hasty conclusions. A work published recently greatly aids in giving a proper consideration to the subject. The work referred to is by that great authority Sir James Mackenzie. In *the Future of Medicine* he discusses the matter as perhaps, he is better qualified to discuss it than any living medical man. During his long career he has seen more sides of medical practice than any other man in the profession. He has been a general practitioner in a busy industrial district in the north of England, where he had a large practice not only as a physician but as a surgeon and obstetrician. During this time and since he has been one of the most prolific of research workers, and his investigations with regard to the heart and its mechanism

has firmly established his reputation as the foremost authority on the heart in the world. He has been a consultant in London and a teacher in one of the largest London medical schools. There is much in the present system of medical education which Mackenzie criticizes severely and his strictures are almost as applicable to America as to Great Britain. He does not believe in specialists as teachers as blindly as some appear to believe and pleads for teachers who shall have had some experience of general practice. He pleads that medicine be simplified—recognizing that laboratory investigations, and what is known as clinical pathology in general have during the past twenty years greatly assisted in advancing knowledge of disease and occasionally aided in its arrest or cure, he yet deprecates the tendency to overspecialization. In his opinion the next duty of a research worker who has invented a new instrument for the study of disease is to render his own discovery unnecessary by employing his instrument to trace out the natural history of those conditions for which it was adapted in order that the next generation will be able to diagnose with the unaided senses what he himself was only able to unravel with mechanical assistance. The phase of medicine upon which the author lays the greatest emphasis is that more attention should be paid to those early stages of disease in which no gross structural lesions have been exhibited.

If preventive medicine reaches the heights which it is prophesied, then the medicine of the future will be very largely if not solely preventive medicine. Probably some of this optimism must be discounted and in that case the future of medicine will be, at least, somewhat along the lines it has been following in the past. Prophylaxis will undoubtedly have a wider sphere, but curative and remedial treatment will not be wholly discarded.

THE POET OF HUMANITY.

It seems inconsistent, almost incredible, that the poet of humanity, of extreme sensibility, should have been a medical man. And not only of the medical profession but a German regimental surgeon. Such, however, was the case and Schiller, the most popular, if not quite the greatest German poet, the poet of feeling and humanity, was trained in the vigorous German military methods and was an army surgeon. Schiller's parents were people of great probity, but it was from his mother that he inherited his special gifts of romanticism, great

sensibility, idealism, and his high moral character.

It may be noticed that almost all great men have had great mothers, and that some almost invariably derive their exceptional mental attributes from their mothers. Like Goldsmith, but unlike Rabelais, Schiller was not a student of medicine from choice. By the interest of his patron, the Duke of Wurtemberg, he joined a school at Stuttgart. At the school it was necessary that a scholar should choose his profession in order that he might be thoroughly trained in it. At first, his choice was the law and medicine was selected afterwards, not because Schiller liked medicine, but because it was less obnoxious to him than law. In the words of Carlyle, medicine had no attractions for him, he accepted it only as a galling servitude in exchange for one more galling. The course at Stuttgart, uncongenial in itself, was rendered absolutely repulsive on account of the chilling formalism that pervaded the whole establishment. According to Carlyle, "The process of teaching and living was conducted with the stiff formality of military drilling, everything went on by statute and ordinance, there was no scope for the exercise of free will, no allowance for the varieties of original structure." For the ardent, impetuous, sensitive and independent temperament of Schiller, the school at Stuttgart was a veritable house of bondage. However, he acquired a sufficient knowledge of the profession, for in 1780 he was appointed by the Duke of Wurtemberg surgeon to a regiment. The whole bent of his mind was towards literature and the quaint saying of Jean Paul was fully borne out by his career. "Schiller," said Jean Paul, "was educated for a surgeon, but fate said to him—'No, there are deeper sores than those of the body—heal thou the deeper.' So he became a poet and an author." In fact, two years before he took upon himself the trammels of medicine and while a youth of eighteen or so he wrote his extraordinary tragedy, *The Robbers*, which, as Bulwer Lytton said, "spread through Europe like fire through flax."

Schiller forbore to publish the drama until he gained his degree in medicine, for fear it might prejudice him with his instructors. The piece was in the highest degree revolutionary and was vivid, impassioned, awakening and sympathetic. Though *The Robbers* brought him fame it also brought him serious trouble. It gave great offense to his patron, the Duke, and the fall from grace was sudden and complete. Schiller was arrested, but contrived to escape from the jurisdiction of the Duke of Wurtemberg. In 1785 he went to Leipsic and thence to Dresden. In 1787 he made his home in Weimar where he became acquainted with

Goethe, an acquaintance which ripened into intimate friendship, to their great mutual advantage. These two great minds acted and reacted on each other. Schiller was a poet and an historian. His greatest poem was *William Tell*. Some of the shorter poems are among the sweetest songs ever penned. His *Song of the Bell* ranks with Gray's *Elegy* and Poe's *Raven* as a gem of literature. As a poet Schiller is characterized by strong feeling and intense idealism. He is inferior to Goethe as a dramatist in one respect, that all his representations are colored by his own individuality, but his deep and earnest sympathy with all human joy and sorrow has gained for him an influence over the common heart of mankind not possessed by the many sided and more gifted contemporary. Schiller is more popular because he is more human. The works of Goethe though yielding proof of genius of the richest and rarest order, have not that strong hold on the popular imagination and heart that Schiller's writings have.

In a previous editorial it was stated that Rabelais was the most famous literary medical man. The statement was perhaps somewhat hasty and ill considered. It is difficult to compare Rabelais and Schiller. The genius of Rabelais is as manifestly French as Schiller's genius is German. The satire of Rabelais is pungent, poignant and Gallic and in keeping with the times. High thoughts in high flown language would not have been read or listened to in the age in which Rabelais lived and therefore for the sake of gaining a large audience he clothed his thoughts in the coarse and crude language understood by the multitude. Rabelais was one of the creative geniuses of the world to be ranked with Shakespeare, Dante and Cervantes. Schiller is scarcely in the same class and yet a poet of the highest order. Of the literary medical men Rabelais stands first and Schiller next, in the estimation of most critics in front of Goldsmith and Smollet. As a medical man Rabelais was decidedly more efficient than Schiller for the reason that he loved his profession and found in it a means of helping his fellow men in a practical way, while Schiller dealt in words more than in deeds. The German poet of humanity was no doubt a better doctor than Oliver Goldsmith, but not so good as Smollet. After all, Schiller was a medical man merely by chance, his heart and soul was in literature and it would have been a catastrophe if he had not been allowed to follow his bent.

Schiller died of tuberculosis for which he had suffered more or less throughout his life. He was gravely ill during the latter years of his life, but devoted himself to literature with an ardor and zeal

that no disease could abate. The last words of Schiller were as typical of him and of the German temperament as the last words of Rabelais were typical of him and of the French temperament. Schiller said, "Death could be no evil because it was universal. Many things are growing plain and clear to me." Rabelais said, "The farce is played." Rabelais, Schiller, Goldsmith and Smollet, literary men by genius, medical men by choice or chance. No other profession can lay claim to the honor of possessing within its ranks, four literary men of such transcendental genius.

BILATERAL MAMMARY CARCINOMA.

The invasion of both mammary glands by carcinoma may occur simultaneously or successively. In the case of successive invasion two conditions must be taken into consideration. First, the second breast becomes the seat of cancer following an operation of the fellow breast for the same morbid process. In these circumstances there is a recurrence. A carcinoma develops in each mammary gland although at a variable interval of time, but the appearance of both neoplasms preceded any surgical interference, in which event the case is one of double or successive mammary carcinoma. There is a simultaneous invasion of both glands, the onset of cancer beginning at the same time in each, then the case is one of double primary cancer. A recurrence in the opposite breast is rare but more frequent in its rarity than is generally suspected. The process can be interpreted in three ways: 1, the second growth is absolutely independent of the first; 2, it is a single and local recurrence, and; 3, the cancer in the second mammary gland represents a true efflorescence of a process of generalization.

Double or successive carcinomata are extremely rare and are susceptible to the same interpretations as recurrence, the surgical interference not constituting a sufficient barrier between these two varieties of invasion for their differentiation from the pathological point of view. Primary double carcinomata,—if their existence is real—evidently prove the individual origin of each neoplasm, but it should be acknowledged this class, which it is possible to admit from the clinical viewpoint, remains doubtful microscopically. On the other hand, in order to clinically classify bilateral cancers under the heading of double primary carcinoma, we must rely upon the commemoratives furnished by the patient which is unquestionably a fragile basis upon which to draw one's conclusions. At all events, such instances are very exceptional.

To explain the invasion of both mammary glands several hypotheses have been advanced. The first is that the tumors are independent although symmetrical. Their development can be explained by spinal metamerism or Brissaud's theory. There is a propagation of the cancerous process from one breast to another. The cutaneous theory explains this propagation by continuity; according to the embolic theory the cancerous infection of the second breast takes place by way of the circulation. Finally the carcinoma extends to the other mammary glands by the lymphatics. In this latter—the lymphatic theory—the infection can take place in two ways. In the first, a retrograde embolus occurs, the second breast becoming involved after the corresponding lymph nodes, the first breast having given rise to a crossed adenopathy. This is the theory of retrograde embolus. The second, or Hadley's theory, maintains that the extension of the process takes place by centrifugal permeation. This is characterized by a centrifugal propagation, the cancerous invasion of the deep lymphatics of the aponeurosis of the pectoralis and by perilymphatic sclerosis. Hadley's theory is probably the correct one. As to treatment, it consists in the modern technic commonly employed, both mammary glands being dealt with at the same time.

FOLLOW YOUR BENT

Genius has been variously defined, but in the end it merely means the special capacity for doing some particular kind of work. Happy the child who has a special fondness and a special capacity for some particular phase of mental activity. Such tendency should be sedulously sought for and carefully cultivated. Unfortunately many precocious children, or children who are thought precocious by fond parents, turn out to be plodders, not geniuses, but wherever there is a marked interest in any particular kind of vocation every effort should be made to develop that inclination and to cultivate the particular set of faculties involved. The increasing complexity of modern life requires early specialization. The accumulated facts of science are so numerous and cover so wide a field that no man may hope to compass the whole of it. Therefore, in order to master any one branch of learning it is becoming more than ever necessary to specialize, and by following so far as possible the inherent tastes of each individual child we may hope to achieve the best results in specialization, even if that child should not be a genius in that particular direction. And after reaching maturity the same advice holds good. A man is likely to succeed best in a field in which he is most interested.

News Items

Mark Anniversary of Ether Day.—The seventy-third anniversary of the first administration of ether was commemorated at the Massachusetts General Hospital, Boston, by appropriate exercises, including an address by Dr. Richard C. Cabot.

Doctor Goetsch at Long Island College Hospital.—Dr. Emil Goetsch, formerly associate professor of surgery at Johns Hopkins University, has been appointed head of the surgical department at Long Island College Hospital.

Dr. Thomas Legge to Lecture at Harvard.—Dr. Thomas M. Legge, chief medical inspector of factories in Great Britain, has been invited to give a course of Lowell lectures and the Cutter lectures in preventive medicine for the coming year at Harvard University.

Port Jefferson Epidemic Under Control.—The typhoid epidemic at Port Jefferson, L. I., is said by health officers to be under control. No new cases have been reported since September 28th and in all known cases the patients are on the road to recovery.

Medical Institute Gift to Belgium.—An institution for medical research similar to the Rockefeller Institute is to be the gift of Americans to Belgium. The necessary funds were by subscription, and the presentation was made to the king and queen of Belgium during their stay in New York.

Gift to Vermont Hospital.—Mr. Henry W. Putnam, of New York, has given the Henry W. Putnam Memorial Hospital at Bennington, Vt., \$150,000 with which to build a nurse's home and establish a permanent endowment for the institution. The hospital was founded in memory of Mr. Putnam's father.

Americans at London Tuberculosis Conference.—The Congress on Tuberculosis Prevention opened October 16th in London, under the presidency of Baron Glenconner. May foreign delegates are in attendance, among them being Dr. C. J. Hatfield, of Philadelphia, director of the Henry Phipps institution for the study and prevention of tuberculosis, and Dr. William C. White, of Pittsburgh.

Graduate Pediatric Course.—The Philadelphia Pediatric Society are giving a postgraduate course, which began Friday, October 17th, on the Diagnosis and Treatment of Tuberculosis in Infancy and Childhood. This course, consisting of eleven lectures, will be delivered by Dr. J. Claxton Gittings in association with Dr. Frank Crozer Knowles, Dr. B. A. Thomas, Dr. James A. Babbitt, and Dr. A. P. C. Ashurst. Lectures will be open to members of the medical profession upon the payment of a nominal registration fee. Dr. A. Green Mitchell, 1717 Pine Street, Philadelphia, secretary of the society, will furnish full details upon application.

Eight Hour Day for Presbyterian Hospital Nurses. The eight hour day has been granted to student nurses in the Presbyterian Hospital, New York, which is the first Eastern nursing institution to effect this reform. The graduate staff of the hospital works on a fifty-seven hour a week basis, which is felt to be the most expedient division of time.

Personal.—Dr. Hugh Cabot, clinical professor of genitourinary disease in Harvard University School of Medicine, chief surgeon at Massachusetts General Hospital, and director of clinics of the State board of health, has been appointed chief surgeon at the University of Michigan, Ann Arbor. He will take up his new duties shortly after the first of the year.

Rockefeller Foundation to Extend Work in Far East. Extension of the educational work of the Rockefeller Foundation in the Far East, particularly in China, is said to be contemplated by that institution. The two most important enterprises of the Foundation in China are the Peking Union Medical College, under construction, and the Shanghai Medical College, the erection of which is expected to be authorized at the annual meeting in December.

Ophthalmological Clinic at Paris.—Professor F. de Lapersonne, assisted by Professor Terrien, Dr. Velter, Dr. Prelat, and Dr. Monbrun, directors of the clinic and laboratory of the Faculty of Medicine of Paris, began a graduate course in ophthalmology October 14th at the Hôtel-Dieu. The course, which will comprise sixteen lessons, is composed of lectures, clinical examinations, and practical exercises. It is announced that foreign medical men may attend.

Cold Storage for Glands.—Establishment of Municipal cold storage plants in which interstitial glands could be kept on ice to supply the demand for renewing human youth, is advocated by Dr. Serge Voronoff, Paris. Voronoff is quoted in press dispatches as stating that interstitial glands, if removed from the body of a hopelessly injured man while he is still alive, will live for weeks in iceboxes.

New Tuberculosis Directories.—The National Tuberculosis Association announces the publication of a new edition of its tuberculosis directories, which are now available, in three parts, as follows: Pamphlet No. 110, A Directory of Tuberculosis Associations and Committees in the United States; Pamphlet No. 111, A Directory of Sanatoria, Hospitals, and Day Camps for the Treatment of Tuberculosis in the United States; Pamphlet No. 112, A Directory of Dispensaries, Clinics, and Classes for the Special Treatment of Tuberculosis in the United States. For tuberculosis agencies that desire copies of these directories bound more substantially, the national association has issued a limited number of a cloth bound directory containing the three pamphlets, the binding matching that of the previous issues. The address of the association is 384 Fourth Avenue, New York.

Influenza Caused by Invisible Virus, Says Dr. Ortecoïn.—A press dispatch from Paris credits to Dr. Ortecoïn the assertion that sanguinary putrefaction in influenza is due to an invisible virus, and also that influenza in human beings differs from bubonic plague but is related to certain animal epidemics. Visible microbes play only a secondary role. Dr. Ortecoïn, who has been conducting experiments at the Pasteur Institute, says he has succeeded in producing influenza among animals by a process that promises the possibility of the application of the principle of serotherapy.

British Working Women Demand Maternity Leave.—British working women will recommend to the international labor conference in Washington the adoption of a measure granting eight weeks leave to women workers before child birth and twelve weeks afterward, with maternity awards for every woman employed in industry, according to a statement said to have been made by Miss Mary MacArthur, chairman of the standing joint committee of the Industrial Women's Organization and secretary of Great Britain's largest trade union of women. She will attend the conference.

High Tuberculosis Death Rate in Balkans.—The tuberculosis death rate in the Balkans is the highest in the world, according to the medical staff of the American Red Cross headquarters at Bucharest. Reports from workers in Rumania, Albania, and Montenegro indicate that these countries are almost wholly without sanitariums for the treatment of tuberculosis. Relief work is therefore temporary, it being considered beyond the province of the Red Cross to found sanitariums on the scale that would be needed.

Success of City's Treatment of Drug Addiction.—The weekly bulletin of the Department of Health of New York city comments on the apparently marked success of the treatment of drug addicts in the department's Riverside Hospital, which has been under way on an extensive scale for a little over a month.

The capacity of the hospital for such cases is 523 men and 100 women. To date over 500 of these patients have been taken entirely off the drug, to the use of which they were habituated, and over 200 of these patients, apparently cured, have been discharged to their homes. The treatment consists of elimination and reduction of drug on admission to between one and a third to three grains a day. (Morphine is used in the hospital irrespective of the drug the patient may have been addicted to.) At the end of four or five days hyoscine anesthesia is produced by hypodermic administration and the patient then taken entirely off his drug, which in over ninety-nine per cent. of the cases treated has been heroine.

Although it is recognized that there will be some relapses, it is hoped that they will be comparatively few in number. A striking result of the treatment is the demonstration of the rapidity and ease with which the drug may be withdrawn entirely without disturbance in the patient's well being and without producing nervous manifestations.

Trachoma Clinic in Ohio.—A trachoma cline is being held at Portsmouth, Ohio, by Surgeon John McMullen, of the United States Public Health Service, and simultaneously a survey of all school children is being made by Dr. Joseph L. Goodwin, of the Public Health Service, and Dr. Ross Hopkins, of the State department of health.

Women's Motor Corps to Aid Health Department.—Colonel Helen Bastedo, commander of the Motor Corps of America, has placed at the disposal of the New York city health department the entire transport service of her organization. The services of the Motor Corps will be utilized in the transportation of drug patients to the narcotic hospital on North Brothers' Island, and in the event of another epidemic of influenza the Motor Corps will convey doctors, nurses, invalids, and food supplies.

Toronto Hospital Appointments.—Dr. Duncan A. L. Graham, newly appointed professor of medicine in the University of Toronto, has been appointed chief physician to the Toronto General Hospital. Dr. John A. Ollie will have charge of the heart clinic; Dr. Frederick W. Rolph, of the gastrointestinal department, Dr. Goldwin W. Howland, nervous diseases; Dr. George S. Young and Dr. George S. Strathy, general medicine; Dr. Harold C. Parsons, tuberculosis; Dr. Charles K. Clarke, the psychiatric department, and Dr. William Goldie, the indoor patients' ward.

Medical Milk Commissions Meet.—The American Association of Medical Milk Commissions will meet in New Orleans at the same time as the annual convention of the American Public Health Association, October 27th to 30th. Dr. A. M. Furrer, of Cleveland, Ohio, is president of the organization. Speakers at the meeting will be Dr. L. R. DuBuys, New Orleans; Prof. F. W. Howe, Boston; Dr. Harris Moak, Brooklyn; Prof. M. P. Ravenel, University of Missouri, and Dr. W. H. Price, Assistant Director of the Service Investigations of Child Hygiene.

74,573 Gassed Patients in A. E. F.—Gas attacks caused the greatest number of hospital cases in the American Expeditionary Forces, the War Department announced in a report of casualties in the overseas army.

	Admitted to hospitals	Died in hospitals
Airplane bomb	141	36
Sabre	12	3
Explosion of mine	15	3
Shotgun	15	2
Shell	16,740	2,058
Hand grenade	870	770
Pistol ball	240	16
Shrapnel	32,753	2,074
Bayonet	181	10
Rifle ball	19,528	980
Secondary missile	246	5
Gas	74,573	1,194
Cutting or piercing instrument	179	2
Flaming fluid	21	....
Knife	19	....
Club	12	....
Unclassified	76,707	7,413
Total	222,252	13,866

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Operative Treatment of Peptic Ulcer.—John B. Deaver (*Annals of Surgery* November, 1919) asserts that there are no binding rules in abdominal surgery, but in order to be more definite states that other things being equal excision of the ulcer, or resection followed by gastroenterostomy, is the procedure of choice. But other things are rarely equal and peptic ulcers do not always occur when they can be removed easily. In the Mayo Clinic the excision of the ulcer is also thought most desirable and cautery has been used to remove ulcers which are not easily accessible to the knife. The procedure does not depend on heat alone but upon complete perforation by the cautery, for clinical experience has shown that spontaneous perforation of gastric ulcer, if complete, usually cures the ulcer and also the patient. Deaver does not agree to this statement having recorded two recurrences. Gastroenterostomy alone is a curative measure—for a time. Gastroenterostomy without resection makes an indirect attack upon the ulcer, diminishes the acidity of the gastric secretion by neutralization with the alkaline juices of the intestines and pancreas; thus reducing the distressing symptoms, especially pylorospasm. If the stoma is large enough and properly placed it prevents stagnation of gastric contents and hastens the evacuation time. The irritating action is removed and the ulcer given a chance to heal. The artificial opening must be made as large as the pylorus and as close to it as possible, for it is the most dependant portion of the stomach and subjected to increased intragastric pressure. The radical operation presents the same advantages as the less complete one with the added benefit of a direct attack on the ulcer and reduces if not removes the chance of carcinomatous degeneration, of perforation and of hemorrhages. Perforation of peptic ulcer is not rare. In the past year it occurred in about 5.2 per cent. of the cases. And it occurs frequently during medical treatment for what should be essentially surgical treatment. With the removal of the ulcer or with its exclusion from the corroding action of the digestive juice the damaged mucosa has a better chance of complete cure. Carcinomatous degeneration of gastric ulcer is a decided menace and cannot be ignored.

The excision of a chronic ulcer or the radical removal of the ulcerous site may be attended with a somewhat greater mortality in the hands of some, than in the operative treatment of peptic ulcer. The radical operation presents more difficulties, which experience can in a measure overcome, but which early operation can materially reduce. It is the difficulty of transgastric resection, for example for a chronic ulcer at the lesser curvature that leads many surgeons to be content with gastroenterostomy, especially when the condition is of long-standing and has led to contractions and adhesions. But the end results are not as satisfactory. There are circumstances when it is expedient to omit the

gastrointestinal anastomosis as in ulcers distant to the pylorus with little exudative induration. Simple excision may suffice. This also holds for saddle back ulcers and those situated on the lesser curvature near the cardia, for which circular resection is the indicated operation. He has, for a number of years, not followed the circular operation by a gastroenterostomy, but on two occasions he was obliged to do a posterior gastroenterostomy on two occasions as a secondary operation. Now he is convinced of the advantage of making the anastomosis at the primary operation. For perforation of a duodenal ulcer he finds it best, after closing the perforation, to plicate the duodenum and fortify the area by covering it over with the gastrocolic and gastrohepatic omentum, completing the operation with a posterior gastroenterostomy.

Radium Therapy.—Ernest Charles Samuel (*New Orleans Medical and Surgical Journal*, October, 1919) declares that radium offers greater hope in malignancy of the uterus than in any other part of the body. The most striking results are obtained in fibroid, but all fibroids are not amenable. Lymphosarcoma is markedly benefitted. He does not find much benefit from radium treatment of malignant disease elsewhere in the body, with the exception of recurrent nodules after breast amputation. The technic of the treatment of uterine cases is thus described:

Fifty milligrams of radium are put into a rubber finger cot; a heavy piece of thread is used to tie the finger cot over the brass filter, this is left long enough, then put into a solution of lysol for fifteen minutes, when it is taken out and wrapped in four turns of sterile gauze. The speculum is next introduced and the radium for the first exposure is placed directly in contact with the mass. The vagina is packed with sterile gauze, the string that is attached to the radium is fastened to the skin with a piece of adhesive plaster, and the patient returned to bed. She is not allowed to get up even to void; a bedpan must be used, first on account of displacing the radium, and, second, to keep the radium from dropping out and being lost. The vaginal pack, on account of its size, interferes with the bladder, and in many cases the catheter must be used. The radium is left in place usually for twelve hours. It is then removed and the patient given a hot saline douche, with instructions to repeat night and morning with a saline solution as hot as can be tolerated, as saline solution seems to be less irritating after the radiation.

The patient is instructed to report in one week for the second exposure. About two layers of gauze are placed between the growth and the radium, to get the advantage of distance filtration; the second exposure usually lasts about ten hours. At the third exposure the thickness of the gauze between the radium and the growth is increased.

This exposure again lasts for ten hours. The patient is urged to keep up the douches and to report one month from the last treatment for examination from the doctor by whom she was referred. Two more weeks are allowed to elapse, then the three exposures are again repeated. The patient rests for six weeks. The third series is given in the same way and the patient told to report in three months. A large proportion of private patients return and about seventy-five per cent. are markedly benefitted. Most of them are able to resume their household duties. A few have remained clinically well for three years, the majority only lasting about fifteen months or two years. A few have died, though cured of the local disease, metastasis usually occurring in a place well removed from the uterus. All cases should be followed by intense therapy with the Coolidge tube by cross-firing through every available portal of entry, as deep therapy certainly does control metastasis away from the site of the original disease. At least three courses of treatment should be given, using as high a tube as possible and giving a full dose each area.

Treatment of Bronchopneumonia in Adults—L. J. Lindsey (*Southern Medical Journal*, September, 1919) asserts that bronchopneumonia is far more common in adults than textbooks would lead one to believe, and warns against the indiscriminate use of vaccines and serums in the treatment. The treatment he recommends is as follows: In the beginning three to six grains of calomel in broken doses followed in three hours by magnesium sulphate. The patient should receive plenty of fresh air and, if possible, sunshine, care being taken not to chill the body. Water should be given freely and the temperature controlled by frequent sponging. Coal tar preparations should not be given. If the pain in the chest is severe it should be controlled by the application of heat or cold over the area, and if this does not suffice, a small amount of codeine or morphine should be given hypodermically, but care should be taken that the opiate does not constipate or lessen the secretions. Ammonium chloride combined with syrup of citric acid seems to be the most reliable expectorant; if the cough is loose but rather persistent, a small amount of codeine or heroin may be added to this mixture. In no disease is it more necessary to select a suitable diet that will maintain the strength and at the same time produce little tympany. Carbohydrates, milk, eggs, broths, and fruit juices should be given. Not a day should pass without at least one evacuation of the bowels. Stimulants should not be given until the heart's action shows signs of weakness; then one thirtieth to one twentieth grain of strychnine every three hours for not too long. Digitalis is useful in some cases. A hot water bottle should be placed at the feet of all pneumonia patients. Special care should be taken that the mouth, nose, and throat are kept clean at all times. During convalescence the patient's heart should be looked after, nutritious food given, and the patient not allowed to go to work for several weeks, and the patient should be examined from time to time in order that his physical status may be determined.

Treatment of Rabies.—Joseph C. Regan and Aaron Silkman (*Archives of Diagnosis*, April, 1919) state that the best method of treating bites of suspected rabid animals is by cauterization. Many of the commonly used agents, however, e. g., phenol, silver nitrate, and the thermocautery, are objectionable in that they seal up the virus. Nitric acid is free from this objection, and is especially valuable in the cauterization of bites treated late; the "fuming" variety of acid should be used. Although many have asserted that to be effective cauterization must be performed within the first few hours, experiments show that certain caustics, notably nitric acid, are effective much later; nitric acid should be applied even up to the seventy-second hour after the injury. Before cauterization the wound should be squeezed to encourage bleeding and thoroughly washed with one in 1000 mercuric chloride solution. A wet dressing of the latter should be applied after the cauterization. A punctured wound that cannot be properly cauterized should be laid open with a scalpel. The bite should not be sewed up. Sutures already introduced should be removed and cauterization performed. In the Pasteur treatment nothing stronger than a three day cord need be used for ordinary bites; for face bites and extensively deep wounds two day cords are advisable. In a bite by a positively rabid animal, the patient should be advised to return for a second series of injections at the end of six months. This will avert the death from rabies after a prolonged incubation period which occurs in rare instances. In face bites or extensive wounds one of the authors has recommended repetition of the entire prophylactic treatment two weeks after completion of the first course. Publicity and proper Federal laws are essential for the eradication of the disease from the United States.

Effects of a Scorbutic Diet on the Adrenal Glands.—Robert McCarrison (*British Medical Journal*, August 16, 1919) studied the effects of a scorbutic diet on the adrenal glands in guineapigs and found that in pigs dying in consequence of such a diet the glands were approximately twice as heavy as in the normal animal. The difference was even more marked when the weights were compared on the basis of the original and final weights of the animals. In spite of the great increase in weight of the glands the amount of epinephrine present in them was only about half that in the glands of normal animals. In addition to these changes the histopathological changes included hemorrhagic infiltration and disintegration of the cellular elements of both cortex and medulla. The latter changes occurred in animals which did not show any clinical evidences of scurvy, and were regarded as being pre-scorbutic in character. In contrast to these findings were those in pigeons fed on diets free from all accessory food factors. Such birds showed an increase in the epinephrine content of the glands. The evidence so far available, however, in both birds and mammals indicated that the functional perfection of the adrenal glands depends on the provision in the diet of adequate amounts of all of the accessory food factors.

Functional Astasia Abasia as a War Neurosis.—A. Hesnard (*Journal de médecine de Bordeaux*, July 10, 1919) comments on the frequency of this condition in the Serbian Army, no less than 115 cases having been encountered among unwounded men suffering from functional nervous diseases. In some the condition had already developed during the Balkan Wars, and it had recurred in a more severe form during the recent conflict. The causes of the condition seemed very variable—infections in some instances, exposure, exhaustion, violent or repeated emotional shock in others. The intensity of the spastic manifestations was such as to suggest organic spinal disease, with very active reflexes and relaxation sometimes quite impossible. There were often minor peripheral organic disturbances in addition, such as terminal neuritis following frost bite, rheumatic conditions, etc. In addition to the types of locomotion described in 1916 by Laignel-Lavastine and Courbon, e. g., short steps, long steps, precipitate locomotion, the inhibitory gait, duck walk, bather's walk, pseudocerebellar gait, etc., there were a number of new types of locomotion, each patient, in fact, having practically a special gait of his own. Some showed what the author terms the skater's gait, the legs being rhythmically crossed; others walked as though on the deck of a ship in a storm; one had the scissors walk, one foot scraping backward as the other advanced; another the armchair walk, etc. These cases are to be ascribed neither to neurasthenia, the anxiety neurosis, nor hysteria exclusively. The writer would term them hysteremotional astasia abasia, believing that each of the three major neuroses mentioned may be involved in variable ratio in different cases. The patients always recovered under combined physical and psychotherapy. Physical measures comprised continuous positive galvanization, mild and prolonged massage, hot air, light, tepid baths, diathermy, etc. In psychotherapy, care was taken to adjust the reeducative measures to the physical capabilities of the more or less exhausted patients.

Ecrasement in Gastric Operations.—Thierry de Martet (*Presse médicale*, July 7, 1919) deems the ordinary clamp of little value in gastrectomy, as the pressure exerted by it is almost exclusively at the heel of the blades, while part of the stomach often escapes from between the tips of the blades. Mayo's écraseur is an improvement, but is too long and heavy, and the same objections apply to it, in a less degree as obtain in the case of clamps. The author has had made an écraseur in which, after application, only the blades themselves remain attached to the stomach. The two blades articulate at one end and are closed over the stomach by powerful forceps applied temporarily over the other end, an automatic latch holding them together. The blades are slightly convex toward each other in order to exert adequate pressure in their intermediate portions. The organ is cut between two such écraseur by means of a thin razor blade of the Gillette type. The crushed margins of the organ are so thin that but little tissue needs to be brought up over them with the Lembert sutures.

Surgical Treatment of Typhoid Carriers.—H. J. Nichols, J. S. Simmons, and C. O. Stimmel (*New Orleans Medical and Surgical Journal*, October, 1919) come to the following conclusions: 1. So-called urinary typhoid carriers are really kidney disease carriers and can be cured by nephrectomy. An additional argument for operation is present if the infected kidney is functionless. One such case is recorded. 2. Intestinal carriers are really bile-passage disease carriers of two kinds: 1. In which the gallbladder alone is infected; these can be cured by cholecystectomy; four such cases are recorded. 2. The gallbladder and bile passages are both infected. In these cases cholecystectomy does not cure the carrier condition and the condition is incurable at present. Two such cases are recorded. 3. The surgical treatment of typhoid carriers, while not perfect, is the best available.

Conduct of Labor and Puerperal Sepsis.—J. H. E. Brock (*Lancet*, August 16, 1919) discusses the problem of the causation of puerperal sepsis, even in the present day of aseptic surgery, and urges that the chief factor lies in the performance of vaginal examinations late in pregnancy and during labor. He contends that one of the earliest changes in the uterus after conception is the appearance of edema of the cervix, which starts almost with impregnation and hence cannot be due to pressure. It seems that this edema, whatever its cause, subserves a purpose beside that of increasing the dilatability of the cervix. As the presenting part progresses the cervix dilates gradually, vessels rupture, and small and large tears occur. The torn vessels are sealed and from them exudes a copious flow of serum and extravasated blood, the purpose of which is doubtless physiological, and probably bactericidal like the flow of lymph after other wounds. Its rôle is probably to cleanse the vagina and to destroy retained organisms. All of this is physiological and wholly beneficial to the patient, but it becomes otherwise if vaginal examinations are the rule during labor, and it may then even become a menace to life. Vaginal examinations, especially when frequent and when they include the introduction of the finger into the cervix, carry infectious matter upward. It is to be borne in mind, as shown by ophthalmic infections in cases without vaginal examinations, that in probably the majority of the cases the vaginal canal is not sterile, hence even the greatest caution in sterilizing the external parts may not prevent the transplantation of virulent organisms from the vagina to the cervix during examination. It should be a rule to make one very thorough examination of the pregnant woman well before the time of labor and to make all other examinations for progress, presentation, etc., by the abdominal method only.

Studies on Influenza.—Yamanouchi, Iwashima, and Iakakami (*Presse médicale*, July 17, 1919) report experimental researches conducted in fifty-four human subjects in connection with the influenza epidemic in Japan. The conclusion reached was that the causative agent in the 1918-1919 epidemic was a filterable virus.

Miscellany from Home and Foreign Journals

The Spleen in Resistance to Infection.—Dudley H. Morris and Frederick D. Bullock (*Annals of Surgery* November, 1919) state that while a widespread impression exists that the spleen plays a part in resistance to infection it is based on little evidence. Experiments have been faulty or incomplete, and it was not always certain that the animals upon whom the experiments were carried out were free from one or more infections. Rabbits injected intravenously with a virulent culture of anthrax when splenectomized died sometimes before and sometimes after controls. Other similar experiments failed to show a marked difference between splenectomized and control animals. The blood changes in dogs after splenectomy which are considered important, are as follows:

1. Moderate secondary anemia lasting a month or more.
2. Leucocytosis, most marked twenty-four hours after operation and lasting several months.
3. Increase in the polymorphonuclears and lymphocytes, and decrease in the mononuclears and transitionals, followed later by a reverse.
4. Absence of eosinophiles from the third to the eleventh week, followed by a pronounced eosinophilia.
5. Appearance of nuclear particles in the red blood cells and presence of normoblasts in the circulating blood.

On the whole, they can not be said to furnish positive evidence of an impaired ability on the part of the body to resist infection; but it seems possible that the anemia and leucocytosis are an indication of the increased susceptibility to infection. The prompt formation of a splenic tumor in many severe systemic infections indicates that the spleen is extremely sensitive to bacterial invasion. If the myeloid metaplasia indicates an effort at increased production of new blood cells, this activity might be considered as only part of a process of resistance. It is not certain that the spleen plays an important rôle in the production of new blood cells. While the spleen has been shown to be an important if not the chief organ for the formation of bactericidal substances, it has been denied that it is greatly concerned with the production of agglutins, precipitins, or antitoxins. Most of the experiments, however, depended upon the reaction of tissue extracts outside the body.

A large series of experiments were done on rats in order to arrive at some definite conclusion as to the importance of the spleen in opposing infection and if the animal's resistance was lowered. The splenectomy operation was very simple. Complications occurred rarely. Rats are particularly insusceptible to the common pathogenic organisms. The principal mortality in rats results from septicemia caused by an organism of the typhoid group, the bacillus of rat plague, first isolated by Tssatchenko. The organism is a slender motile rod varying greatly in length in individual cultures and according to the media used; short forms predomi-

nate. It is gram negative, taking a polar stain, in unstained preparations the translucent centre and darker poles are very striking. The surface colonies on agar are round or oval, grayish translucent discs. Gelatin is not liquified. The broth cultures show general turbidity and pellicle formation followed later by sediment. Growth on potato is slow and scant, but after forty-eight hours a thin grayish covering appears. Litmus milk is turned first red then blue-red. Glucose, galactose levulose and maunite are fermented, but not lactose, saccharose, dextrin, or maltose. There is no indol production. Growth takes places on all ordinary media. The infection was found to be endemic and epidemic in the laboratory and caused ninety per cent. of the mortality among the animals. The cultures are readily standardized and easily recovered from the heart's blood after death.

Thirty-six apparently healthy rats were splenectomized. A similar number of control rats were subjected to a laparotomy in which one testicle was removed. Both sets of animals were thriving the day after operation. They were exposed to chance laboratory infection and kept under observation for several months. Whenever an animal in either series died, an animal in the other group was killed and both completely autopsied. Almost invariably the splenectomized animals died before the controls. The death rate being 80.5 per cent. as compared to 38.9 per cent. in the control rats. The changes, which are characteristic of the tissue injuries wrought by the bacillus of rat plague and kindred organisms, may be summarized as follows:

1. Lungs: congestion; lobular pneumonia; lobar pneumonia.
2. Thymus: parenchymatous degeneration; necrosis; and replacement of the organ by granulation tissue.
3. Heart: myocardial degeneration, associated often with an interstitial cellular infiltration.
4. Liver: congestion; cloudy swelling; fatty infiltration; focal necrosis or extensive degeneration of essential cells with accumulation of fat.
5. Kidney: congestion; parenchymatous degeneration with focal necrosis; glomerular and tubular nephritis.
6. Pancreas: edema, and degeneration of parenchyma.
7. Lymph nodes and lymph follicles of intestine; acute lymphadenitis and focal necrosis.
8. Spleen: acute splenic tumor with focal necrosis.

The peritoneal cultures were negative but the heart's blood of the animals that died, showed the organisms of the typhoid group as a rule. It was concluded from the results that splenectomized rats were more prone to contract the disease; and having contracted it, showed less resistance. The lowered resistance of the spleenless animals to chance infection by the rat bacillus was due to the removal of the spleen. These results were corroborated by three other series of experiments.

Etiology of Disordered Action of the Heart.—J. A. Venning (*British Medical Journal*, September 13, 1919) draws his conclusions from the study of 7,803 cases admitted as disordered action of the heart or as valvular disease of the heart. Of the entire series 835 were admitted as cases of valvular disease, but on careful examination only 304 of these were found to be actual cases of valvular disease, the remainder being cases of disordered action of the heart. Similarly almost half of the cases of valvular disease were originally admitted with the diagnosis of disordered action of the heart. These figures showed the large element of error in differential diagnosis between the two classes or cases. Among the cases of valvular disease fifty-eight per cent. of the patients gave a definite history of acute rheumatic fever, showing the great importance of this disease as a causative factor. In a very large number of the valvular cases the patients had stood many months of hardship and strain in the front line indicating the compatibility of such organic lesions with severe effort. The cases of disordered action of the heart were divided into four groups, corresponding to the four periods of six months each covered by the study, and the etiology was investigated for each period separately. It was found that the greatest causative factor was the physical and mental strain of warfare, the incidence of this factor rising from about twenty per cent. for the first six months to about thirty-six per cent. for the last period but one, and then falling slightly. The second cause was infections, the incidence of which as a cause remaining fairly uniform in the neighborhood of twenty per cent. Here, again, rheumatic fever proved the most important and most crippling, accounting for from forty-one to fifty-seven per cent. of all cases due to infections. Trench fever was not found to be of very great importance as a cause. Other less important factors were found in neurosis before enlistment, civil occupations, constitutional inferiority, and gas poisoning. The disordered action of the heart caused by the last factor was, however, neither serious nor lasting. Finally the discharge classification of 6,269 cases of disordered action of the heart was followed, the cases being grouped according to the etiology. In cases due to gas poisoning sixty-one per cent. who were originally A men were discharged as A men, twenty-one per cent. as B men, and the remainder in lower categories. Among the rheumatic fever cases thirty-one per cent. of A men were discharged as A, and forty-four per cent. as B, while seventy per cent. admitted as B were so discharged.

Increase of Alkalinity of the Blood in Shock.—Benjamin Moore (*Lancet*, September 13, 1919) contends that recent work shows that there is no enhanced acidity of the blood in shock such as would warrant the use of the term acidosis, but rather that there is a greatly increased alkalinity of the blood which damages the heart and nerve centres and leads to that secondary shock which results fatally. In shocks there is a very marked reduction of the alkaline reserve so that the titration of the blood to acids gives greatly reduced figures, but at the same time the blood is much more alkaline

than normal. In its effort to get enough oxygen the shocked organism breathes off an excess of its carbon dioxide. It thereby alkalizes its blood and tissues, and this alkalinity, by its action on the molecular aggregation in the bioplasm, disturbs the functions of the heart and nerve centres. As the pressure of free carbon dioxide in the blood is reduced the alkalinity rises and the kidneys and tissue cells remove the alkali from the circulation. For this reason the circulating bicarbonate of the blood decreases and the lowered titration to acids results. With the occurrence of primary shock from any cause there is cerebral anemia and unconsciousness. If this condition lasts for as much as twenty to thirty minutes there is a general reduction in metabolic activity, but the continued respiration, even at a reduced rate, rapidly removes an excess of carbon dioxide over that which is being produced, causes increased alkalinity of the blood, and secondary shock results. Excessive respiration is not a necessary antecedent to shock, but in every case in which shock develops the respiration is excessive if it is considered in relation to the diminished metabolic activity of the tissues and the diminished production of carbon dioxide. In the treatment of shock it is entirely wrong to administer alkalies; what the organism really needs is oxygen, carbon dioxide, and warmth until tissue oxidation approaches its normal level.

Criticism of Recent Claims to Have Discovered and Cultivated the Filter Passing Virus of Trench Fever and of Influenza.—J. A. Arkwright (*British Medical Journal*, August 23, 1919) reviews the work of Bradford, Bashford and Wilson, and reports his studies of cultures and stained slides provided by Wilson. The author also reviews the work which has been done by others, and draws from his own extensive researches. He reaches the following conclusions: That he was quite unable to distinguish macroscopically or microscopically between tubes inoculated with trench fever or influenza virus and control tubes at any period up to three weeks from their inoculation, or even longer. Culture tubes which showed a considerable deposit or turbidity of the serum broth always proved to have been contaminated with common bacteria. Two tubes selected by Wilson as good examples of cultures of trench fever virus and influenza virus, respectively, proved to be grossly contaminated with large staphylococci and contained no other organisms. Of three films shown to the author as typical of the trench fever virus two seemed to be films of irregularly stained diphtheroid organisms, while the third contained many small bacilli in addition to diphtheroids. In other tubes, regarded as typical cultures of trench fever, nothing was found other than what may often be found in control tubes. The forms claimed by Bradford, Bashford and Wilson as the organisms of trench fever and influenza seemed to be either a staphylococcus or an irregularly stained diphtheroid bacillus, or smaller and larger granules of precipitated protein such as are found in control tubes. The author believes that Bradford, Bashford and Wilson have been misled in their investigations by various factors.

Preoperative and Postoperative Blood-Pressures.—J. O. Polak (*American Journal of Obstetrics*, August, 1919) emphasizes the influence of proper preoperative examinations of the blood, urine, pulse pressure, and renal functions, and of comparative temperature records, in saving gynecological patients from postoperative complications and promoting smooth convalescence. In all cases the author has systolic and diastolic pressure readings taken at rest, after moderate and active exercise, at operation, and six, twenty-four, and seventy-two hours after operation. Frequent estimations of the phthalein output are also made in each patient. From studies along these lines in 350 abdominal cases, the author has become convinced that the pulse pressure is the test of myocardial strength when endocardial lesions can be excluded. The relation of the pulse pressure to the systolic pressure is one to three or more, if compensation is adequate. Renal efficiency is directly dependent upon cardiac force, provided the kidney structures are normal or nearly so. One hour of ether anesthesia does not disturb the ratio of pulse pressure to renal function—phthalein output—unless the operation is accompanied by considerable loss of blood. When preoperative renal function is low, pulse pressure must be high to compensate for it; saline solution by skin, bowel, or vein does no good unless the heart can take it up and carry it along. When both pulse pressure and phthalein output are low, or the ratio of pulse pressure to systolic pressure is as one to two, the operative prognosis should be guarded. Morphine in large doses, used during operation, seems to reduce shock, but definitely diminishes renal output. In the majority of cases the systolic pressures show a moderate fall after ether anesthesia; oxygen inhalation after withdrawal of the ether diminishes this fall temporarily. In cases of shock, especially where much blood has been lost during operation, the fall in systolic pressure is greater than after a long operation without blood loss. The pulse pressure is a better index of hemorrhage or cardiac failure than the systolic pressure. A rise in the leucocyte count occurs constantly in actual hemorrhage, whereas in shocks the leucocytes fall.

Influenza and Surgical Accidents.—J. L. Faure (*Presse médicale*, July 24, 1919) notes that most surgeons believe air infection to be a negligible factor in operative practice. From many years' experimentation and observation, however, he is convinced that infection from dust suspended in the air of the operating room does occur, and he now regularly takes the precaution of settling this dust by means of water vapor and disinfecting the operating room with formaldehyde every week. Where the operator and his assistants, in the presence of unaccountable fatalities from infection, have had the water examined and found it sterile, and have made certain that the autoclaves are in good working order, the cause of the trouble is undoubtedly air infection. Observations during the late influenza epidemic confirmed the author's view in this respect. Suddenly, in January and during the first half of February, 1919, when the second invasion of influenza in Paris was at its height, the author had four patients succumb unaccountably to infection and had seven

cases of embolism, of which three were fatal. Most of these cases had been dealt with in the author's own regular operating room, with the same assistants, in the usual technic, and with water, gauze, and autoclaves sterile as shown by actual tests. These accidents took place on the very days in which the curve of influenza fatalities reached its maximum and subsequently no more occurred. In a number of patients also pneumonia or phlebitis developed during this period. A relationship is seen between these observations and the numerous fatalities in obstetrical work during the epidemic, infection from the air apparently getting in through the exposed tissue surfaces. Témoïn had similar experiences at that time. In any future influenza epidemic, operative work not immediately urgent should be postponed until infection of the air has become less.

Antianaphylactic Immunization with Sodium Chloride.—Richet, Brodin, and Saint-Girond (*Presse médicale*, July 24, 1919) found that when a second injection of horse serum is to be given to an animal which three weeks previously had been given a preliminary injection of this serum, the violent anaphylactic reaction, which is frequently lethal within a short time, may be prevented by the use of a serum which has been diluted with nine times its volume of isotonic sodium chloride solution. Where this is done the reaction is of only moderate intensity and the animal quickly recovers. Sodium chlorate if given in sufficient doses, undoubtedly exerts a protective influence against the effects of second serum injections. If the saline solution is injected before the serum a much larger quantity of salt is required, due, apparently, to the rapidity with which it is eliminated. The protective action of salt is considered by the authors to be related to previous observations upon excess of chlorides reported by them.

Method of Sedimentation of Tubercle Bacilli in Sputum.—J. G. Greenfield and J. Anderson (*Lancet*, September 6, 1919) have employed the following method with success for over a year, finding it much more reliable and practical than any of the other published methods. Five mils of sputum are mixed with ten mils of the following mixture:

Sodium carbonate (crystalline)	1
Phenol (crystalline)	1
Water	100

in a centrifuge tube; the tube is capped with rubber, shaken for a few minutes, and incubated for twelve to twenty-four hours. At the end of incubation the tube is centrifuged for about fifteen minutes, the supernatant fluid poured off, and films are made from two to four loops of the sediment and stained. The method has many advantages including: its rapidity, since the tubes are readily set up and the examination is very easy; the sputum is sterile when the times comes for its examination; the films resemble the direct smears both in the relative proportion of other organisms and in the cellular elements; and the mucus is not stained. Finally the tubercle bacilli can be found in the smears very much more readily than in direct smears, and are often found after the sedimentation when they are absent from direct smears.

Comparison of the Antiscorbutic Values of Fresh, Heated, and Dried Cow's Milk.—Rosamund E. Barnes and E. Margaret Hume (*Lancet*, August 23, 1919) employed both guineapigs and young monkeys in their experiments and confirmed the previous observations that raw cow's milk must be regarded as one of the less valuable foodstuffs for its antiscorbutic properties. They found that daily rations of fresh milk amounting to 100 to 150 mls for guineapigs and 125 to 175 mls for young monkeys were required to protect from scurvy. Dried milk was found greatly inferior in its protective value, failing entirely in the case of guineapigs in the largest amounts which could be given to those animals, and showing less than half its original value in the case of monkeys. Scalded milk, while inferior to fresh milk, was distinctly superior to dried milk. These facts constitute a strong argument in favor of adding some extra antiscorbutic material to the diet of infants fed on cow's milk which has been dried. Raw orange juice, raw turnip juice, or the juice of raw or canned tomatoes are the best. Grape and carrot juices are useful, but are inferior to those mentioned. Cooked and mashed potatoes can be employed where they are not otherwise contraindicated. Some evidence was also obtained by the authors to show that winter milk is inferior to summer milk in antiscorbutic property. This seemed referable to the nature of the food used for cows at the two seasons, and it is suggested that the inferiority of winter milk can be corrected by feeding cows with some beets or carrots in place of the man-golds commonly used. Raw and dried cow's milk did not show any appreciable differences in their growth promoting properties.

Sudden Detachment of Aortic Intima.—Cranston Walker and Lena Walker (*British Medical Journal*, August 16, 1919) saw a well built, muscular man, sixty-five years old, three quarters of an hour after a sudden seizure which caused him to fall to the ground suffering from pain in the chest and loss of the use of his left leg. He also had a vague oppressive sensation in his chest, and was pallid and presented the picture of severe hemorrhage. Examination revealed a paresis of the left leg involving all the muscles equally. Nothing definite was discovered on examination of the heart and other organs, though the pulse was rapid and small and the heart sounds very feeble. Amyl nitrite inhalations, sodium nitrite by mouth, and rest in bed led to rapid improvement, but about forty hours later he died suddenly on making a slight effort. At autopsy the entire aorta was found much sclerosed and beginning in the ascending portion there was very extensive dissection of the intima, which was most pronounced in the ascending and abdominal portions, in the latter the intima having largely occluded the vessels supplying the left leg. The authors discuss the mechanical factors which can produce intimal stripping or dissecting aneurysm and contend that the most important are firm sclerosis of the whole wall, cracks in the sclerosed intima, and the forward movement of the blood stream, rather than the blood pressure.

Studies on Cirrhosis of the Liver following Intraportal Injection of Toxic Substances.—Sukemasa Ogata (*Journal of Medical Research*, May, 1919), in order to study the effect of toxic substances considered to be the cause of cirrhosis of the liver, injected alcohol, an extract of cigar tobacco, an emulsion of killed tubercle bacilli, and an emulsion of killed colon bacilli directly into the portal vein of a rabbit. In some instances the ear vein was used for injection. Following the alcoholic injection marked cirrhotic changes in the interlobular spaces, with newly formed bile ducts, were seen, but the cirrhosis was not the same as Laennec's cirrhosis of the liver. Repeated injections of tobacco may also result in some toxic effects on the liver, but again the changes produced did not resemble Laennec's cirrhosis, and from these experiments no relation can be established between cirrhosis of the liver and nicotine. On the other hand, a possible relation may exist between tuberculosis, particularly of the peritoneum and intestine, and cirrhosis of the liver, as changes resembling tuberculous lesions followed by increased connective tissue, were observed in the liver following repeated injections of a sterilized emulsion of tubercle bacilli. In like manner sterilized colon bacilli and their toxic products may be capable of producing cirrhotic changes in the liver, though the change is again not the same as Laennec's cirrhosis.

Diagnosis of Arteriosclerosis from an Ocular Stand-point.—C. A. Clapp (*Archives of Diagnosis*, April 1919) laments the almost universal disregard of an examination under considerable magnification—sixteen times—of the small arteries and arterioles in the only place in the human body in which they are visible, viz., the fundus oculi. While in all cases of hypertension the patients do not show vascular changes in the fundi, the patients who do show marked change there do not always have an increased blood pressure—apparently a useful point on the diagnosis between hypertension and arteriosclerosis. Diagnosticians should become familiar with the following eye changes in arteriosclerosis: Increased tortuosity of the retinal vessels, with alterations in size and breadth, broadening of the light streak, and occasionally a beaded appearance; dipping or cupping of veins as they cross the retinal arteries—due to the arterial thickening—with occasional dilatation of the veins peripherally to these points; edema of the retina with hemorrhages, usually linear or flame shaped, and occasionally, small exudations; blurring of the optic nerve head, usually beginning in the superior nasal quadrant, and at times marked optic neuritis; pigment disturbance about the macula, described as a "moth-eaten appearance" and caused by changes in the vascular supply; arteriosclerosis of the choroidal vessels, a rarely seen but significant conditions. No renal, cardiovascular or nervous case is properly studied without a fundal examination with dilated pupil by direct ophthalmoscopy. It is not always possible to say that the patient has a general arteriosclerosis, but much useful information can be obtained for differentiating between cardiovascular and other lesions.

The Effect of Age, Heat, and Reaction on Antiscorbutic Foods.—Alfred F. Hess and Lester J. Unger (*Journal of Biological Chemistry*, June, 1919) disagree with the conclusions of Denton and Kohman that "ordinary methods of cooking do not perceptibly injure the nutritive value of carrots". The present experiments were carried out on guineapigs, and it was found that in the course of cooking the carrots lost a very large part of their antiscorbutic potency. It was also observed that there was a difference in the ability of carrots as an antiscorbutic agent depending on whether they were young or old, fresh or stale, and the amount of boiling they required. When fresh young carrots are dehydrated they are enabled to retain their antiscorbutic power after dehydration. The water in which the carrots are cooked does not retard the onset of scurvy. Contrary to the conclusions of other investigators, milk, when dried by the Just-Hatmaker process, was capable of protecting a guineapig from scurvy. Milk dried by this process was capable of curing scurvy.

Inoculation Against Spanish Influenza.—Francis Temple Grey (*Lancet*, September 13, 1919) cites several well controlled observations which seem to show that the use of prophylactic vaccine against influenza gives results, "which are nothing short of miraculous". This measure will decrease enormously the incidence of the disease, will greatly mitigate its severity, and will reduce its mortality to a low figure. The full dose of the vaccine used contains micrococcus catarrhalis, 125 million; pneumococci and streptococci, fifty millions each; and the same number of a gram positive diplococcus. The bacillus influenzae is not a necessary constituent of the vaccine, and in view of the possibility of its producing a negative phase during an epidemic outbreak, it should not be used. A pure streptococcal vaccine gives results quite as good as the mixed vaccine described. After the fifth week from vaccination the immunity begins to disappear, hence the full dose should be repeated every five or six weeks during an epidemic.

Direct Concussion of the Dorsal Cord.—J. Lhermitte (*Presse médicale*, July 24, 1919) reports the case of a man aged twenty-three who fell a distance of five metres and at once exhibited the clinical picture of complete functional section of the dorsal portion of the spinal cord. After four days in which the patient's condition remained unchanged, defence reflexes and Babinski's sign appeared. The man succumbed on the fifteenth day to bronchopneumonia. Postmortem the spinal column was found entirely uninjured and there was no meningeal lesion. The cord itself was macroscopically normal, but microscopically the upper dorsal cord showed marked changes. The primary acute degenerative process described by Claude and the author was very manifest, and present in pure form. There was no area of softening, nor any hemorrhage. In no place did the vessels seem distended. This case shows that the new facts gleaned in military practice are likewise applicable in the traumatism encountered in times of peace and that direct spinal concussion (commotion) is a definite, separate clinical entity.

The Role of the X-ray in the Diagnosis of Long Standing Renal Tuberculosis.—J. A. C. Colston and Charles A. Waters (*Bulletin of the Johns Hopkins Hospital*, September, 1919) report in detail five cases of renal tuberculosis in which the x ray was instrumental in establishing the diagnosis. They emphasize the usefulness of the x ray in such conditions, as, when other methods have failed, a definite diagnosis has been made by its use alone. Of course catheterization of the other ureter should be carried out to determine the condition of the opposite kidney. The shadows seen will depend on the amount of calcification which has taken place in the diseased kidney, as they will vary from the indefinite shadows cast by small areas of calcification to the characteristic lobulated shadow which is typical of a completely destroyed kidney.

Certain Diagnostic Aspects of Medico-surgical Diseases of the Gastrointestinal Tract.—C. W. McClure (*Boston Medical and Surgical Journal*, September 25, 1919) emphasizes by means of illustrative cases the value of the fluoroscope in the diagnosis of some of the gastrointestinal disorders, the clinical significance of certain abnormal muscular phenomena of the alimentary tract, the necessity for the clinician to learn the radiography of his chosen field, and the possibility of masking important symptoms by the too early use of special dietary measures.

What is the Unconscious?—Henry Jones Mulford (*American Journal of Psychology*, July, 1919) refers for an understanding of the unconscious to the primitive cell, which could react only to an external stimulus. This cell had reflex consciousness, which is reaction to contact without knowledge of the reaction before or after the contact. The cerebral cells, specialized as thought cells, sometimes behave as contact cells because they were contact cells before they were cerebral cells. The unconscious is merely reflex action, and the terms unconscious and subconscious may not apply.

Preliminary Report of Studies on the Influence of Alcohol and Nicotine upon the Ovary.—Sukemasa Ogata (*Journal of Medical Research*, May, 1919) after removing one ovary from the rabbits used in this experiment, noted the effect on the corresponding organ of gradually increasing injections of alcohol into the ear vein over a considerable period of time. No apparent changes in the ovaries could be detected, though in some instances there were fewer developing Graafian follicles than in the normal ovary.

Circinate Tuberculides Simulating Tertiary Syphilis.—M. Pinard (*Presse médicale*, July 24, 1919) observed in two cases circinate tuberculous lesions on the buttocks presenting a distinctly syphilitic aspect. One patient had a costal abscess from which fluid was obtained capable of inducing tuberculosis in a guineapig. Failure of energetic arsenical treatment, undertaken in spite of negative Wassermann and Hecht reactions, was an interesting feature, particularly in view of the fact that congenital syphilitic infection might otherwise have accounted for the special circinate appearance of the lesions.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-Second Annual Meeting, Held at Cincinnati,
Ohio, September 15, 16 and 17, 1919.*

The President, DR. JOHN F. ERDMANN, of New York,
in the chair.

(Continued from page 636)

Prophylaxis of Gestation.—DR. ASA B. DAVIS, of New York, said that prophylaxis of pregnancy (prenatal care) meant a supervision of the pregnant woman throughout the whole nine months of gestation. It meant the giving of instruction to her as to her mode of life, her clothing, occupation, exercise, sleep, diet, the attention to hygienic care of her body, bathing, the avoidance of constipation, etc. She should be the subject of regular monthly observations during the first six months of pregnancy, bimonthly during the remaining three months, and as much oftener as the nature of her case required. At such times, her urine should be examined and her blood pressure taken. Early in pregnancy there should be a thorough physical examination which should include careful external and internal pelvimetry. She should be instructed to report promptly anything which she considered to be abnormal and bring for answer any questions which had arisen and annoyed and perplexed her. The aim should be to anticipate and avert complications; and if they did arise, to detect them early while they were yet relatively unimportant and treat them at this stage.

Disturbances of vision should call for prompt ophthalmoscopic examination. Only by this means was it possible to distinguish between the toxemia of late pregnancy and the exacerbation of chronic nephritis during pregnancy. In the former, structural changes in the eyes were rarely detected and the symptoms were transitory if the toxemia was removed. In the latter structural eye changes were the rule and they might demand prompt interruption of pregnancy in order to save the eyesight.

The relations between accoucheur and patient, in so far as the reproductive process was concerned, should be that of mutual understanding and confidence in order to secure the necessary cooperation. This placed obligations upon both parties; upon the former that he should be competent and honest, alert in his interest and well sustained watchful care, and careful and thorough in his investigations.

If abortion and sterilization were to be done, the most satisfactory way was to empty the uterus by abdominal hysterotomy and resect a portion of the tubes from the uterus outward, ligate the distal end and suture peritoneum over the cut ends, but we needed more light and cooperation upon this subject from specialists who were treating tuberculosis. The decision to bring about this great change in a woman's life should not rest upon the fiat of a hurried physician working in a dispensary for tuberculosis and acquainted with but one side of the question.

Ovarian Cyst: Removal of Large Cyst of Right Parovarian, Followed by Cæsarean Section; Fibroma of Round Ligament.—DR. ARTHUR T. JONES, of Providence, Rhode Island, stated that in a case of ovarian cyst, a median incision was made from the pubes to the ensiform, and the tumor, which was an enormous cyst of the right ovary, was removed without difficulty. The appendix was found enlarged and was removed. The incision was closed in layers by the usual method. The tumor contained forty-three pints of fluid and with sac weighed fifty pounds. Patient made a good and uninterrupted recovery.

In the second case a laparotomy was done through a median incision; a large cyst of the right parovarium was delivered and removed. The uterus was then incised and a live child delivered, placenta removed, and the uterus closed in two layers. The abdominal incision was closed in layers. The patient made an uninterrupted recovery.

In the third case the tumor was found to be hard and fibrous, and attached to the distal end of the round ligament. The latter was dissected along to the internal ring. The peritoneum was opened at the internal ring, uterus palpated, and found to contain small fibroids on the posterior wall low down near the cervix. Both appendages were found adherent to the underside of the broad ligaments, the ovaries were sclerotic, and the tumor with a portion of the round ligament was cut away. The peritoneum at the internal ring was closed and also the internal ring closed around the round ligament, the latter stitched between the edges of the external oblique as in the Alexander operation. The incision was closed. The patient made an uneventful recovery.

Chronic Oophoritis and the Cystic Ovary.—DR. OTTO H. SCHWARZ, of St. Louis, Mo., stated that chronic oophoritis necessarily meant a chronic inflammatory process in the ovary, and it should embrace only such lesions which could be definitely attributed to the effects of inflammation. It was almost always a secondary disease, secondary usually to an infection of the tubes, and therefore most frequently of gonorrheal origin; infection from a puerperal origin was also frequent. In the description of chronic oophoritis most authorities agreed that the periovarian adhesions with sclerotic changes in the ovary were most characteristic.

A series of eighty cases had been studied in which one or both ovaries had been removed at operation. With few exceptions, the removal of the ovaries was of a secondary nature; they were either diseased themselves in association with more important pelvic lesions, or were removed in the course of a hysterectomy. When the ovary was removed for a new growth, it was not included in the series.

In going over these specimens a diagnosis of chronic oophoritis was made in twenty-four cases; in sixteen of these cases the patients were operated upon for chronic adnexal inflammatory masses, and in these cases, without an exception, there was a very marked inflammatory process in the tubes. The ovaries were densely adherent to the tube, in some instances it was very difficult to recognize

them, so intimately were they connected. In ten of these cases the ovaries were enlarged, usually the enlargement was rather moderate; in several instances about the size of a hen's egg, but no larger. On six occasions they were of normal size; some perhaps slightly smaller. Microscopic examination of the tube in each of these showed a marked chronic salpingitis. In the eight remaining cases, uterine myomata were present, but these were for the most part rather small. In two of these cases the ovaries were markedly adherent to a chronically inflamed tube; in the others there was only slight evidence of pelvic inflammation, but the tubes on microscopic section, with one exception, showed a definite chronic inflammation. The one case which showed no tubal inflammation had a definite chronic inflammatory process in the endometrium and in the uterine wall. Cystic degeneration of the ovary was found most frequently in cases of noninflammatory nature. In a considerable majority of cases, there were no changes in the ovary which could be attributed to inflammation. Small round cell infiltration, one of the usual findings in chronic inflammation, was not in evidence.

The Cystic Ovary.—DR. FRANCIS REDER, of St. Louis, Mo., said that although the so-called cystic degeneration of the ovaries, according to later research work, was looked upon for the most part as a physiological process, the fact must not be lost sight of also that a pathological condition was at work which exerted a destructive potency upon the parenchyma of the organ, thus impairing its functional efficiency. A cystic ovary was usually discovered in the course of an abdominal operation. Resection of the cystic area and puncture of the scattered cysts alone rarely cured the condition. Proper suspension of the organ to reestablish and augment its vascular supply, together with a well regulated hygienic management of the patient, might eventually effect a cure. Without an abnormal position of the uterus, be it a retrodeviation or a descensus due to ligamentous relaxation in which the uterus might be anteverted, there was seldom a prolapsus of the ovary; without a prolapsus of the ovary there was no abnormal hyperemia, and without an abnormal hyperemia there was rarely a cystic ovary.

Experience With Cases of Version During the Year, September, 1918, to September, 1919.—DR. IRVING WHITE POTTER, of Buffalo, N. Y., stated that since last year's meeting of this society he had personally delivered 1010 women, 450 of whom were primiparæ and 560 multiparæ. Of this number there were fourteen twin births. For various conditions version was performed 680 times, 300 in primiparæ, 380 in multiparæ. For delayed rotation of the occiput from either the right or left posterior position, there were 545 cases. There were four face presentations with the chin either anterior or posterior. Prolapsed cord furnished nine cases. Arm presenting furnished three cases, which would have led to a neglected shoulder presentation if not attended to. Placenta prævia marginalis, eight cases. There were forty-two cases of vertex presentation that were delivered by forceps because the

head could not be raised up through the pelvis, owing to too firm uterine contractions. In eighty-eight cases the patients were seen in consultation with physicians; eleven patients were seen with midwives. There were forty-three stillborn children in the 1010 deliveries, and of this number 680 were delivered by version, representing a total fetal mortality of forty-three cases.

Instruments were applied to the aftercoming head twice, and Doctor Porter believed the more familiar we were with the proper method of version the less frequently we would find it necessary to apply the forcep to the aftercoming head. There was no maternal mortality, and the maternal morbidity was no greater than in other methods of delivery. There were no lacerations of the maternal soft parts that required anything more than simple repair, and he meant by that a slight tear up to but not through the muscle. He described in detail the steps necessary to a successful version.

Abscess of the Liver.—DR. JOHN W. KEEFE, of Providence, Rhode Island, stated that abscess of the liver was always the consequence of infection. The infecting agents might reach the liver directly, as when in consequence of traumatism bacteria were introduced directly into the liver. Infection might be carried by the blood stream, through the portal vein, hepatic artery and hepatic veins. Without doubt, this was the usual route of entrance of the infective organisms, although they might gain access to the liver by way of the lymphatics. There might be extension of disease of adjacent organs, for instance, the gallbladder. Ulcerative endocarditis might be the primary cause. Appendicitis also might be the forerunner of liver abscess, the infection then took place through the circulation following thrombophlebitis or by retrocecal extension. By far the most frequent cause of abscess of the liver was dysentery, especially amebic dysentery. This form might be accompanied by pyelephlebitis. It was likely to be found in subjects fond of alcohol, especially gin, and those who led an irregular life with exposure to the elements, and were poorly housed and poorly fed.

Multiple abscesses of the liver of pyemic origin and suppurative pyelephlebitis were practically always fatal. The traumatic abscesses, those following dysentery and appendicitis, and those due to extension from a purulent gallbladder might be amenable to surgical intervention. Emetine hydrochloride or hydrobromide one half to one third grains, administered subcutaneously, was of value when the Amebahistolytica was found. The probable location of the abscess must determine the point of attack. An anterior incision might be the most desirable in certain cases, but an incision in the eleventh interspace midaxillary line was the one of choice in a large proportion of cases. The pleural cavity and diaphragm must be traversed before reaching the liver. The capsule of the liver should be incised and a blunt pointed clamp inserted through the liver substance into the abscess cavity; the clamp should then be opened and withdrawn in this position, thus enlarging the original point of entrance.

Syphilis as a Cause of Delayed Healing in the Non-infected Abdominal Incision.—DR. WILLIAM EDGAR DARNALL, of Atlantic City, N. J., stated that in his own experience, which covered an active service of nearly twenty years, he could find but three cases among hundreds of abdominal incisions. Two of his cases occurred in patients with incisions below the umbilicus and one above. The first was in his early experience, a ward case, a negress, on whom he did a subtotal hysterectomy for large fibroids. The case was a perfectly clean one. There was no indication after the operation of any infection of the incision either locally or constitutionally. He thought the patient was making a good recovery until the removal of the silk worm sutures from the skin on the tenth day, when the whole wound fell wide open, peritoneum and all, and one could look with unobstructed view clear to the bottom of Douglas's culdesac. She became infected and died. This was before the discovery of the Wassermann reaction but the almost universal prevalence of syphilis among the Southern negro placed her at least under suspicion.

The second case occurred in 1913 in a husky Italian on whom he did a cholecystostomy. The incision was made through the right rectus muscle. Five days after the operation the incision showed no healing and no infection and the intestines were protruding. He was taken to the operating room and sewed up again and fed actively on iodides with the result that the incision healed perfectly. His Wassermann was positive. The third case occurred in a patient on whom he did a Wertheim operation for carcinoma of the cervix. The other two patients had been strong and robust, but this one was of lowered vitality although the cancer had not progressed extensively. These three cases were not enough to base conclusions upon, but two of the patients were definitely syphilitic and the other probably so. This evidence was enough to suggest syphilis as one of the causes, at least, of delayed healing in the abdominal incisions.

The Buried Loop Operation for Shortening the Round Ligaments.—DR. JOHN NORVAL BELL, of Detroit, Mich., said that he had devised the following operation: The usual median incision having been made, the necessary attention given the pelvic pathology, the round ligaments were then brought out through a perforation of the abdominal wall as in the Gilliam operation. A strip of fascia from one half to one inch in width was now cut transversely and dissected from the rectus. The fascial flap was drawn through the loop of ligament, replaced in its original position, and sutured there. The loop of the ligament was buried beneath the fascia and could not escape to slide back into the abdominal cavity. Not infrequently the loop of ligament on one side was shorter than the other. Where such a condition existed the fascial flap could be cut narrower. In other words, the flap could be cut to accommodate the length of the loop. The freshly cut edges of the fascia lying in apposition and union should be firm and prompt. All necessary plastic work should be done in the perineum and vagina.

The Varieties and Treatment of Dysmenorrhea.—DR. J. HENRY CARSTENS, of Detroit, Mich., stated that dysmenorrhea was due to obstruction, to abnormal conditions of the membrane, to inflammation of the tubes, to pelvic adhesions, and to an aberrant action of one or more of the ductless glands. The treatment should consist of dilatation and the use of the stem pessary to make it permanent; abdominal section and removal of the tubes, or the restoration of them; the breaking up of adhesions, and the use of preparations of ductless glands as indicated.

Short Incisions Versus Long Incisions.—DR. ROBERT T. MORRIS, of New York, said that in operative work we were to use incisions as short as possible and as little manipulation of the tissues as might be safest for our purposes. The operator who was not very expert required a great deal of room for his work. He must work by sight and through an incision perhaps several inches in length; whereas the more expert operator could operate through an incision one, two, or three inches in length. In other words, a very short incision was the one which on general principles gave the smallest proportion of toxic substance and the smallest degree of destructive nerve impulse. On the other hand, what he called the mackerel incision, such as one learned in the fish shop, was the one which gave the greatest degree of shock. Therefore, it was very desirable to use the shortest incision possible for one's work through which he might work safely and comfortably in the interest of the patient.

Some Lessons From the War for Abdominal Surgeons and Others.—DR. ROWLAND E. SKEEL, of Cleveland, Ohio, stated that tetanus antitoxine as a prophylactic measure was of unquestioned value, when properly administered. That prolonged rough handling of abdominal viscera and traction on mesenteries was productive of shock lay within the experience of every abdominal surgeon, while shock as the result of moderate hemorrhage plus prolonged etherization was occasionally seen, but there still remained a residuum of cases in which none of these were operative, therefore Henderson's theory of carbon dioxide exosmosis or Cannon's theory of the development of a toxin in devitalized muscle might be called upon to explain.

The value of certain procedures in treatment were definitely established clinically by the experience of war. These were first, relief from extreme pain; second, the warming up of a patient who was cold; third, that hot liquid food was a decided stimulant; fourth, that the use of either saline or sodium bicarbonate solutions intravenously, subcutaneously, or per rectum was of value as a temporary expedient only; and fifth, that blood transfusion was applicable in more cases than any other one measure in overcoming any and every type of shock other than that of psychic origin. But little of importance had been gained in our knowledge of intraabdominal injuries. Two things only stood out with any distinctness. The first of these was the fact that the most extensive injuries to the liver were not incompatible with life, unless the injury was of such a character as to be almost immediately fatal. The extent of liver destruction which

still permitted of recovery was a perennial source of astonishment. One of Doctor Skeel's patients who recovered lost a transverse section of the entire upper abdominal wall some three inches in width with a groove in the liver substance which almost bisected it; in fact, the lower half of the liver was stitched into the defect in the abdominal wall to prevent extrusion of the intestines. The other point had been first pointed out to him by Major John Anderson, and had reference to the almost constant ratio between preoperative pulse rate and mortality in perforating abdominal injuries.

A penetrating wound of the thorax and lung, even with extensive hemorrhage, which did not permit the ingress and egress of air with each respiratory movement came to be the subject of marked conservatism unless the resulting hemothorax became infected. Quite the contrary was true of open sucking wounds of the chest. The profound shock and appearance of impending death never were overcome until the entrance and exit of air was prevented by some kind of closure of the chest wall, the effects of which were almost instantaneous in their appearance.

Cancer in Women: Educational Cancer Campaign Among the Medical Profession and the Laity.—DR. ANDRÉ CROTTI, of Columbus, Ohio, stated that one of the outstanding features among the causative factors of cancer was chronic irritation, and while researches must still go on in the laboratories until something better was found, all that we could do for the present from a practical point of view was to take this valuable piece of information into serious consideration and learn furthermore to detect the disease in its incipency. The facts brought out by the Pennsylvania Cancer Committee were as follows:

1. On the average the patient's physician had known of the conditions present for one year in superficial and thirteen months in deep seated cancer before any treatment was instituted.

2. Of superficial cancers only sixty-eight per cent. and of deep seated only forty-eight per cent. were operable when first seen by the surgeon. In thirty-nine per cent. of the superficial and in forty-six per cent. of the deep seated cancers there had been a precancerous condition, that is, a lesion which might have been cured by comparatively simple operative measures and the ensuing cancer prevented.

3. In superficial cancers symptoms of the condition were apparent to the patients on an average of eighteen months before the surgeon saw them; in deep seated cancers the average was fourteen months.

4. In three per cent. of the cases of cancer of the breast the physician first consulted failed to make any local examination, while in thirteen per cent. he gave bad advice, such as to use local applications or "to wait and see what developed."

5. In stomach cases the physician made no local examination in nine per cent., and gave bad advice in twenty per cent.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Einige Erfahrungen über die Therapeutische und diagnostische Bedeutung der Milchinjektionen besonders in der ophthalmologie. von Gerda Uddgren, med. LIC. Stockholm: Ivar Haeggströms Booktryckeri A. B., 1918.

The author, an ophthalmologist of Stockholm, Sweden, devotes 172 pages to the report of her experience with intramuscular injections of milk in the treatment of inflammatory eye diseases and for diagnostic purpose in 106 patients, her material being culled from the ophthalmological department of the Stockholm Polyclinic, the St. Gorans, St. Eriks, Sabbatskerks and Royal Serafimer Hospitals, the Stockholm Orphan Asylum, and her own private practice. Fifty-four pages are devoted to tabulated reports of cases and seven pages to bibliography. The results obtained by the use of protein bodies, as attested by these studies in milk treatment, the author affirms, would go far to justify its addition to our therapeutic resources, especially in the domain of ophthalmology.

Births, Marriages, and Deaths

Died.

BARCUS.—In Philadelphia, Pa., on Monday, October 13th, Dr. Adolph L. Barcus, aged fifty-five years.

BARKER.—In Danville, Ind., on Saturday, October 11th, Dr. Joel T. Barker, aged seventy-one years.

DUBIN.—In Philadelphia, Pa., on Wednesday, October 15th, Dr. Simon M. Dubin, aged fifty-three years.

DUCKETT.—In Anderson, S. C., on Saturday, October 11th, Dr. James Perry Duckett, aged sixty-eight years.

MCGANNON.—In Nashville, Tenn., on Thursday, October 9th, Dr. Matthew C. McGannon, aged sixty-two years.

MACDONALD.—In St. Paul, Minn., on Saturday, October 11th, Dr. Angus MacDonald, aged seventy-six years.

MAKECHNIE.—In Somerville, Mass., on Friday, October 17th, Dr. Horace P. Makechnie, aged seventy-eight years.

MILLER.—In Glasgow, Ky., on Sunday, October 12th, Dr. Thomas Finlie Miller, aged thirty-four years.

MOSHER.—In Tuxedo, N. Y., on Saturday, October 10th, Dr. Joseph Hoyt Mosher, aged thirty-two years.

PIXLEY.—In Pittsfield, Mass., on Sunday, October 12th, Dr. Elbridge Simpson Pixley, aged eighty-seven years.

ROBERTS.—In Sawtelle, Cal., on Friday, October 10th, Dr. Ernest E. Roberts, aged forty-one years.

SEELEY.—In Warwick, N. Y., on Friday, October 10th, Dr. Whitfield T. Seeley, aged seventy-three years.

SPREHN.—In Oroville, Cal., on Monday, October 13th, Dr. Henry John Charles Sprehn, aged forty-two years.

VAN BUREN.—In Tacoma, Wash., on Saturday, October 11th, Dr. Martin Franklin Van Buren, aged sixty-five years.

VAN RIPER.—In Pasadena, Cal., on Thursday, October 11th, Dr. Cornelius S. Van Riper, aged eighty-two years.

WILLIAMS.—In Hilton, N. Y., on Thursday, October 16th, Dr. William Wilbur Williams, aged sixty-six years.

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Original Communications

SOME THEORIES OF SYPHILIS.*

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There are many things about syphilis that we do not understand and the question of the proper treatment of this disease is as yet unsettled to thoughtful men. Certain observations that we must accept as facts appear to contradict each other; many things observed have no satisfactory explanation and even the results of our treatment furnish a fertile subject for dispute. In this article I shall mention some points which are puzzling and suggest theories which may explain the puzzles.

I shall begin by examining the result of the treatment of syphilis with arsphenamine as compared with that obtained in the presalvarsan era; for that is perhaps, in practice, the most important question in our present state of knowledge of the treatment of syphilis. What we must call expert opinion differs widely on the subject. The lately deceased Professor Gaucher, of Paris, had nothing but condemnation for salvarsan. He called it the German

present occupy positions between these two extremes. A certain school holds that arsphenamine is of value only in rapidly removing lesions of the skin and mucous surfaces; that it is useless for other purposes.

The largest series of cases, and one that covers the ground will, as regards the value of arsphenamine in the treatment of syphilis, that consisting is of 4134 cases reported by Mattauschek and Pilcz. It is instructive to study the tabulation of this series; it is also instructive to study the differences in the conclusions that may be drawn from the same premises. I quote herewith from a man famous in the recent history of the treatment of syphilis (1) to show his judgment of the value of salvarsan from the results shown in this table, and will analyze these results as I see them.

TABLE I.

Mattauschek and Pilcz,	Total cases, 4134.
Paralytica dementia developed in . . . 198—	4.8 per cent.
Tabes dorsalis developed in 113—	2.7 per cent.
Cerebrospinal lues developed in . . . 132—	3.2 per cent.
Total 443—	10.5 per cent.

EFFECT OF TREATMENT.

Number of cases.	No treatment.	One course of treatment.	Repeated energetic treatment.
General Paresis developed in 25—25	per cent.	31—23.1 per cent.	30—3.2 per cent.
Tabes developed in 11—11	per cent.	16—11.9 per cent.	25—2.7 per cent.
Cerebrospinal lues developed in 3—3	per cent.	21—15.6 per cent.	71—7.6 per cent.
Number of cases, 617.		Poorly treated, 1880-1884.	Better treated, 1896-1899.
General Paresis developed in		60—9.7 per cent.	37—3.2 per cent.
Tabes developed in		22—3.5 per cent.	16—1.4 per cent.
Cerebrospinal lues developed in		15—2.4 per cent.	28—2.4 per cent.

poison, asserting that it never cured and was always a menace. He accused the drug of aggravating the disease, producing and precipitating the onset of the metasymphilitic diseases. On the other hand, some authorities laud to the skies what they call "intensive treatment" with the drug. Their object as announced is "to destroy the greatest number of spirochetes in the shortest possible time," truly a worthy aim, but they knew no limit to the intensiveness of their treatment till experience gave warning that caution must be observed in the use of this preparation. Most students of syphilis at

* Prepared for the Fordham University Society for Experimental Research.

"While the incidence of cerebrospinal involvement in syphilis varies in different races and in different sexes the experiences of Mattauschek and Pilcz is representative. These authors followed 4134 cases of syphilis in officers in the Austro-Hungarian army who were infected between 1880 and 1890. These cases were followed until 1912. The results of these investigations are shown in Table I. A striking feature of the table is the difference in the percentage of patients in whom tabes and paresis developed among those who were untreated or poorly treated as compared with those who had been energetically treated. In practically a quarter of the poorly treated cases paresis developed

contrasted with a little over three per cent. of those who were well treated. Similarly in from eleven to twelve per cent. of the poorly treated cases tabes developed, while in only a fifth of this proportion of well treated patients did the disease develop. A single course of treatment seemed to increase the tendency to the cerebrospinal form of lues. This observation is of added interest in view of our present knowledge of the results of insufficient salvarsan treatment on the development of cerebrospinal syphilis already discussed in this paper. A similar parallelism between early efficient treatment and diminished incidence of tabes and paresis is seen in the last part of the table. In the period between 1880 and 1884 the treatment was relatively insufficient, while in the period between 1895 and 1899 there was an improvement in the general treatment of the disease with a corresponding decrease in the incidence of parasyphilis. It is striking that the incidence of cerebrospinal syphilis in the two groups is the same."

Let us study these figures further, comparing the results in the different groups.

	GROUP I Poorly treated presalvarsan.	GROUP II Well treated presalvarsan.	GROUP III One course including salvarsan.	GROUP IV Repeated ener- getic courses including salvarsan.	GROUP V Not treated.
General Paresis developed in	9.7 per cent.	3.2 per cent.	23.1 per cent.	3.2 per cent.	25 per cent.
Tabes developed in	3.5 per cent.	1.4 per cent.	11.9 per cent.	2.7 per cent.	11 per cent.
Cerebrospinal lues developed in	2.4 per cent.	2.4 per cent.	15.6 per cent.	7.6 per cent.	3 per cent.

General paresis.—We find that treatment is effective in preventing this complication; that good treatment with mercury and potassium iodide is of more value than inefficient treatment; that one course of the modern treatment is of no value and that the best and most energetic treatment used now has no advantage whatsoever over the old treatment.

Tabes.—We find that treatment is of value in preventing this complication; that careful presalvarsan treatment is better than careless presalvarsan treatment; and that the best treatment including arsphenamine gave results about one hundred per cent. worse, as far as occurrence of this condition is concerned, than the presalvarsan treatment.

Cerebrospinal lues.—The results are still more peculiar here. Poor presalvarsan treatment proves to be as good as the best treatment of that period and neither is of any special value; while arsphenamine seems to have a disastrous effect, the best results being an increase of 200 per cent. in the number of patients who develop this condition.

Evidently the results of our use of arsphenamine are not encouraging, at least in so far as the central nervous system is concerned. This is strikingly shown in a recent report by Carl with (2). He found in eighty-four cases of primary syphilis among twelve of the patients who had been treated with arsphenamine the cerebrospinal fluid of six showed pathological changes. In the remaining seventy-two patients, who had not been so treated, pathological changes were found in six (33 per cent.). The action of arsphenamine on the other tissues will be discussed later.

I wish to emphasize further that the increase in the number of persons who are afflicted with any form of syphilis of the central nervous system following the use of arsphenamine is in proportion to the closeness of contact of the cerebrospinal fluid with the tissues involved in that particular pathological condition. Thus, the number in whom paresis develops (where the primary lesions are in the brain substance) is apparently not affected at all; in tabes (where the ganglia on the posterior nerve roots, the nerve roots and the neighboring meninges are commonly involved—and these tissues are in more intimate relation to the cerebrospinal fluid than is the tissue below the surface of the brain), there is an apparent increase of almost one hundred per cent. in the number of cases involved in cerebrospinal lues (where the tissues involved are bathed in the cerebrospinal fluid) the increase in the proportion of cases is two hundred per cent.

In this connection I wish to qualify the term tabes. Some neurologists consider tabes as being a condition where the primary lesion may be in the ganglia on the posterior nerve roots, in the nerve

roots, and in the neighboring meninges, the lesions extending into the columns of Goll and Burdach secondarily. An example of this would be a case of Larkin's quoted by Fordyce, in which the patient had in life presented a clinical picture of tabes and at autopsy showed insular sclerosis of the posterior nerve roots with accompanying syphilitic meningitis but no involvement of the spinal cord whatsoever. Other neurologists call such conditions pseudotabes and assert that true tabes always begins primarily in the columns of Goll and Burdach and is due to a deposit of spirochetes in these columns. The term tabes as we use it here includes both conditions because it is questionable if a differential diagnosis was made in the cases collected by Mattauschek and Pilez.

Certain explanations are offered for the apparent increase in the number and the earlier appearance of nerve involvements in the last few years and we must consider these. One explanation is that the increase is only apparent, not real, and that this is due to our being able to recognize these conditions better and earlier than before, especially with the aid of the chemical and serological tests of the spinal fluid.

There are objections to this claim. One is that we have the same laboratory aids for all the conditions mentioned above, paresis, tabes, and cerebrospinal lues and yet we find paresis is no more common than before, while tabes is increased almost one hundred per cent. and cerebrospinal lues is increased two hundred per cent. To explain this discrepancy it is asserted by some that many cases formerly diagnosed as paresis are now properly

placed in one of the other groups by aid of the new methods of examination. Southard and Stearn, of Boston, found that in 1910, before the serological tests were used, from ten to fifteen per cent. of the cases diagnosed as paresis proved nonparetic; and of the mistaken cases, not all could be classed as syphilis of the central nervous system. If we should concede that twenty per cent. of the diagnosis were incorrect and all these were classed as tabes or cerebrospinal lues, we would still find only about .6 per cent. which must be deducted from the 3.2 per cent. of cases in which paresis developed under good presalvarsan treatment and be credited to the other groups of neurosyphilis. These other groups, however, show an increase of 6.5 per cent. in a hundred syphilitics, instead of 0.6 per cent. in a hundred, so that explanation can not be considered sufficient.

Another explanation given for the apparent increase in syphilis of the nervous system admits the increase as real, but asserts that is due to the fact that mental and nervous diseases increase with advance in civilization. This may be true, but it seems incredible that the state of civilization among the patients studied by Mattauschek and Pilcz, all officers of the Austro-Hungarian army, should have changed so much for the better in the few years from 1896 and 1900 to 1912 as to warrant the increase of disease of the nervous system of nearly one hundred per cent.

Let us therefore consider what are the possible causes of the damage done by the arsenic to those tissues of the central nervous system which are bathed in the cerebrospinal fluid.

1. It is possible that there is too great permeability of the meninges to arsenic or its compounds, the arsenic acting unfavorably on the nerve tissue. This may be due to normal permeability of the choroid plexus to the arsenic (for in the presalvarsan era no arsenic was used so no arsenic could enter the cerebrospinal fluid), or to increased permeability of the meninges to the arsenic or its compounds. This latter may be the result of the action of the disease on the membrane, or to the action of the arsenic on the membranes. There may also be an increased permeability of the meninges to mercury due to some action of the arsenic on the meninges.

2. There may be lessened permeability of the meninges, not to arsenic, for no arsenic was used in the presalvarsan era, but possibly to mercury or to an antibody, as a result of the action of the arsenic on the meninges.

3. There may be some difference in the action of the drugs or of the antibody that enters the spinal fluid from that which takes place in the general system.

While I was endeavoring to secure facilities to try out these possibilities, a number of them were unravelled by various investigators.

Permeability of the meninges.—The permeability of the meninges to arsenic was long doubtful. Some years ago Ehrlich explained the lack of success in the treatment of syphilis of the central nervous system with intravenous injections of salvarsan, by

stating that arsenic injected into the blood could get no access to the cerebrospinal fluid. Many experiments were made on animals as to the permeability of the meninges to the drug and the reports were contradictory. We may now say that whatever the results may be in healthy people or in animals experimented on, in syphilis the meninges are permeable to arsenic injected into the blood. Rieger and Solomon, Benedict, Kuttner, Kaliski, and Barbat found arsenic in the spinal fluid of syphilitics after intravenous injection of arsphenamine, in some series in as high as ninety-six per cent. of the cases; and it is found in quantities considerably in excess of what is safe to administer intraspinally.

Permeability of the meninges to mercury.—The cerebrospinal meninges are practically impermeable to mercury (at least when arsenic is not administered). A. D. Finlayson reports (3) that he found a trace of mercury in 500 c.c. of grouped spinal fluids from paretics who had been under treatment for fifteen months (some of them the entire period), after a number of negative examinations, the treatment consisting of daily rubs with mercury and lumbar puncture every ten days. I have not been able to find in the literature experiments to determine the presence of mercury in the spinal fluid following the use of both arsphenamine and mercury. Since, however, we have no reports of the presence of mercury in the cerebrospinal fluid nor of meningitis occurring even in those cases where death from salvarsan poisoning followed treatment with both mercury and arsphenamine, and since such severe and persistent irritation of the meninges as produced by lumbar puncture every ten days for a period of fifteen months while the patients were receiving daily rubs with mercury was not followed by the presence of mercury in the spinal fluid, this possibility need hardly be considered.

Permeability of the meninges to antibody.—The meninges are permeable to antibody in health and disease. Wile and Kafka found they were permeable to hemolytic amboceptor in general paresis (4) and Kolmer and Sekiguchi found syphilitic reagin in the cerebrospinal fluid of dogs, three hours after removal of blood and the intravenous injection of human syphilitic serum.

Since mercury can not penetrate the meninges and antibody penetrates them both in health and disease, the damage must be attributed to the presence of the arsenic in the fluid. It is possible that the arsenic itself is directly injurious to the tissues or that it does damage in some other way. If the arsenic itself is directly injurious to the tissues of the central nervous system, why is it so irregular in its action? Why does it act badly in tabes and much worse in cerebrospinal lues while it has no effect on the brain tissue in paresis? Unless other and more reasonable explanations fail us, I believe this need not be considered. Let us therefore see if the action of the arsenic in the cerebrospinal fluid differs in any way from its action in the general system.

Ehrlich's formula for the reaction that takes

place in the body in the cure of disease is as follows: The curative substance, the more or less specific immune body, unites with the toxin or germ or irritating substance and in the presence of complement the whole is changed, the irritant and the complement being destroyed. In the blood, complement is present; in the cerebrospinal fluid it is absent, entirely or almost so, so that the reactions in these two mediums are necessarily different. Let us follow this clue.

We can begin with the statement of two facts: 1. Since some cases of syphilis of the central nervous system are cured, at least in the early stages, in spite of the absence of complement in the cerebrospinal fluid, and without the penetration of mercury into the spinal fluid or the administration of arsphenamine, it is evident that the antibody which is present in the fluid can itself, in some way, neutralize the syphilitic infection, though probably not so well as when complement is present. 2. Since cerebrospinal lues and tabes develop in a considerably larger proportion of those syphilitics who have been treated with arsphenamine than in those who have not been so treated, it is evident that the arsenic in some way protects the germs or the toxins from the attacks of antibody. How may this occur?

There are two possibilities: 1, The arsenic may interfere with the antibody, directly, neutralizing it in some way; 2, The arsenic may protect the spirochetes or their toxins or both by forming some loose union with them, the union being temporary—till the arsenic is excreted.

Let us consider these two possibilities. Is the first likely? If the arsenic interferes directly with the antibody in the cerebrospinal fluid, why does it not do so in the blood stream? We know that it stimulates antibody production in the presence of syphilitic infection, and the rapid destruction of spirochetes which follows the administration of the arsphenamine shows it to be very improbable that it interferes with the action of the antibody. The second possibility is much more plausible. The arsenic compound, being spirochetotropic, unites with the germs, but it is in too weak concentration to destroy them—to change them chemically or so to alter their surface tension as to cause their destruction. This union is somewhat similar to that of the antigen—i. e., the spirochetes, etc., with the specific amboceptor, but it is weaker; for it is almost unthinkable that laboratory products are as specific as the antibody produced by nature itself. The union of antigen with amboceptor is followed by the sensitizing of the antigen but not by its destruction, and the antibody separates or may be separated from the antigen to a great extent. The separation of the less specific arsenical compounds from the antigen—from the spirochetes—is more complete, and the arsenic disappears from the cerebrospinal fluid. While the union lasts, however, the spirochetes and probably their toxins are protected from the action of the antibody, and separation takes place, at least on some occasions, when the resistance is low, and the germs and toxins do an increased amount of damage.

The problem then is to get the complement of noninactivated serum into and disseminated through the cerebrospinal fluid. The sera used at present for treatment of syphilis of the central nervous system, whether autosalvarsanated (Swift-Ellis method), reinforced (Ogilvie method), or normal, are inactivated before injection. This proposition, of course, brings up the question of the diffusion of the serum in the cerebrospinal fluid against the current of the flow of that fluid. I will touch on this later.

If complement is the prime essential lacking in the cerebrospinal fluid, how can we explain the beneficent effects, seen in many instances, that follow the treatment of syphilis of the central nervous system with arsphenamine, even following an intraspinal injection of inactivated serum containing the drug—though this favorable effect be but temporary?

Let us consider the therapeutic action of arsphenamine and of mercury. It is asserted and has been proved that arsphenamine is a stronger spirocheticide than mercury. It is also asserted that the arsenic is a weaker builder of immunity and its action is more transient than that of mercury.

I quote again from a foremost supporter of the virtues of intensive treatment with arsphenamine as to the action of the arsenical preparation, with which I agree, and then analyze the conclusions of this authority as to the value of intensive treatment with this drug, doing so because this quotation is a fair sample of the claims made for the so called intensive treatment by its advocates in their attempts to explain the "phenomena of increased severity" which often follows the use of salvarsan.

"The character of the picture (of the usual course of syphilis) may, however, be altered by the institution of intensive treatment. It has long been observed that cases of primary syphilis, relapsing after unsuccessful attempts at abortive treatment with mercury, are likely to show severe skin lesions. Similar deep nodular or ulcerative lesions are frequently seen in the relapses following inadequate salvarsan treatment. This phenomenon of increased severity noted in relapsing lesions of the skin occurs also in the central nervous system, and explains the occurrence of meningitis with cranial nerve paralysis in many of the inadequately treated cases of secondary syphilis. In these patients the greater part of the organisms have been destroyed by the remarkable spirocheticidal action of the salvarsan. This has, moreover, been accomplished so rapidly that the usual tissue immunity which develops as a result of prolonged contact between parasite and host is lacking. As a result a small focus of spirochetes, tucked away safely in the tissues of the central nervous system, and thus escaping the spirocheticidal action of the salvarsan can develop in the susceptible host with great rapidity and severity. . . . It should be emphasized that the development of this condition is due to inadequate intensive treatment, and that a few doses of salvarsan, without continued treatment, may result in more severe nervous manifestations than if milder therapy had been applied."

The explanation given is that the arsphenamine destroys the spirochetes so rapidly that there is no time for the tissues to become "acclimatized" to the irritation of the germs; and a small focus of spirochetes tucked away safely from the action of the arsenic, somewhere in the tissues, develops in the susceptible host with great rapidity and severity—I repeat, this occurs because "the tissues have not become acclimatized to the germs."

That this reasoning is unsatisfactory is seen at once when we consider that the body was certainly unacclimatized to the spirochetes before infection; so that increased severity necessarily means that the resistance is less in that patient than in one who had not been treated with arsphenamine; that the resistance has been lowered; that the antibody producing cells or tissues have been damaged. This, to me, seems self evident and needs no further proof.

To add to the proof of the existence of this "phenomena of increased severity"—aside from the quotation given above and personal experience, I will quote Major S. W. Schapira, professor at Fordham Medical College, as to his experience here and in camp. He found in camp that in many newly inducted soldiers who had received "considerable" arsphenamine treatment for syphilis before induction into the service, secondary lesions developed within two months after cessation of this treatment of greater severity than in those who had received no arsphenamine or had not been treated at all. He also tells me that some dozen patients with secondary lesions, in a hospital in New York, were each given ten or twelve weekly intravenous injections of salvarsan and no other treatment. That in all the lesions disappeared and the Wassermann reaction, which had been strongly positive, became negative; but in every case the Wassermann reaction again became strongly positive and lesions reappeared of unusual severity, within two months after cessation of the treatment.

How can we explain the injury to the antibody-forming tissues which is responsible for the "phenomena of increased severity?" There are several possibilities but the simplest one must be accepted because it is based on the usual action of all such drugs if used to excess—that is overstimulation. Arsphenamine is not only a spirocheticide, it is also a builder of immunity; it stimulates the production of antibody. If given in excess it overstimulates the antibody-forming cells until the acquired resistance is first lowered to the degree that is normal in the noninfected; then, if the treatment is continued, the resistance is lowered further till it is less than the normal in the noninfected.

The usual time of the reappearance of the lesions, which are of increased severity and of the positive Wassermann following the treatment, is suggestive also. The original lesions had been healed by the arsphenamine. The activity of the antibody-forming cells had then been neutralized by overstimulation and the condition of the patient was similar to that following the original infection—i. e., the patient was ready for the period of incubation. The spirochetes which had survived in some protected area or "isle of safety" developed again in suffi-

cient numbers to bring out the secondary lesions; and the usual time required for this is six to eight weeks. Where the overstimulation had been sufficient to further weaken the antibody production, the phenomena of increased severity naturally results; i. e., the lesions are more severe than in ordinary cases.

Another action of arsphenamine, and a powerful one, is the absorption of syphilitic infiltration. Proof of this by the citing of cases need not be given. We all know this from personal experience. This action is most noticed and appreciated by both patient and physician in cases where the syphilitic infiltration is on a sensitive or important site. For example, a mass of infiltration involving the iris, or a broken down gumma at a sphincter, will be more troublesome than a similar lesion on the calf of the leg, and absorption of the syphilitic mass or healing of the broken down gumma at a point where it is most troublesome gives greater relief than removal of a lesion at the more indifferent point.

In discussing this subject, suggestions have been made that arsphenamine destroys the spirochetes and disappearance of the lesions follow automatically, once the irritation of the germs is removed. In answer to this we can point to the fact that in tertiary lesions, such as gumma, the spirochetes are few and far between, yet the lesions disappear rapidly under the action of arsphenamine. It seems to me, therefore, that the prompt relief of certain symptoms in cerebrospinal syphilis, which follows the administration of arsphenamine, may be attributed with justice to two things: 1, To a temporary loose union of the arsenical compounds with the irritating spirochetes, their toxins or with both—this union interfering with the action of the irritating substances, and 2, to the rapid and powerful effect of the arsenic on the syphilitic infiltration.

While considering the subject of the therapeutic action of antiluetic remedies I wish to submit one suggestion for your consideration. It is commonly understood and accepted that if the administration of the same amount of arsphenamine which induces lesions of increased severity is followed by treatment with mercury, the tendency to increased severity is overcome—at least to a certain extent. Such action of the mercury at a time when the immunity building cells have become damaged by overstimulation with arsenic is suggestive of some difference in the immunity building action of arsphenamine and of mercury.

It seems certain that mercury stimulates the antibody producing cells in a different way than arsenic does. If we study the processes of nature we will see how this may occur. We know that there is a multiplicity of amboceptors to fit multiple forms of receptors on the microbes, etc. To describe the condition graphically we will say: The receptors formed on the disease producing substance or antigen are of more than one pattern or kind; and the specific antibody produced by nature in the attempt to cure the disease has a more or less corresponding multiplicity of antibody parts. The arsenic preparation stimulates principally certain

parts of the antibody and the mercury stimulates principally other parts of the antibody; and when the antibody forming cells become overstimulated by one drug the second can take up the work effectively.

I will also suggest the possibility that arsenic and mercury each acts most strongly on different immunity forming cells—that tissues stimulated strongly by one of these drugs is acted on weakly (and some tissues perhaps not at all) by the other, and vice versa. I simply suggest this as a possibility.

Because of, or perhaps in spite of, this difference in the action of arsphenamine and mercury, I wish to criticize a method extensively used at present in the treatment of syphilis; that is, the simultaneous use of arsphenamine and mercury. Some syphilologists give courses of treatment consisting of a number of injections of arsphenamine and at the same time push the use of mercury. Others first administer several injections of arsenic and give the mercury later; in either case the medication is followed by a period of rest from treatment.

We know that the spirochetes become arsenic "fast," also, that they become mercury "fast." Akatsu and Noguchi (5) showed that in vitro the spirochete increases intolerance to the arsphenamine five and a half times in three to four months, to bichloride, thirty-five to seventy times and to Lugol's solution of iodine, three times in the same period. We also know that the body cells become "fast" to mercury, or worse than that, they become overstimulated by it. The fact that the profession has for many years adopted the method of administering this drug with intervals of rest (from treatment) is sufficient proof of this. We have seen that arsenic, administered in too large amounts and continued for too long a time, overstimulates the immunity building cells. There is nothing to prove and there is no reason to believe that the germs and cells do not become "fast" to both mercury and arsenic if these drugs are administered simultaneously. It seems to me, therefore, that the preferable method of treatment is to administer these drugs separately so that the second may act effectively when the first has already become comparatively inactive.

If the suggestion I have made as to the difference in action of mercury and arsphenamine on antibody forming tissues is correct, it may be said that the use of both these drugs simultaneously is advisable to secure the maximum amount of antibody as soon as possible. It is quite likely that both drugs together may act more energetically than either, until the germs become "fast" and the tissues overstimulated, but, since it is impossible with any means at our disposal at present to bring about the destruction of all the spirochetes in the body in one of the short periods that these drugs act favorably, it seems to me that it is best to use them separately. Arsphenamine, a powerful spirocheticide and an effective builder of immunity, if used in moderation, may be employed first; and when this preparation must be stopped, the weaker spirocheticide and less dangerous immunity builder, mercury, is adminis-

tered while the "fastness" of the germs and immunity building cells to the arsenic is disappearing. A period of rest, long enough to permit the first drug used to be eliminated completely and the spirochetes and immunity building tissues to resume their original sensitiveness to that drug, should follow and the course be repeated.

If it is true that the absence of complement in the cerebrospinal fluid is the reason for the injurious effect of the arsphenamine on those tissues that are bathed in the cerebrospinal fluid, the problem before us is how to get the complement into the fluid. Of course, the answer "inject noninactivated serum into the subarachnoid space" immediately suggests itself. But, does serum injected into the cerebrospinal fluid become disseminated through that fluid? For the institution of intraspinal treatment in syphilis of the central nervous system has resulted in the formation of two schools which differ on this question.

We need not go here into all the arguments, pro and con, of the different schools. It is known that the current of the cerebrospinal fluid is from above downward. It is also known that while most of the fluid escapes through the venous circulation, a small amount escapes along the nerve roots under the sheaths formed about them by the extension of the cerebrospinal meninges. It is along this path, according to my theory, that the arsenical compounds, which have penetrated into the cerebrospinal fluid after intravenous injection of the arsphenamine, reach the ganglia on the posterior nerve roots which are often involved in tabes.

The undecided or disputed points here are fewer and simpler than those that are in question when the value of intraspinal treatment for the purpose of bringing arsphenamine and its products into the tissues of the brain and cord are considered. The only question we must consider, in the light of my theories, is: Will noninactivated serum injected into the cerebrospinal fluid be disseminated through that fluid? If the complement will be carried wherever the fluid reaches, that is sufficient.

The findings of Weed and others in their studies of the cerebrospinal fluid, which show that particles in suspension injected into the fluid do not penetrate the lining membrane unless, indeed, there is a special affinity between these particles and the cells lining the meninges, have no bearing on the subject before us. The finding of Weed that solutions injected into the spinal fluid under conditions approaching the physiological are disseminated through the fluid is encouraging to us from the standpoint of prognosis. The favorable clinical findings in the intraspinal treatment of various nonsyphilitic meningitides—cerebrospinal by Flexner, pneumococcus by Lomar, influenza by Wellstein and poliomyelitis by Flexner and Amoss—where the requirements were the dissemination through the cerebrospinal fluid of the specific medication rather than penetration of drugs deep into the tissues bathed by that fluid, bear out, in practice, the observations of Weed and point to the probability of favorable action in accordance with

my suggestions for the treatment of syphilis of the central nervous system.

I will add that Professor Carl P. Sherwin, of Fordham Medical College, has kindly tested for me the diffusibility of noninactivated blood serum with cerebrospinal fluid *in vitro*, and reports that they diffuse well; also, that in one of my tabetic patients at the Central and Neurological Hospital the first intraspinal injection (of three c.c.) of noninactivated serum, administered in the lower lumbar region, was followed by a neuritis of the fourth dorsal nerve and a herpes zoster along the line of distribution of its cutaneous filaments.

It is of course impossible to prove conclusively that this irritation of a nerve which leaves the spinal canal at a much higher level than the point where the serum was introduced was not a coincidence; but as the patient had not received any arsphenamine and was beyond the age when herpes zoster was most common and had never had similar lesions before, it is to say the least strongly suggestive of the diffusion of the serum through the spinal fluid.

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HEALTH CLASSES FOR CHILDREN*

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In a most suggestive book of satire, Samuel Butler tells of the wonderful land of Erewhon, in which all illness of any sort was considered to be highly criminal and immoral. "If a man falls into ill health or catches any disorder before he is seventy years old, he is tried before a jury of his countrymen and, if convicted, is held up to public scorn and sentenced more or less severely as the case may be." Such a vigorous plan of action is only a satirical dream. Nevertheless, during the past ten years, there has been growing a keener interest in the value of health and a fuller realization of the worth of disease prevention. This has crystallized in many ways, including definite plans for protecting human life, among which health classes for children are of primary importance.

It is essential that one should understand what health really is. Health is wholeness and soundness; a state of being in which all natural functions are freely exercised without consciousness of them. Health is more than freedom from disease; it is

positive, not negative. It carries with it the ideas of alertness, energy, selfreliance, muscular coordination, imagination, curiosity, concentration, persistence, initiative, responsibility, and self control. It contains the idea of power and willingness to think and act, and even to be honest, cheerful, and courteous. It is more than vitality, power, and endurance; it embraces physical, mental, and moral potential productivity. I realize that this is a broad concept of health, nevertheless, I deem it a requisite definition for appreciating the purposes and the possibilities of health classes for children.

Obviously the first necessity is to awaken an understanding of the positive virtues bounds up in health, in order to establish a heightened sense of responsibility for preventing disease. To create an interest in health classes, it is imperative that present day familial psychology undergo various changes. Families must be stimulated to regard health as a positive and tangible asset. Today illness is more or less regarded as of serious importance, whereas, in all truth, health is the primary condition demanding continuance. There is a tendency to evaluate health only after it begins to decline or has vanished.

By creating a higher appreciation of health, it is possible to emphasize the advantages of anticipating disease. The family can be made to understand the strategic advantage of attacking premonitory conditions, which, if neglected, may lead to invalidism or fatality.

It is similarly necessary to correct the unfortunate idea, too widely prevalent, that children outgrow various things. All too frequently parents are informed that at about seven years of age, this, that, or the other condition will disappear. The delayed walking, or stammering, etc., has little significance; it will all come right in time. Interest in the physical welfare of children must be made aggressive and active, rather than passive and negligent. Furthermore, it is patent that to succeed in securing cooperation for the protection of health, familial confidence in preventive measures must be established. Families must be taught to believe in the value of prophylactic procedures, despite the fact that they lack infallibility.

With the growth of social thought, there has been a slower development of the idea of the intimate relationship existing between personal hygiene and public health. It is difficult, in a selfish community, to expect the average family to appreciate, altruistically, its own contribution to public weal through selfprotection and selfeducation. Nevertheless, the advantage of securing an understanding of the interdependence of human families to secure a larger measure of general health is of paramount importance. From the viewpoint of a natural interest in familial improvement, there is much benefit to be derived by indicating numerous interrelations between physical and mental health; physical health and moral health; and mental health and moral health. The desire to have children of good character is almost universal, and to establish and direct currents of influence towards this goal is worthy of much effort.

Another motivation for health classes, more

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powerful because more concrete and practical, lies in the awakening of a realization of the social and economic phases of health, in terms of education, wages, and accomplishments. Health classes will have a more rapid growth when families and communities are able to interpret the potential results in terms of achievement possessing monetary value. This, possibly, is not a high ideal, but it is none the less a practical one. Health for health's sake is an idea that, theoretically, sounds virtuous, but, pragmatically, represents a miserliness of soul, for after all health is not the only thing worth living for.

In order to succeed with health classes for children, there must be impressed upon families and communities the importance of beginning health conserving thought and work during the periods of earliest life, such as are covered by the intrauterine period, infancy, and childhood. It is because these periods represent the most fertile fields that the puericulturists seek to give them the maximum attention.

Preventive medicine, in its modern aspects, seeks to shift its emphasis from the individual to the mass. Obviously, however, the mass consists of individuals. Whatever advances the health values of families leavens the health possibilities of the group. Preventive medicine, working through education, aims to make health contagious. It possesses the commercial advantages of wholesale business, as opposed to the retail healing of the sick at higher costs. Primarily, while prating of family independence, one loses sight of the mutual interdependence which is the basis of human welfare.

The most significant characteristic of health agencies lies in their humanization. By this, I mean the appreciation of individuals as animate, thinking, soulful beings, rather than as masses of clay to be molded according to the medical arts. It is far removed from the concept of cases and numbers and preserves the individuality of those to whom aid or enlightenment is to be given. This is a matter rather distinct from what is termed the socialization of medicine, which, after all, deals more with the nature of the agencies responsible for medical work. Medicine may be socialized most thoroughly and still lack humanization. Unsympathetic methods, rules, and regulations may result despite a highly paternal form of socialization. In health classes for children, humanization is of paramount importance.

In the ancient Mosaic laws, and, in fact, in all Biblical medicine, the prevention of disease was of the utmost significance, and the ancient Jewish high priests were practically public health officers with unusual police power. It is written, "Life and death, blessing and cursing, have I set before thee: choose life;" and again, "No man liveth unto himself, and no man dieth unto himself." In no small sense there is a spiritual basis for modern preventive medicine.

It is undeniable that the transference of stress from individual therapeutics to general prophylaxis through individual education possesses a real commercial value. The cost of health classes, for example, designed to conserve health is far less than

would be the cost of medical care for those who might suffer illness during a period free from such supervision. This has been amply demonstrated in the effective work of baby welfare stations, which have been so successful in lowering infant mortality and in decreasing the communal costs that were previously assessed upon it by such afflictions as the summer diarrheas. The potential value of saving human life is difficult to estimate in terms of dollars and cents, save as the law interprets human values in assessing punitive damages, or as economists coldly calculate investment values. It is beyond doubt that health classes return a large interest to the community for the small principal invested.

Medical science, particularly in the public health field, has been transformed so successfully because it pays. The past decade has witnessed a changed point of view in prophylactic methods. Sanitation, valuable as it has been, failed to produce the results attainable through education. Ignorance has been recognized as of greater consequence and danger than defective plumbing or accumulations of garbage or rubbish. The human factor has become evident as the greatest danger to human health. Man is man's own greatest health hazard. Wherefore, public health education has become one of the most significant bureaus of public health departments.

The growth of public and private interest in specific projects for the control of particular diseases has given rise to a large amount of propaganda in which the main emphasis has been placed upon education. These same public and private agencies sooner or later have recognized that the crux of their endeavors should be placed upon working with and for children. This is well exemplified in such movements, for illustration, as the campaigns against tuberculosis, the conservation of vision, and those various other lines of activity which resulted in the growth of baby welfare stations, medical inspection of schools, and public health nursing.

The recent war served to bring out in the public press numerous facts and figures which had previously disturbed socially minded public health workers, who, in antebellum days were too frequently regarded as egotistical reformers, or self-seeking agitators. The handicaps and defects, the invalidism, and the unnecessary crippling revealed in the supposedly sturdy manhood of a smug civilization awoke the conscience of various nations and gave them much reason for serious reflection. As a result, numerous new agencies and institutions have been sought, founded, nurtured or developed, with a view to lessening the wastage of human power, and to building up a more resistant and healthy generation. As one of the measures in this country, there arose the singularly cooperative enterprise known as The Children's Year, stimulated and fostered by the Federal Children's Bureau. One of the results of this campaign was the stimulus to activity in providing better types of agencies for conserving infant and child health, phases of which I shall refer to later.

Obviously, in dealing with the early years of life

the educational measures must be enabled to react to the welfare of children by utilizing the home as the unit for educative effort. While, theoretically, in this country the child is the ward of the State, its destiny is largely controlled by the home into which it chanced to be born. Therefore, the home has come to be the goal to be reached through educational measures in order that infancy and early childhood might have the benefits that accrue from the practical application of a knowledge of child hygiene. The hope of health classes for children, similarly, lies in the centering of activity in behalf of the growing generation in the homes, and little children shall lead them into light and learning, for the greater joys of living and a larger measure of vitality.

While this may seem far afield from the subject of health classes for children, an appreciation of the underlying principles formulated through the development of years is essential as a preliminary to a survey of their organization and methodology. They have a more or less universal application—a further evidence of what Osler termed the “cosmopolitanism of medicine.” Evidences of the growth of the idea are found in the history and the development of social medicine in all sections of the globe. The work of Miele in Lille, Calmette and Budin in France; the accomplishments of the Wellcome circle in England; the New Zealand Society for the Health of Women and Children; the Women's Institutes in Canada; the rapid growth of social service and public health nursing, and similar types of effort by individuals and associations throughout the civilized world, indicate the tendencies to establish, under private auspices, social health agencies which should merit the approval and acceptance by organized national, State, or local departments of health. There has been an answer, growing in vigor, to the query of Herbert Spencer, “Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy—joined with the suggestions of ignorant nurses and the prejudiced counsel of grandmothers?” As he wisely comments, “To tens of thousands that are killed, add hundreds of thousands that survive with feeble constitutions, and millions that grow up with constitutions not so strong as they should be; and you will have some idea of the curse inflicted on their offspring by parents ignorant of the laws of life.” There have been developed, in the spirit of this interrogation and statement various types of health classes for children.

During the prenatal period one finds classes for giving prenatal advice and prematernity care, leading up to more scientific obstetrical supervision and control. After the birth of the child there are various types of babies' welfare stations, from the old *gouttes du lait* and *consultations des nourrissons* to the more highly developed types that give or sell whole milk, but focus primary attention upon home visitation, home instruction, and the individualized training of the mother in all that pertains to infant welfare. Until recent times inadequate attention was given to children between the ages of two and six years, popularly designated as the “preschool

age.” The glaring deficiency in health supervision during this period has been recognized, and, as a result, strenuous endeavors are being made to reach these children through the medium of health centres and special health classes. This phase of health educational work has been particularly urged by the Children's Bureau and at last is beginning to be introduced in various sections of the country, with a corresponding gain in health efficiency.

The socialized health agencies for children of the school age include medical inspection of schools, school nurses, the drafting of adequate educational laws, and the formation of little mothers' leagues. To these are added an increased stress upon the hygiene of teaching and the teaching of hygiene in the public schools, although it is doubtful whether these function as satisfactorily as might be desired. The last period includes children of the working age, for whom classes have not been formed, but in whose behalf there have been established examinations as a preliminary to securing working papers, a certain degree of supervision during employment, and, in some cities, a demand for reexamination upon changing places and types of employment.

All of these forms of social institutions may be regarded broadly as types of health classes for children, some being by means of immediate attention to the young, but more of them possessing the advantage of indirect instruction through the utilization of the home and parents, most usually the mother, for imparting the essential knowledge of the fundamental principles of hygiene. The child receives the benefit of the world's experience through the medium of parental supervision based upon a newer knowledge.

It is obvious that the idea of a class is founded upon an educational ideal. Every system of health classes for children is based upon the theory that the greatest cause of loss of health is ignorance. The character of service to be given depends upon the utilization of medicoeducational principles applied in the pursuance of a social ideal, namely, human welfare.

During the last decade, in various sections of this country, there have been instituted special classes for the treatment of tuberculosis, trachoma, cardiac diseases, malnutrition, and similar specific disease states. These, however, strictly speaking, are not health classes. They are designed for the restoration of health; nevertheless, as an outgrowth of these special classes, there has been derived a considerable amount of health education. Their work is of the utmost value, and should be continued as supplementary effort for the management of conditions of ill health existent or unpreventable.

The health classes for children are general in their purposes. They exist for the accentuation of the correct rules of living, but also for the discovery of existent defects and handicaps unsuspected or unrealized. When doubt exists as to the exact nature of any particular objective finding, they have recourse to the distribution of individuals as to the proper diagnostic department. They seek to secure for individual children the proper individualized treatment that may be indicated along medical, psychological, social, or economic lines. A large

part of their efforts is devoted to the stimulation of familial cooperation, and personal application to the pursuit of hygienic living.

It is thus apparent that with a general interest in familial health health classes for children seek to make available general knowledge concerning home hygiene, without unduly stressing any one particular phase of it and without instilling fears of any one of the various diseases which may attack childhood. I believe it is essential to broaden the outlook of the family so that it perceives the general worth of health, instead of aiming to motivate through the development of anxiety over known handicaps or through the instillation of fears regarding the possibility of particular afflictions. Furthermore, it is evident that the purpose of such classes must include a desire to improve familial standards of living. This follows as a natural consequence of the determination to secure a home environment most favorable to the growth and development of healthy childhood. It is for the most part impossible to eliminate the curses of an unfavorable heredity, but it is possible to mitigate some of the dire results attendant upon an unsatisfactory environment, whether the shortcomings be due to ignorance, poverty, or both.

Health classes serve to teach the unity of body, mind, and soul, and to place in proper perspective their relation to the welfare, not merely of the individual child, but of the entire family taken as a unit. Consequently, it becomes necessary to effect the organization of health classes and to develop their methods in such a way as to approach all the problems relating to childhood from a single centre. This involves a diversification of methods and agencies as circumstances demand. It requires an understanding of the medical, psychological, social, and economic problems so thoroughly interwoven in the development of healthful and healthy family life. It not only leads to an understanding of the particular states and conditions of individuals, but permits the correction of personal and familial defects so that other members of the family, particularly younger children, may not suffer from the disadvantages reflected in the specific deficiencies of any particular child entering into the health class. The form of organization and a description of some of the methods employed will help to clarify these general suggestions.

In the matter of effective organization, from the standpoint of effort and efficiency, there should be at least physicians, a history taker, and a social service worker. With these as a minimum requirement, there might well be added a certain number of volunteer aids, a person capable of giving instruction in domestic science and art, and a psychologist.

The taking of the history can be done by a trained dispensary aid or by a nurse, who will thus save the time of the doctors for more important work. In the recording of the facts concerning the personal and past medical history it is advantageous to have the essential facts underscored so that at a glance the physician may see the outstanding items in the history.

The doctors, and there should be at least one for

each three to five new patients: each session, are charged with the responsibility of making the general examination of the children. In addition they will make rough special tests of various kinds, as circumstances may require, in order to determine whether the child should be referred to other departments or places for further diagnostic or therapeutic consideration. A record of defects found and tendencies noted should be kept. They are to advise freely but are not to dispense medicine. If children are acutely ill at first appearance, they are to be referred elsewhere for treatment. Exceptionally, when health classes are situated in places other than dispensaries, there may be need for an occasional prescription, but the fewer medicines prescribed, advised, or dispensed, the more satisfactorily the work is accomplished and the more distinctly does the class stand forth as a centre of hygiene and conservation rather than as a slightly modified, old type clinic, devoted to therapeutics.

Specific directions are to be given to patients, when old enough and sufficiently intelligent, or to the parent or guardian accompanying the child. Directions must be given in detail, not in general terms. Patients should not be instructed to take exercises, but a definite list of exercises should be given with a demonstration as to the method of their performance. Nothing must be left to the imagination. These directions are supplemented by orders which are written out for the social service assistant or for the domestic science teacher, who, in turn, as occasion demands, will induct the patient or parent into the right methods of carrying out the advice given and supervise and follow up the work in the home. When defects or handicaps which can be corrected are noted, the doctor refers the child to the proper agency or department for their correction. His obligations include the general oversight of the health class and the guidance and supervision of all those serving with it.

The social service worker is equally important in the management of the health class, and preferably should be a woman who also has had nursing training and experience. This is not mandatory, but is exceedingly advantageous. In the clinic she serves to keep a certain measure of order, arranges for the natural supply of children to the history taker and the doctor, attends to the weighing and measuring of the children, and furnishes such supplementary data to the doctor or history taker as should be recorded. As a social visitor, she is charged with securing the social history of the children and of the family to which they belong, recording such facts as may be of permanent value. Furthermore, it is part of her duty to make any investigations of home conditions that require specific injury and to arrange for visits to other agencies or departments, as may seem requisite either from the standpoint of social and economic betterment or because of physical or mental handicap. She carries out the directions of the doctors and secures cooperation and willing assistance in the home. She follows up individual children so that they return to the health class at such times as their presence may be required.

A variable number of volunteer aids willing to give service will facilitate the administration of the health class. A large variety of duties may be assigned to them; but I should like to suggest, particularly, their value for taking children to various clinics where corrective measures may be instituted, so as to save the time of the social service worker and to permit the mother to remain in her home when other children demand her attention. Taking on somewhat of the character of a friendly visitor, these volunteer aids are of inestimable value in giving support and encouragement to small groups of families for whom a general hygienic oversight of a personal character is indicated. They may weigh and measure children, explain various educational material, give personal demonstrations, and in various other ways advance the interest of the work.

I am firmly convinced that a considerable gain will result from the employment of a teacher of domestic science and art, who would be capable of giving suggestions and demonstrations in the homes. Through simplifying the technic of homemaking, she could lessen the burden of those, who, from lack of training, dulled intelligence, or impaired finances, have proved unsuccessful in making the most of the home environment. Furthermore, she would aid considerably in inculcating the principles of dietetics, both by demonstrations and lectures to groups of mothers, and by personal instruction within the home.

As I view the problem of health classes, I am more and more certain of the necessity of devoting greater attention to the mental hygiene of children. In order to accomplish anything in this direction, it is of the utmost importance that a capable psychologist be a member of the staff. This is desirable, not merely for the purpose of ascertaining the psychological basis of character deviations, which demand rectification, but by this means mental health may be assured with a greater promise of normal moral development, which, after all, is part of our health problem.

In considering the methods to be employed it is obvious that there is ample room for variety and the expression of individuality. The method which I shall briefly detail embraces the plan which my assistants and I employ in our own health class connected with the dispensary of Mount Sinai Hospital of New York.

At the time of admission, a card is given to the parent or guardian bringing the child. We use three types of cards. The first is blue, the second yellow, and the third white. The idea of having three colors is for the purpose of inducing a certain measure of competition among parents and stimulating each household to do its best. Each card has a little quotation in English, rather suggestive of the phase of development of the possessor. It may be argued that having quotations in English for persons of foreign extraction is of little value. It must be recalled, however, that a certain proportion of the foreign population cannot read their own tongue, and a diversity of languages upon cards is impracticable as well as un-American. In addition, it is desirable to stimulate interest in the common

language of the community and to depend for the understanding of the quotation upon the ability of school children to translate or of the social worker, friend, or neighbor to make clear the meaning of the matter printed upon the card.

The first card, the blue one, has upon it "Accuse not nature. She hath done her part. Do thou but thine." After a family evinces a reasonable degree of cooperation, and progress is noted among all its children, the yellow card is substituted for the blue. It contains the statement "Good health and good sense are two of life's greatest blessings." When further development is noted, and it is believed that the best possible cooperation has been secured, results corroborating this fact, the white card is exchanged for the yellow and with it is given a little idealism in the words "To know, love, and serve childhood is the most satisfying and soulfilling of all human activities." I know full well that it is hard to get people to accept this without reservations, but there is no harm in presenting the idea to those who feel daily the constant stress and strain of bringing up children. I may say, in passing, that the moral effect of this card variation has proved excellent. The psychology is sound; the results are stimulating.

Admitted to the class, the waiting room is next of importance. It should be a light, cheerful room, with ample ventilation, and provision for the comfort of adults and children. Discipline should not be formal; there should be an opportunity for relaxation and diversion. There is no reason why the time spent in waiting should not be employed to some advantage, and for this some provision has been made. The wall is hung with informative posters and descriptive charts. A shelf is arranged upon which exhibits may be placed to illustrate foods, food values, and the relative economic and nutritive worth of articles of diet; proper types of wearing apparel; methods of making a home refrigerator, a fireless cooker, and similar items concerning which there is inadequate knowledge in the home. A bulletin board is of value in calling attention to matters of current interest relating to health. Its material is changed according to the demands of the season, the nature of the problems most pressing, or in line with some direct propaganda work that certain groups in attendance call for.

For the children there are toys, games, books, rocking horses, blackboards, and other means of self entertainment or mutual amusement. Here and there is a picture, selected for its esthetic value, its bright colors, or possibly its inspirational nature. The purpose is to take the waiting room out of the category of places that are morbid, to allay anxieties, dispel the possibility of fear, and create an atmosphere of friendliness, interest, and kindness.

Conversation is not prohibited, but rather encouraged, and the interchange of ideas upon matters of health is to be hailed with enthusiasm. There should be an air of freedom, and an opportunity for the manifestation of a common interest in promoting familial health and happiness. In fact, I may say that the waiting room breathes a joyous

and healthful atmosphere, and is not the sad, severe, cold and forbidding anteroom to which the poor are accustomed. The evidence of education and the helping hand must reach across the threshold to welcome those who seek a knowledge of right living and reveal intelligence through their presence.

From the waiting room the children go into small rooms or cubicles to be undressed, following which they are weighed and measured. This latter process is not a private, but a public performance, in order to secure a general interest in the subject of growth and nutrition in so far as they are represented by the relative weight at various heights for different ages. This is tangible evidence for adults and children alike of growth and improvement or a halt in progress.

The child is then stripped for examination by the doctor, who examines it carefully, paying particular attention to all the organs of the body. In addition, there is inspection of the spine and the extremities, the skin, etc. The details of the physical examination need not be given, save to remark that they should be comprehensive and, when necessary, should have repeated observations. If a visual defect is noted by cursory examination, the child is referred to the eye department. If an orthopedic defect is noted, it is sent to the orthopedist for treatment; if carious teeth require attention, the dentist is soon honored with a visit.

While the records are made immediately by the doctors, the child is dressing itself. A little time can be saved if a volunteer aid stands at the doctor's elbow to record the data. There is one disadvantage in this, in that parents may catch occasional words which create anxiety that can be avoided if the doctor makes the record himself. After the examination, full directions are given to the parents or child. The advice is supplemented with the information that the social visitor will call and explain further, and then a note is made upon the record blank as to the character of information which should be given at the time of home visitation, either by the social worker, the domestic science teacher, or the friendly visitor. When necessary, the child should be referred to the psychologist for investigation, and a consultation should then be held regarding steps to be taken. The parent or child is then told when he is to report again at the class.

This work at the class is supplemented by the home visitation of the social worker, who carries out the instructions that have been given, gives the advice which occasion demands, makes arrangements for the conferences with other departments, and provision for appointments for whatever form of corrective work that is necessary. The observations of the social worker, in turn, are fully recorded upon the record blank.

The spirit of the health class is of paramount importance. Every one engaged in its must manifest constantly cheerfulness, geniality, patience, tact, optimism, and endeavor to give inspiration at every phase of the work. I am increasing personal interest on the part of children by having a card upon which are to be placed blue stars when they

cooperate and carry out directions, and red stars when they fail to live up to the duties. Their object is to gain as many gold stars as possible, one gold star being affixed for every five blue stars. Every teacher appreciates the value of this trifling device.

While there is a certain lightness radiated, the seriousness of efforts must not be in doubt for a moment. The aim to secure familial relations of friendliness and cooperation must always be in evidence. All are working together in the interest of the family and the children. It must be evident by word and act that we seek to give the benefits described by Cabot in his book on *Social Work*, wherein he says "We want to give pleasure, beauty, money, information, education, courage, and to help build up the power to get more of each." The joy of the health class is based upon the truth that "A merry heart doeth good like a medicine."

I may be permitted to lay particular emphasis upon the opportunities for health classes during the preschool age. According to practice, work for infants stops at the age of two years, and health work does not begin again until the school age is reached at six years. Then, the various types of machinery begin to get into action for the purpose of noting defects and handicaps and securing their correction. It is far more rational to undertake the work now done during the school period, or as large a measure of it as may be possible in a continuous manner from infancy until school is entered. The health classes during the preschool age would enable one to catch any of the defects that were uncorrected during infancy. It makes possible the forestalling of handicaps that otherwise might develop under the existent system of neglect until the medical inspector of schools discovers them.

A great advantage, however, lies in the fact that health classes during the preschool age would enable us to prepare our children for school, to supervise their physical and mental development so as to fit them for the receiving of educational training. They would be enabled to secure the best physical health previous to entrance upon school. Nor should one case aside, as immaterial or insignificant, the fact that it is possible, during this period, to inculcate an attitude of mind that grasps the value and the purpose of school hygiene, so as to provide for greater accomplishments and cooperation in this direction.

If we demand that children attend school for the purpose of receiving an education, we should likewise require that they be in a state of health most capable of assimilating the educational diet prepared for them. Children may be made more capable of absorbing information and of using their minds if they have had the guidance and instruction, the building up and physical and mental reconstruction necessary for a higher degree of normal functioning.

While it may not appeal to all as a direct part of the obligation of a health class, I cannot forego to emphasize again the gains which may be made during this period in the development of character. There is such a thing as a healthy character, and its formation should not be neglected in the ordinary methods of conducting a health class. As one item

in character formation, the determination of mental attributes, intelligence, and deviations from normal conduct demand investigation, correction, if possible, and redirection when necessary. Lisper, stuttering, stammering, nail biting, fits of temper, negativism, etc., can be corrected more easily during this period than if allowed to continue until they serve as bases of partial ostracism by school companions or enure to their disadvantages all through life through the negligence of faulty pedagogy.

From a practical point of view, the complete physical and mental study of children during the preschool age serves to give information which makes it possible to direct the proper placement of the child upon entrance into school. The benefits to be derived from this procedure need not be dwelt upon at this time. It is, however, worth while observing that health classes during the preschool age should be of tremendous service in lessening the likelihood of prolonged absences, retardation, non-promotion, and elimination from school.

I have endeavored to present the reasons for, and the nature of health classes for children. There is only one thing that I feel requires further comment. I believe that the health class should be a single unit class, with, possibly, various subsidiary groups, to whom special attention may be given according to the necessity of conditions. To illustrate, if the class is large and there is a sufficient number of children revealing particular defects, such as malnutrition, cardiac disease, speech defects, or orthopedic defects. I believe it would be desirable to have them referred to special classes where they will receive such particular assistance as they may require. These visits, however, should be occasional rather than continuous. The child should always return to the main class in order that its attention may not be constantly focused upon its one specific defect. The sense of segregation should not be permitted to develop. If the child requires a tooth to be extracted, he goes to the dentist; the tooth is removed, and the child returns to the health class. The same procedure is followed for those requiring the removal of hypertrophied tonsils and adenoids. There is no reason why a similar attitude should not be retained with reference to postural defects, malnutrition, or any other defect or handicap. The single class for specific deficiencies has many commendable features, all of which are duly recognized, but, nevertheless, I believe that the idea of health as a whole should be the dominant one. It is the healthy nature, the healthy character, that we seek to develop, which Carlisle describes as blessed, coherent, and sweetly cooperative.

In brief, I may review and summarize health classes for children as the expression of humanized medicine, seeking through medical, psychological, educational, social, and economic means to build up generations of children who will be a credit to themselves, their families, and their countries. They will be powerful, but selfcontrolled; mentally alert, and without indolence; spirited, but spiritual; capable of living in fullest measure, a life that will enrich their communities in all that accrues from the health which is wealth and happiness.

SURGICAL SHOCK.*

Its Relation to Anesthesia.

By ALBERT H. MILLER, M. D.,

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Among the causes of postoperative fatalities surgical shock occurs with sufficient frequency to warrant serious consideration. The original meaning of the word shock is "a violent collision or the concussion caused by it." In pathology, shock is a profound acute prostration of the body functions. The picture presented by the victim of shock is rather clearly defined. The voluntary muscles are flaccid. The skin is cold. The color of the patient is ashy or cyanotic. Perspiration is profuse, appearing in beads on the face and soaking the clothing. The pupils are dilated. The reflexes are inactive. The pulse is small and usually rapid. The blood pressure is lowered to an extent marking the degree of shock. The respiration is superficial, sometimes irregular or halting. Consciousness may be acute or depressed. There is reduced sensibility to pain. The whole appearance represents acute, profound prostration.

The condition resembles cerebral concussion except that consciousness is less affected. Acute sepsis may produce symptoms of shock. A condition greatly resembling shock results from an overdose of a general anesthetic. Profuse hemorrhage produces a condition resembling shock, accompanied by thirst and restlessness. The condition resulting from hemorrhage is not identical with shock. There is a difference in the reaction to treatment. In shock there is a concentration of blood in the peripheral vessels. The capillary count is high. The hemoglobin percentage is also high. In hemorrhage, the capillary red count is low and the hemoglobin percentage is reduced.

Pure shock.—Extreme depression of the vital functions without apparent lesion, may follow a lightning stroke or the effect of powerful electric currents. It appears among men at the front who have been knocked down but not otherwise injured by an explosion. This form of shock may result in recovery or in death.

Wound shock.—Shock as seen in war usually follows such severe injuries as avulsion of limbs, extensive laceration of muscle and comminution of bone, multiple wounds, and extensive injuries of the brain, thorax, or abdomen. Wound shock may appear immediately or may be delayed. Its development is favored by wet and cold, by lack of food and water, by loss of sleep, and by extreme exertion and mental strain. It is aggravated by pain, disturbance, loss of body heat, and by hemorrhage.

Experimental shock.—In physiological laboratories shock has been studied in animals under the influence of general anesthesia. Occasionally the anesthetic has been carefully administered with a device for regulating the dose. Usually the degree of anesthesia obtained has been an uncertain factor in the experiments. As a result of these experi-

* Read at the annual meeting of the New London, Conn., Medical Association, April 3, 1919.

ments a number of conflicting theories as to the causation of shock have been advanced.

According to the theory of vasomotor exhaustion, the vasomotor centre is first stimulated, then exhausted by painful impulses coming to it through the afferent nerves. As the result of vasomotor exhaustion, there occurs a paralysis and dilatation of the peripheral vessels, with accumulation of blood in the venous trunks. Circulatory failure results from failure in the supply of fluid to the right side of the heart.

According to the kinetic theory, shock is an exhaustion of the kinetic system, comprising the brain, the thyroid, the suprarenals, the liver, and the muscles and is brought about by overstimulation of these organs.

The acapnia theory of shock depends upon the fact that increased frequency and depth of respiration without an increased oxidation results in a lowering of the carbon dioxide percentage of the blood and a subsequent acidosis. Painful impulses cause a stimulation of the respiration with subsequent reduction in the amount of carbon dioxide in the blood or acapnia. This is followed by loss of tone and dilatation of the veins, resulting in failure of the supply of blood to the right side of the heart.

The signs of shock may be produced experimentally by the injection of olive oil into a vein. In cases of shock following laceration of subcutaneous fat or of the medullary fatty tissue of bones it has been suggested that the condition may be due to fat embolism.

The peripheral theory of shock depends upon the fact that when the abdominal muscles are relaxed there is tendency for the entire mass of blood to stagnate in the abdominal vessels. The capacity of these vessels is greater than the entire mass of blood in the body. A dog anesthetized to the stage of muscular relaxation may die if placed in the upright position. A patient too deeply anesthetized for a breast operation has died on being raised to the vertical position for the application of the bandage. These deaths result from the effect on the circulation of a diminished intraabdominal pressure, not enough blood being returned to the heart to insure its mechanical operation. The stagnation of blood in peripheral vessels is an undoubted factor in the causation of many cases of shock. The experimental study of shock has so far failed to furnish a theory of its mechanism in all cases.

It is probable that in the study of experimental shock, the effect of anesthesia has usually been underestimated. It has been demonstrated that the signs of shock may be readily produced by the administration of the anesthetic alone. Under carefully regulated light anesthesia, there is often difficulty encountered in producing shock by manipulations which readily cause shock in the absence of anesthesia.

Surgical shock.—The severe trauma which produce wound shock are rarely encountered during surgical operations. The accessory factors for the production of wound shock: wet and cold, lack of food and water, loss of sleep, mental strain, pain,

disturbance, loss of body heat, and hemorrhage must not be forgotten in the consideration of surgical shock. With a considerable amount of the intestine exposed, a marked lowering in the operating room temperature is followed by a rapid decline in blood pressure. Deprivation of food and water, loss of sleep, pain, and mental disturbance must have a similar effect in the production of surgical shock as in the case of wound shock.

Signs of surgical shock frequently develop in the course of operations in which the traumatization is comparatively trivial. The influence of the anesthetic in these cases has not been appreciated. Frequently the condition is simply poisoning from an overdose of the drug used for producing anesthesia. Our methods of administering anesthetics do not bear investigation well. Unmeasured amounts of these powerful agents are employed to produce what some authorities are fond of calling "absolute surgical anesthesia." In reality there is no such condition as absolute surgical anesthesia. Anesthesia is a variable condition, progressing through zones or stages from the more superficial to the deeper levels. The signs of anesthesia are indistinct and anesthetics are administered by guess rather than by rule. It is not strange that a tremendous overdose of the anesthetic drugs is frequently employed.

A continued large dose of a general anesthetic causes a steady decline in blood pressure with early appearance of pallor, sweating, a cold skin, a feeble pulse, and superficial respiration. This is in accord with the experimental evidence that all the signs of shock may be produced by an overdose of an anesthetic.

There is an obsession in the mind of the surgical profession that shock is likely to occur in patients under a light degree of anesthesia. While cardiac inhibition might develop under an entirely insufficient general anesthesia, there is no evidence that shock ever resulted either experimentally or in practice from a reasonably light anesthesia. A complete abdominal hysterectomy, if free from hemorrhage may be performed under such a light degree of anesthesia that the patient's limbs need to be frequently restrained and that expiratory phonation persists throughout, without change in the blood pressure or the pulse rate.

The conclusion to be drawn is that the condition known as surgical shock, when not the result of hemorrhage, is frequently an anesthetic toxemia.

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A HOME FOR AGED AND INFIRM PHYSICIANS.

BY WOLFF FREUDENTHAL, M. D.,
New York.

What are we going to do with our old or infirm colleagues who are without financial resources? Does it not seem peculiar that we physicians, who devote fifty or even seventy-five per cent. of our daily labor without remuneration to the poor, have not thought of ourselves? During the years past I have encountered so much destitution among physicians that I am convinced that these cases are not sporadic but very numerous. Let me give a few examples.

About a year ago, in an institution with which I am connected there were at one time three medical men in the wards. They all died. At present there are two medical men in the wards of the same hospital. One of them is a young man of thirty-eight or forty. He had a good practice, had purchased all the necessary equipment, and was just beginning to save a little money when he was stricken with tabes. All his savings went in a short time and he is now a pauper.

Dr. —, over seventy years of age, called on me, telling me that he was absolutely penniless and that he was willing to do any kind of work but was not willing to accept charity. What work is there for a doctor over seventy? He finally accepted a "loan" from a medical society, but this was inadequate although the loan was repeated several times. At last he told me one day that something would happen unless a radical change occurred. Soon afterward I read in the papers that Dr. — had been found dead in his chair. It is not difficult to guess the cause of his death.

Another case. Dr. —, a well known specialist of this city and at one time president of a national medical society, died suddenly. There was not enough money left to defray the funeral expenses. True enough, he had made money and lost it in Wall Street, and that may be against him. But are we all angels? Did none of us ever try his luck in Wall Street?

Dr. —, who seemingly had a good practice, died leaving his widow \$1,000 insurance and probably a few hundred dollars beside. This woman apparently did not know how to earn a livelihood and soon she was *vis à vis de rien*. When hunger stared her in the face she did the stupidest thing possible — she set her apartment on fire. Naturally she was found out and sent to prison, and it was only through the persistent efforts of several physicians that she was released after a year or so. She got work and is glad to work. Is she a criminal?

When I narrated these stories to a colleague, he thought that such cases were exceedingly rare. But I asked him whether he knew Dr. So-and-So. "Why, of course. I know him well." "All right," I remarked. "If you want to see him, he is in a ward of the — hospital."

What we need is a home for all such unfortunates, and we will get it. A society with that end in view has already been formed and no doubt will soon

be incorporated under the laws of this State. It is my idea to raise a fund of \$100,000 and purchase a big tract of land somewhere. The physicians' home should be open to three classes of physicians (and their wives): 1, Those who are able and willing to pay all that is necessary in exchange for congenial surroundings; 2, those who have only a limited amount of money; 3, the most important, those who have no means whatsoever.

It is now up to the medical profession to support such a movement. Will you do it?

RUPTURE OF MEMBRANES FIFTY DAYS BEFORE LABOR.

By H. R. COSTON, M. D.,
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Physician to Mercy Home.

Thirty years ago I reported a case of dry labor. (1) Briefly, that case had gone forty-six days from the rupture of the membranes until the delivery took place. A male child of eight pounds was born after a reasonably easy labor. Since that time I have watched the literature rather carefully, and have seen no report of any case approaching that interval between rupture of membranes and labor. The rarity of these cases prompts me to report a second case which has recently occurred in my practice, as follows:

I was called on July 13, 1919, to see Mrs. M. R., primipara, aged twenty-six, with the report that the membranes had ruptured. I responded immediately and found the woman sitting on the slop jar, in which there was a quart or more of fluid which resembled, and to all appearances was, liquor amnii. The os uteri admitted the tip of the middle finger, but was thick, and the head high up in the left occiputoposterior position. As there was no pain I gave the patient chloral and left her, with instructions that I should be summoned when needed.

I saw her occasionally and every few days examined her urine, which her husband brought to my office, until September 1st, 1919, when she went into labor and was delivered, after four and one-half hours, of an eleven pound boy.

I was called a half hour from the first pain, and reached her in a few minutes. The os uteri was dilated to the size of a half dollar piece. There were no membranes present at that time and no history of her having lost any fluid, between my visit of July 13th and September 1st, making exactly fifty days from the time of rupture of the membranes until delivery occurred. Recovery was uneventful.

Erythrosis or False Cyanosis.—Christen Lundsgaard (*Journal of Experimental Medicine*, September, 1919) reports a typical case of Vaquez's disease in which the oxygen unsaturation and carbon dioxide content were normal, while the total hemoglobin and oxygen capacity were abnormally high. As the color of the skin and mucous membranes was more reddish than bluish, Lundsgaard proposes calling this condition erythrosis, rather than cyanosis.

LONDON LETTER

(From Our Own Correspondent)

Housing Schemes in Great Britain—Housing and the Incidence of Rickets—Election of President of the Medical Society of London—Opening of the Winter Medical Sessions in London—Medical Meetings in London.

London, October 17, 1919.

It is obvious that the greatest asset of a nation is a healthy vigorous population. It is equally evident that no matter how rich a country may be if her men and women and, perhaps, her rising generation are not mentally and physically alert and able and willing to work, that country will decay and decay rapidly. The causes of race deterioration in civilized countries are not far to seek. All the so-called highly civilized countries are industrial, the more industrial the more prosperous. But prosperity brought about by intensive industry has its drawbacks. In manufacturing centres the workers are generally massed together in houses not too sanitary and live under conditions not conducive to good health. In some countries in Great Britain this state of affairs has been going on for many years. The result is that the people have deteriorated, or at any rate are not so healthy as they should be, and it is fully recognized by the medical profession and thinking members of the community, that steps must be taken to check this process. Some employers have long realized this and of their own volition have tried by every means in their power to better the conditions of their workers. But the matter has gone too far for sporadic efforts and the conclusion has been reached that it is only by organized concerted action that the desired results will be achieved. The *raison d'être* of the Ministry of Health is to further preventive medicine and the first move in this direction is potently to house the population in sanitary comfortable buildings. Not only in the country are a considerable proportion of the dwellings of the workers defective but there is a lamentable scarcity of houses of any kind. The problem which faces the Ministry of Health then is to provide a very large number of houses as quickly as possible. Attention has been drawn to this subject in former letters but the question is of such self-evident importance that no opportunity for driving it home should be missed. It is no exaggeration to state that upon the successful carrying out of adequate housing schemes largely hinges the future of the inhabitants of Great Britain. Unfortunately although the Ministry of Health has drawn up schemes which if carried into effect will provide houses at a satisfactory rate, there appears to be great doubt as to their consummation. In the first instance material and labor are so expensive, that the cost of houses of the description mapped out seems likely to prove prohibitive. Again the local authorities are not exhibiting that hearty cooperation which is required to make the schemes successful. As a rule, the people at large do not show keen interest in the matter and certainly do not realize how essential a housing revolution is to the well being of the nation. According to *Housing*, the official pub-

lication of the Ministry of Health, it is learned that the number of local authorities which have begun work on building schemes is less than a hundred, and yet the building season is rapidly drawing to a close. It is to be hoped that the supineness of the local authorities will be converted into energetic alacrity and that they may soon be convinced that sanitary, comfortable and convenient dwellings, however expensive, are a cheap investment in the long run if they promote good health.

* * *

Recently there has been much discussion in this country, concerning the causation of rickets. For example, in Glasgow Doctor Finlay and Professor Noel Paton have been making investigations and have concluded that the disease is due largely to lack of ventilation, fresh air and exercise. Dr. F. Lawson Dick has just published a book, *Defective Housing and the Growth of Children*, in which he asserts that the changes in the skeletal, dental and endocinous systems to which the name rickets have been given are mainly due to bad housing. The author discusses the occurrence of rickets amongst the Jewish population, the children of which though overcrowded, are well nourished, and attempts to prove that whereas rickets may and does occur when the fat soluble, a factor, is abundant in their diet, it has never occurred where sufficient fresh air and exercise have been provided. Therefore he holds it is difficult to avoid the conclusion that defective housing and slum dwellings are the essential causes of rickets, and that any scheme of feeding, however perfect, will inevitably be a failure so long as slums and housing conditions are left as they are. Professor F. G. Hopkins, of Cambridge University, a great authority, from his investigations has definitely reached the conclusion that improper feeding is the chief cause of the disease. Dr. Eric Pritchard, while holding that food is a very important factor in the causation of rickets, is of the opinion that it cannot always be ascribed to any one cause. He thinks that bad housing and lack of exercise play important rôles in its causation. It is manifest that children suffer more than any from bad housing conditions, and for this reason alone, the housing problem is one to which attention should be promptly paid.

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The Medical Society of London held its first annual meeting of this year on the evening of October 13th, at its building, 11 Chandoe Street, Cavendish Square. A president was elected, the presidential address delivered and a paper read, but before going into these matters it may be of interest to the readers of the *NEW YORK MEDICAL JOURNAL* to give a brief history of this society, one of the oldest medical societies of Great Britain. Doctor Lettson, who flourished in London as an eminent practitioner of medicine some one hundred and sixty years ago, was chiefly responsible for the foundation of the Medical Society of London in 1773. The first meetings were held in Doctor Lettson's house and the number of members was originally limited to thirty physicians, thirty surgeons and

thirty apothecaries. In 1776 the home of the society was in Crane Court, whence it was removed to Holt Court, Fleet Street. In 1850 the lease was taken for twenty-one years of premises in George Street, Hanover Square, after which the society moved into the heart of the doctors' quarters in London, a commodious and handsome house in Chandoe Street, Cavendish Square, near Harley Street, Wimpole Street, Welbeck Street, St. Anne Street, those streets in which members of the medical profession of London congregate. The Lettsomian Lectureship was established in 1850 in honor of the early benefactor of the society. In this year too it was decided to amalgamate with the Westminster Medical Society. The celebrated picture by Mealey of the founders of the society hangs in the council room in Chandoe Street. It contains twenty-five figures of the principal medical men in the British metropolis at the time the picture was painted. Fenner was not in the original picture but was painted in afterwards. The engraving by Branwhite was partly finished before this was done and a piece of copper had to be let into the plate, so that Fenner's head and shoulders might be engraved on a spot previously occupied by background. In 1792 the first volume of memoirs was issued. Of this series there were six volumes, the last appearing in 1805. Then nothing was published until 1810, when Vol. I of the *Transactions* was issued. After this there was a long gap, the society not publishing any report of its meetings until 1846, when *Transactions*, new series, Vol. I, appeared. The new series like the old was limited to one volume. In 1861 another Vol. I. was issued and in the following year Vol. II appeared. Then occurred another gap until 1874, when Vol. I of the *Proceedings* was published, since when they have appeared regularly. These facts with regard to the Medical Society of London were taken from an extremely interesting article by Mr. D'Arcy Power, contributed to the *British Medical Journal* a few years ago. Thus it will be gathered that this old society has an honorable history which it has maintained to the present day.

The induction of the president on October 13th, was a simple but dignified ceremony, held in the Old World appearing comfortable, but distinctive meeting room, a room which has witnessed many such ceremonies and which has seen some brilliant and great men called to the presidential chair. The president elected the other day is a well known surgeon, V. Warren Low, C. B., F. R. G. S., who saw service in the Boer war and also in the World war. His address consisted of an able résumé of some of the surgical lessons of the war. However, it is not ethical to discuss the address of a president of the Medical Society of London, but it will not be out of place to refer to some remarks in connection with the constitution of the society made by the president. It is unique, perhaps, so far as the constitution of medical societies of cities is concerned, in that it admits physicians, surgeons, specialists, and general practitioners into its folds. The paper of the evening was given by Dr. F. de Haviland Hall and dealt with angina pectoris

with low blood pressure. It was pointed out that up to comparatively recent times angina pectoris was believed to be synonymous with high blood pressure. But it was now known that a considerable number of cases of this most distressing manifestation of heart disease was accompanied by a low blood pressure. Even if pressure is high during an attack it is normal or perhaps subnormal in the intervals between attacks. Doctor Hall is of the opinion that the prognosis of such is less hopeful than of those in which high blood pressure is a constant feature. Also he thinks that the treatment which has good effects in relieving the pain when high pressure is present, is of little avail or may even be dangerous when the patient in the ordinary way has a low blood pressure. Nitrite of amyl introduced by the late Sir Lander Brunton and which has shown itself of so great service in high blood pressure can not be recommended when the reverse is the case. Doctor Hall holds that these stimulants are indicated and for the relief of pain morphine injected.

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Among other effects of the strike of railway men which took place recently in London, it had the result of upsetting the arrangements made for the opening ceremonies of the medical schools of London. As usual arrangements had been entered into for addresses by distinguished men to be given on October 1st at the various hospitals to which medical schools are attached and students' dinners were to be held in the ordinary way. However, the untoward strike, coming like a "bolt from the blue," set all these plans at naught. At least, few of the medical schools were favored with addresses, while students' dinners were dispensed with entirely. Of the addresses which were given that of the Right Hon. Christopher Addison, M. D., the new Minister of health, is perhaps entitled to first place. It was given at the Royal Free Hospital, the London School of Medicine for Women. Sir Thomas H. Goodwin, the director general of the Medical Service of the British Army, who is well known in America as well as to the readers of the *NEW YORK MEDICAL JOURNAL*, on account of his frequent contributions to its pages when in America, distributed the prizes at St. Mary's Hospital. The distribution of prizes at Charing Cross Hospital, which should have been undertaken by Sir Auckland Geddes, a member of Mr. Lloyd George's Ministry and the new principal of McGill University, Montreal, was postponed indefinitely. Of the other large hospitals, with the exception of St. George's, some opened their medical sessions on October 1st without ceremonies, and the remaining ones postponed their opening for a short time.

One of the most interesting addresses delivered was that by Dr. S. Squire Spriggs, editor of the *Lancet*, at the opening of the medical session at St. George's Hospital. Doctor Spriggs dealt mainly with the coming altered conditions of medical practice in England, of which the creation of the Ministry of Health was a harbinger. In order to meet this changed state of affairs he pointed out that, if fuller use is to be made of medical science,

not only for the treatment or the prevention of disease, but also for the education of the public in the right ways of living, of working, and of playing, it is obvious that the medical profession as a whole requires reorganization; but to listen to some of our leaders one would think that to carry out this reorganization the Ministry of Health was invented. It was not; but the reorganization of the profession inevitably follows in certain directions, for the fuller duties placed upon the profession cannot be performed without a waste of time and effort. The medical profession showed the need for a Ministry of Health by demonstrating that to sound medicine the people must look for national salvation; our own organization is a sequel. As for the future of the medical profession in Great Britain, the editor of the *Lancet* expressed hopeful views. He drew attention to the fact that the new student might be excused if he was somewhat confused with regard to the prospects and proceeded to state his firm conviction that the conditions of medical service were not at all unpromising because they happened to be sharing in an all-pervading social muddle. On the contrary, while much that was dignified and some that was useful might certainly be jostled out of existence in the class and sectional fights ahead, it was perfectly certain that our science would receive new opportunities for expansion and, in his opinion, the material prospects of the medical profession would improve. He also holds the view that the activities of a Ministry of Health, rendered necessary by the progress of medicine cannot fail to operate in the near future to the advantage of medicine as well as the community. For the Ministry of Health designed for the public weal must be administered by medical men, and if they do it well they are worth their reward. But the meaning of all this is that general practice in Great Britain, as it has been understood hitherto is in the melting pot. In a few years' time there may be no longer a group of family practitioners having sole charge of the health of certain districts, each of them supposed to represent all the medical and surgical wisdom required in the district, save where the Ministry of Health as medical heir to the Local Government Board or the Board of Education annexes a portion of the burden and therefore of the remuneration. But the cessation of the old time methods of general practice will go hand-in-hand with added opportunity, both for specialization and for the passage from the ranks of general practice to those of hospital surgeon and physician and scientific expert.

The change in the methods of practice, according to Dr. Spriggs' point of view, will work for the benefit of medical practitioners. And it seems likely that such will be the case. The chief fear in a Governmental Department is that its policy may be guided or even controlled, to some extent, by party politics. The Ministry of Health is a Governmental Department and unless its medical advisers are sufficiently powerful to influence its policy that policy may be employed neither in the best interests of the community nor of the medical profession. However, the die has been cast, and the

members of the medical profession must adapt themselves to the altered circumstances, with the resolve to do the utmost for the health of the country, while, at the same time, not losing sight of their dignity and independence.

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We are having a deluge of medical matters in England at the present time. In addition to the almost continual memoranda and announcements issued by the Ministry of Health, the developments which are rapidly occurring with regard to the organization of the postgraduate scheme in London; the daily lectures given under the auspices of the Fellowship of Medicine in the building of the Royal Society of Medicine; the weekly lectures given under the auspices of the Royal Sanitary Institution at its building in Russell Square, during the week in which this letter was written, two very important medical meetings were held. The first meeting, which was of distinct medical scientific interest, were held by the Society for the Study of Inebriety. It was, indeed, the autumn conference of that well known society and took place in the rooms of the Medical Society of London, Cavendish Square. The president of the society is that distinguished surgeon, Sir Alfred Pearce Gould, and it includes amongst its past presidents, past vice-presidents, and members of council the cream of the British medical profession. The program was a long and varied one. After the delivery of the presidential address, on the morning of October 14th, the Rt. Hon. Lord D'Abernon read a paper on the Scientific Basis of Drink Control which will be published in full in the *JOURNAL*. At the afternoon session Sir Thomas Whittaker, M. P., opened a discussion on Alcohol in Relation to Recreation, Refreshment and the Saloon. He said in part that drinking in working men's clubs was a serious political influence that stood in the way of temperance legislation, and these clubs were popular with the labor party. Restrictions on saloons, he maintained, could not be imposed with any good results while the working men were free to obtain drink at their clubs at any time. The counter attraction to the saloon which he desired to see were places that would supply an opportunity for social intercourse which the saloon offered today but without the sale of intoxicating drink or any refreshments.

At the evening session, which took place in the building of the Royal Society of Medicine, Mrs. Mary Scharlieb, M. D., M. S., Dean of the London School of Medicine for Women, gave the eighth Norman Kerr Memorial lecture on The Relation of Alcohol and Alcoholism on Maternity and Child Welfare. The lecture was of an instructive nature but space does not permit more than a bare mention of the title.

The other meeting held during the past week was the Seventh Annual Conference on Tuberculosis, held in the Central Hall, Westminster, by the British Association for the Prevention of Tuberculosis. An account of this important meeting will be given at a later date.

Editorial Notes and Comments

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THE THERAPEUTIC VALUE OF TEA.

In these days of prohibition a stimulant is required. If tea may be termed a stimulant, it may take the place of some of those strong liquors which are now banned. However, there are those who hold the view that tea is harmful and while it cheers but does not inebriate it injures digestion and with coffee should be classed among the harmful beverages. On the other hand, there are many who think that tea is distinctly beneficial and that in some cases it exerts a somewhat extraordinarily favorable effect. In the removal of depression, for example, the virtues of tea have been highly lauded. Some time ago Haig drew attention to the influence of the morning cup of tea in dissipating the irritation and depression which some unfortunate individuals suffer from on rising. He ascribed such lowering of the mental horizon to excess of uric acid in the blood and attributed the good effects of tea in removing these symptoms by the supposition that it, in common with other substances of a like nature, freed the blood of uric acid or at least tended to decrease the amount. Subsequent investigations do not appear to have corroborated this theory, and yet the fact remains that with many persons the morning cup of tea dispels mental miasmas as effectually as the sun the early dews. But Haig is only one of many who have noticed that tea acts like magic in overcoming morning irritability. Most of these authorities do not attempt to explain the reason for this phenomenon except by vaguely suggesting that tea exerts a stimulating

effect on the nervous system. They omit to state that the blood plays a foremost rôle in evoking nervous symptoms and that, as Haig has pointed out, it is essential to correct morbid blood states if it is desired to treat successfully functional nervous disorders.

In an editorial in the *Medical Press*, August 27, 1919, the nervous depression which affects so many civilized people and especially women upon rising is bluntly called morning toxemia. The writer of the editorial thinks it may be safely concluded that these early morning symptoms are related to the condition of the blood, and goes on to say that we may postulate among its multitudinous constituents the presence of two classes of substances having opposite effects upon the nervous system. When the former predominate there is a feeling of vigor and joyousness, while lassitude and depression reign supreme when the latter are in the ascendant. Although in this article the cause is not suggested, it is stated that it may be reasonably supposed that nervine stimulants and nervine depressants exercise their influence through the medium of an organ situated in the optic thalamus.

It may be concluded that in spite of our lack of knowledge as to the exact manner in which tea acts in removing morning irritability and depression, it has a therapeutic value the extent of which has not been gauged. As bearing upon the subject, the writer recently had an experience of the seemingly beneficial effects of tea. A lady of his acquaintance, not a patient, was suffering very great pain from neuritis. So acute was the pain that unless narcotics were used she passed the night in misery. It was suggested that she try the effects of tea in the night, and on following the suggestion the pleasing result supervened that the pain was so greatly alleviated that no particular discomfort was felt. It would be making exaggerated assertions for the therapeutic action of tea to assert that such relief from pain was due to it. Of course the mental effect must also be taken into account.

ALCHEMY AND MEDICINE.

Alchemy is an application of the hermetic philosophy and constitutes a veritable general physiology. Its fundamental dogma takes into consideration three constituent principles for all things. This tenary conception is expressed by different symbolic figures and by the numerical system of the Pythagoreans. The three principles of matter are sulphur, mercury and salt; matter itself is expressed

by four elements of manifestation, namely, earth, water, air and fire. Living beings likewise possess three principles: The material body, the soul, and a fluid intermediary, the astral body. Finally, divinity is expressed by a trilogy which is encountered in most religions and for the Hermetists it assumes ten ways of manifestation. The Hermetists reduce Matter and Force to a single principle, a universal agent—ether. There is an analogy and harmony between the different planes of creation (elementary, astral, devine), from which is derived the idea of a relation between man (microcosm) and the universe (macrocosm) which forms the foundation of Astrology. These theories admit of practical applications consisting in a transmutation of mineral, vegetable, animal or spiritual life. Metallic transmutation is based upon a conception of matter to which contemporary physics seem to be returning. For alchemists it proceeds from a belief in the life of matter and takes place by means of the philosopher's stone. Universal medicine consists in employing this stone as a vital ferment, capable of curing disease and prolonging life. *Palingenesis* proposes to artificially create living vegetables and the contemporary work of Stéphane Leduc pursues the same object. Finally, the Alchemists believed in the possibility of artificially creating a human being—*Homunculus*.

Sacred Science, which preceded Alchemy, was elaborated in the temples of the ancient religions. Its origin is legendary but its traces are to be found in the Extreme Orient although it appears more likely that it first arose in Egypt, and for that matter it has always been attributed to the Egyptian God Hermes.

The majority of the Greek philosophers became initiated in the hermetic theories in the Egyptian temples and it was by taking their ideas as a basis that Hippocrates formulated his theory of the four temperaments. The school of Alexandria played an important part in the transmission of Egyptian therapeutic procedures to Greek medicine. With Galen, hippocratic medicine was brought to Rome without having undergone any great changes and it was continued by Celsus. The Arabs also inherited the medicoalchemic science of the Egyptians and Greeks and transmitted it in their turn to the Occident. The monasteries, the crusades, the schools of Byzantium and the secret kabbalistic societies extended the hermetic theories; Bacon, Arnold of Villanova, Basil Valentine, Agrippa, and above all Paracelsus were alchemistic physicians. The Rosicrucians retained a portion of hermetic medicine.

Hermetic medicine confines itself to three principles of man. On his physical body it acts by a therapeutic inspired either by the three principles or the four elements—hippocratic medicine. On the astral body of man it acts, according to the pathogenic cause, by a cure of sympathy, magic practices, or by a therapeutic inspired by planetary influences, a therapeutic which logically becomes linked with the theory of signatures, the principle *similia similibus*, which in turn lays the foundation for opotherapy, serotherapy and metallotherapy, finally coming to the idea of specific remedies. It was for the purpose of acting on the astral body of man that the long, fruitless search for the quintessences was made. In mental affections hermetic medicine acts by psychotherapy or mystic means. After Paracelsus, von Helmont and Glauber continued the same theories, but a double current arose among the followers of Paracelsus. Some more particularly defended the mineral remedies; these were, the Iatrochemists who ended in a completely materialistic conception with Sylvius and the Faculty of Medicine of Paris. The others retained only the notion of the astral body and this resulted in the vitalist school with Stahl and the School of Montpellier. Finally, it may be said that the Alchemists have transmitted to us as chemists, the entire mineral materia medica and therapeutics. From the viewpoint of hermetists, they indicated to us the use of extracts, the notion of specific, serotherapy, psychotherapy and other branches of therapeutics.

THE ERYTHROLITIC FUNCTION OF THE SPLEEN.

Historical examinations have shown that destruction of red blood corpuscles occurs in the spleen. Red blood corpuscles undergoing changes and granulations offering the genic reactions are to be found in the splenic parenchyma. The majority of these granulations become frankly blue with potassium ferrocyanide and hydrochloric acid and undoubtedly correspond to free iron, the hydrate of oxide of iron or rubigen of Lapique. Other reagents, on the contrary, present a paler tint which takes place more slowly, and are in all probability composed of iron still in a weak state of combination. The altered red blood corpuscles, as well as the hemoglobin granulations, are either free or are contained with macrophages. Carefully conducted researches have thus revealed the existence of a double hemolytic process, extracellular and macrophagic, but it is difficult to come to a definite conclusion as to the mutual subordination of each of them. A comparative count of the number of red

blood corpuscles in the blood of the splenic artery and vein does not seem to show that there is an intrasplenic hemolysis. The method is in reality lacking in precision and lends itself too readily to causes of error for one to detect the differences in the composition of the blood—which are of necessity very trifling—at the entrance and the exit from the spleen.

The search for free hemoglobin in the plasma of the splenic vein likewise encounters technical difficulties which necessarily impose much reserve in the interpretation of the results. The study of the blood before and after splenectomy gives contradictory results as far as the number of red blood corpuscles and the percentage of hemoglobin are concerned. The changes observed appear in reality to depend more on the operative trauma or accidental perturbations than to the splenectomy itself. The removal of the spleen does not appear to delay the evolution of artificial plethora obtained by transfusion. It does not seem to modify the resistance of the red blood corpuscles to hypotonic solutions to any extent, but it does appear to thwart the actions of certain hemolytic poisons, such as toluylene diamine and pyridin. Splenectomy also markedly diminishes the quality of bile pigments secreted regularly each day. The extract of spleen obtained by crushing the organ in chlorinated water possesses manifest autohemolyzing properties in the dog, which may be overlooked if the extract is not properly diluted or if the quantity of red blood corpuscles used for the test is too great. The autohemolyzing action of the splenic juice cannot be verified in a regular way in the animal series. It is found in a mild degree in the guineapig, but appears to be wanting in man, sheep, pig and rabbit. When the autohemolyzing substances are wanting, the spleen contains heterohemolyzing substances in a certain number of animals. In the dog the spleen is not the sole organ of which the watery extract is endowed with an autohemolyzing power, since this power is to be found in lung extract and also, but far less frequently, in the extract of liver and lymph nodes. On the other hand, with the exception of the pancreas, the majority of the other organs may be regarded as inactive.

The splenic extract of the dog appears to be endowed with a specificity because it hemolyzes the red blood corpuscles of the dog especially, much less those of the guineapig and appears to be devoid of any action in the blood of man, pig, rabbit, sheep and horse. This apparent specificity is probably due to a particular sensibility of the erythrocytes, because in the guineapig the splenic extract causes a more marked hemolysis in the dog

than in the guineapig. The active substance of the splenic extract of the dog resists a temperature of 56° C. but it is distinctly influenced by higher degrees of heat. At 80° or 100° C. the splenic extract separates into a liquid portion and a precipitated portion. The liquid part is usually deprived of autohemolyzing properties which still exist in a mild degree in the solid portion. The splenic extract of the dog precipitated by ten times its volume of alcohol gives up little or no active substance to the precipitating fluid. The spleen has little action on the coloring matter of the blood which is liberated by destruction of the erythrocytes. However, a portion of the hemoglobin is decomposed as is shown by the presence of free iron in the spleen, but the major part passes directly into the liver without seeming to undergo any notable change in the splenic parenchyma.

To sum up, the histological data, the diminution of the secretion of bile pigment after splenectomy, the possibility of detecting hemolyzing substances in the spleen of certain animals are all arguments in favor of the part played by the spleen in the dissolution of the erythrocytes. The spleen is not the only organ of hemolysis. Experimental splenectomy shows with what ease its functions can be fulfilled by other organs, probably hematopoietic, but for all that it is an important focus of red cell destruction and from the practical standpoint there are already a number of cases of splenectomy done for serious forms of anemia with excellent results.

DUST HAZARD IN THE ABRASIVE INDUSTRY.

The conviction is growing, among students of industrial hygiene, that the incidence of tuberculosis among the workers in dusty trades is one of the gravest problems in this field. C. E. A. Winslow, professor of public health, Yale Medical School, and Leonard and David Greenberg, of the U. S. Public Health Service, call attention, in Reprint 530 from the *Public Health Reports*, to two important studies of tuberculosis ratios by industries and age periods for this country. Of these one was made in 1908 and 1909 by the United States Bureau of the Census and the other by Mr. F. L. Hoffman for the Prudential Insurance Company of New Jersey. In general the data show quite clearly that exposure to mineral and metallic dusts, as among brass workers and marble and stone cutters and polishers, is accompanied by tuberculosis ratios at least one third greater than the ratio for all occupied males, and at some age periods more than twice as great. English data indicate that a tuberculosis ratio half again as high as the normal corresponds to an actual mortality from tuberculosis of one to two persons in a thousand in excess of the mortality among all occupied males. In other words, one or two out of

every thousand persons in these dusty trades are sacrificed each year to the special hazards of their employment.

Statistical analyses and experimental studies have shown that the most hazardous of the dusty trades are those in which the workers are exposed to the inhalation of small, hard, sharp, nonabsorptive particles. The continued inhalation of metallic and silicious particles first of all initiates a fibrosis, which is the primary reaction to their deposition in the lung tissues, and then in a majority of cases leads to the development of pulmonary tuberculosis in the injured organ.

It seems obvious from the results noted that establishments devoted to the manufacture of abrasive materials may present conditions in regard to aerial dust content that can scarcely be equaled in any other industry. The study of such conditions and the devising of adequate means for so controlling them as to protect the workers in this trade from the menace of tuberculosis would seem to invite serious attention.

DISABILITY RATINGS FOR EXMILITARY MEN.

One of the most interesting phases of the administration of the war risk insurance acts is the formulation of the table of disability ratings. The law requires that the director of the war risk insurance bureau shall prepare such a table and revise it from time to time. The actual technical work of preparing the ratings by which the diseases and injuries incurred in the war with Germany are to be measured, rests upon the chief medical advisor. It is not only necessary that this officer prepare ratings for the separate diseases and injuries, but for the combinations thereof as well. For this purpose a board of officers of the Public Health Service has been in session for some time, and each section of the tentative schedule is being placed in use as soon as it is completed. Upon the basis of the medical opinion of the degree of disability, compensation is awarded by the government to the injured exsoldier, sailor, or marine. This is the first time in its history that the government of the United States has put in action a definite and well thought out scientific plan of awarding what in effect is a pension on the basis of the degree of disability as determined by medical evidence.

News Items

Baltimore Union Hospital Assured.—The campaign in Baltimore for \$750,000 for a Union Memorial Hospital fund has been successful, and work on the construction of the new hospital is expected to begin shortly.

Red Cross Aids Minsk.—The American Red Cross has authorized the sending of a field unit from its headquarters in Eastern Poland into Minsk, which has been captured by the Polish army. The efforts of the unit will be mainly concerned with general relief and antityphus work.

Texas Surgeons Elect Officers.—At the semiannual convention of the Texas Surgical Association held in Temple, October 13th and 14th, Dr. Frank Paschal, of San Antonio, was elected president and Dr. Frank L. Barnes, of Houston, was reelected secretary.

New Appointments at Worcester City Hospital.—Dr. Ernest L. Hunt (Harvard, 1902) has been appointed director of surgical services and Dr. Edward B. Bigelow (Harvard, 1904) has been appointed director of medical services at City Hospital, Worcester, Mass.

Hospital Bequests.—The will of Mrs. Mary J. Kingsland, formerly of New York, contains the following bequests: Society for the Relief of the Ruptured and Crippled, \$50,000; New York Nursery and Child's Hospital, \$50,000; St. Luke's Hospital, \$25,000; Tarrytown Hospital, \$25,000.

England Preparing for Influenza.—England is preparing for a recurrence of the epidemic of influenza. Vaccine is being prepared in large quantities at St. Mary's Hospital and other bacteriological centres in London for distribution throughout the United Kingdom. Inoculation with this vaccine is being widely practised.

"Secret Maternity" Hospital at Lyons.—The municipality of Lyons, France, has established a "secret maternity" hospital for unmarried mothers. It is a hospital without inquisition, freely open to these unfortunates. The institution is thought to be the best method of combating abortion and of protecting the health of mother and child.

Weekly Health Index.—Worcester, Mass., had the lowest death rate among the larger cities of the United States for the week ending November 1st, according to the weekly health index issued by the Bureau of the Census. The death rate in Worcester for the period stated was 6.9. Memphis had the highest rate for the same period, 17.9. The rate for New York city was 10.4.

Doctor Mills Resigns.—Dr. Charles K. Mills, chief of staff at the Philadelphia General Hospital, has resigned after forty-two years' service there. He founded the neurological department at the hospital. Dr. J. W. McConnell, head of the neurological department at the University of Pennsylvania, has been appointed his successor. Doctor Mills will continue as consultant to the neurological department.

Mississippi Valley Medical Association.—Dr. Frank B. Wynn, of Indianapolis, was elected president of this association, at the annual meeting held in Louisville October 21st and 23d, succeeding Dr. Francis Marion Pottenger, of Monrovia, Cal. Other officers were elected as follows: Dr. Chauncey W. Dowden, of Louisville, first vice-president; Dr. Frank Smithers, of Chicago, second vice-president; Dr. Henry Enos Tuley, of Louisville, reelected secretary; Dr. Samuel C. Stanton, of Chicago, reelected treasurer. Next year's meeting will be held in Chicago.

Doctors Strike.—It is reported in a press dispatch that doctors in Dundalk, Ireland, went on strike recently to enforce their demands for a minimum salary of seven guineas (about \$35) weekly for all public services. Their present salaries average £275 a year. A number of patients applying for treatment at dispensaries were refused.

Joint Pediatric Meeting.—The joint meeting of the New England Pediatric Society, the Pediatric Section of the New York Academy of Medicine, and the Philadelphia Pediatric Society was held this year in Philadelphia on Saturday, November 15th. An interesting program was presented, beginning at nine o'clock in the morning and ending in the evening with a dinner at the Hotel Rittenhouse.

Britain Aiding Tuberculous Soldiers.—An appropriation of \$5,000,000 for permanent settlements and \$1,250,000 for colonies has been provided by the British government to aid discharged tuberculous soldiers, of whom it is estimated there are approximately 40,000. The first settlement will be in Kent, where accommodations will be provided for training 120 men and lodging 300.

Eastern Long Island Hospital Campaign.—The Eastern Long Island Hospital, at Greenport, has instituted a campaign to raise \$30,000. According to the board of directors, unless this amount can be raised immediately it may become necessary to close the institution at least a part of the year. The total expenditures last year were \$17,000 and the deficit \$6,000. The amount to be raised will take care of deficiencies covering the next five years.

Tuberculosis Work in Vermont.—The Vermont Tuberculosis Association is advocating five hospitals or wards for tuberculosis, one each for the northeast, northwest, southeast, southwest, and central sections of the State. The central section will soon have a hospital located at Barre. The association has endeavored to get in touch with 245 soldiers from the State discharged from the army on account of tuberculosis.

Personal.—Dr. William C. Brons, of Jamaica, Long Island, who recently completed a year's overseas service in the Medical Corps, U. S. Army, has been appointed house surgeon of St. Mary's Hospital, Jamaica.

Major Guthrie McConnell, formerly of Waterloo, Iowa, has accepted the position of director of the research institute of the National Dental Association, Cleveland.

Dr. B. M. Jaffe, formerly of the Maryland General Hospital, Baltimore, has returned from eleven months' overseas service with the army and resumed private practice in Baltimore.

Vermont State Medical Society.—At the annual meeting of this association held October 9th and 10th in Burlington, the following officers were elected: president, Dr. Michael F. McGuire, Montpelier; vice president, Dr. Alan Davidson, St. Albans; secretary, Dr. William G. Ricker, St. Johnsbury; treasurer, Dr. David Marvin, Essex Junction; councilors, Dr. James N. Jenne, Burlington; Dr. Schuyler W. Hammond, Rutland; Dr. Frank E. Farmer, St. Johnsbury.

Deaths Since Armistice.—Since the armistice 600 officers and 28,000 French soldiers have died in hospitals as the result of wounds and diseases, according to a report compiled from French army statistics by Louis Marin, member of the Chamber of Deputies. From start to finish of the war 4,103,391 wounded and 4,988,213 sick were treated in hospitals. The number of officers and men wounded is estimated at 2,800,000.

Rockefeller Gives \$10,000,000 to Research Institute.—John D. Rockefeller has given \$10,000,000 more to the Rockefeller Institute for Medical Research, the largest single gift he has made to the institution. The gift was made, according to an announcement made by the institute, to meet growing needs in many lines of research and to make the latest findings of its staff available in general medical practice. The income of the fund will be used to sustain new lines of research in biology, chemistry, and physics, as well as to continue study already in progress with reference to diseases of men and animals.

New Appointments at Cornell Medical School.—The Cornell University Medical College announces the following appointments to the medical faculty in New York city: Dr. E. F. DuBois, assistant professor of medicine; Dr. Oscar M. Schloss, professor of clinical medicine, department of pediatrics; Dr. Henry H. M. Lyle, assistant professor of surgery; Dr. Jeremiah S. Ferguson, assistant professor of clinical medicine, department of pediatrics; Dr. Nellis B. Foster, assistant professor of medicine; Dr. John C. A. Gerster, assistant professor of clinical surgery; Dr. Charles V. Morrill, assistant professor of anatomy; Dr. Robert Chambers, assistant professor of anatomy.

Electrotherapeutists Elect Officers.—At the twenty-ninth annual meeting of the American Association of Electrotherapeutics and Radiology, which was held September 16th to 19th in Philadelphia, the following officers were elected for the ensuing year: President, Dr. William Martin, of Atlantic City, N. J.; first vice-president, Dr. William T. Johnson, of Philadelphia; second vice-president, Dr. Virgil C. Kinney, of Wellsville, N. Y.; third vice-president, Dr. S. St. John Wright, of Akron, Ohio; fourth vice-president, Dr. Mary L. H. Arnold Snow, of New York; fifth vice-president, Dr. John H. Burch, of Syracuse, N. Y.; treasurer, Dr. Emil Heuel, of New York (reelected), and secretary and registrar, Dr. Byron Sprague Price, of New York.

Reduced Birth Rate in New York.—A reduction in the number of births reported in the city during 1919 as against those recorded last year is revealed in a review of the first eight months of the year issued by the Department of Health of New York city. During the first eight months of this year 86,380 births were recorded this year, while the corresponding figure for 1918 is 94,956, a reduction of 8,576 births. Marriages have decreased from 37,821 in 1919 to 37,615. The falling off in both birth and marriage rates is ascribed to economic conditions, restriction of immigration, and the absence of young men because of the war.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.
Philadelphia.

(Continued from page 626)

Acute anterior poliomyelitis has at times been known to present a clinical picture sufficiently resembling that of rheumatic fever as to lead to its being mistaken, on hasty examination, for this disease. The possibility of error is increased from the fact that the paralysis of poliomyelitis easily escapes notice unless thought of and examined for, especially in the very young children, and may thus be overlooked for several days.

The constitutional reaction at the onset of poliomyelitis is not infrequently of such a character as might readily be observed in acute rheumatism. In both conditions the initial general manifestations come on rather abruptly, and prodromes are uncommon. The rise of temperature is often only moderate in both, though sometimes it attains or exceeds 104° F. Where prodromes do occur, they not infrequently include sore throat or a definite tonsillitis in either affection. Malaise is also a prodrome common to both. Anorexia, a coated tongue, and constipation are ordinary accompaniments of the established disease in both instances, and inability to sleep is likewise a frequent early manifestation. An initial chill is often noted in rheumatic fever; in acute poliomyelitis a chilly sensation sometimes occurs in adults, and less frequently there is a distinct chill. Sweating is emphasized by a symptom of rheumatic fever; according to Frauenthal and Manning, 1914, sweating is frequent in poliomyelitis and in some epidemics so profuse and constant that it has been spoken of as a cardinal symptom of the disease. The marked and persistent general asthenia of poliomyelitis is analogous to the customary prostration of rheumatic fever.

The chief occasion for confusion of these two diseases lies in the pain and general tenderness of poliomyelitis which, in the absence of a careful examination or of a recollection of the possibility of this disorder, may be mistaken for the joint pains and tenderness of rheumatism. The likelihood of this mistake is increased from the fact that in children acute rheumatism may be attended with but slight or obscure joint involvement. Whereas slight pains in the joints at times constitute a recognized prodromal symptom in rheumatic fever, emphasis has been placed on pain or tenderness as one of the few reliable early signs of poliomyelitis. Shidler noted general tenderness in all but one of a series of nineteen carefully investigated cases of the latter disease. Apart from the occipital, cervical, and spinal pains characteristic of this affection, myalgic pain, constant or paroxysmal, is stated by Frauenthal and Manning invariably to

precede paralysis of involved muscle groups, and frequently to persist further for a varying period. Again, in cases characterized by peripheral neuritis there is an intractable pain along nerve trunks, usually unaccompanied by paralysis. Finally, in the arrested or abortive type of poliomyelitis, which in epidemics in certain localities has been known to constitute as much as one half of the entire number of cases, there is also some degree of pain, unassociated, however, with definite paralysis; the pain may be of the myalgic type, located in the back or extremities, and is accompanied by tenderness.

Although, according to Frauenthal and Manning, swelling of joints has been noted in poliomyelitis by a few observers, the chief requirement in avoiding confusion of this disease with rheumatic fever lies in a careful examination of the supposedly involved joints. In rheumatism there is definitely a joint involvement, whereas in poliomyelitis the pain tends rather to correspond to the distribution of large nerve trunks, and furthermore, continues to increase after the temperature has begun to subside. Where the condition is actually rheumatism there may be a history of earlier attacks of joint pain, relieved by the salicylates. Convulsions, mental symptoms, hyperesthesia, headache, vomiting, and evidences of meningism point to poliomyelitis rather than rheumatic fever. The patellar reflex in poliomyelitis is usually exaggerated at first, but diminishes or disappears before the onset of paralysis. An affected extremity in poliomyelitis is cold to the touch and exhibits a dull reddish or purple hue. Finally, lumbar puncture may be of diagnostic value, showing an opalescence or milkiness of the cerebrospinal fluid, which, in turn, indicates that the appearance of paralytic manifestations is imminent. Cardiac involvement in a doubtful case suggests acute rheumatism rather than poliomyelitis.

For the treatment of acute poliomyelitis no reliable agent has as yet been secured. Absolute quiet imposed as soon as the diagnosis is made or even in any case in which a possibility of poliomyelitis exists, is probably one of the best palliative measures, clinical evidence being available to the effect that any exercise or exertion after the onset of the disease increases the chances of widespread paralysis and even of a fatal termination. Laxatives and diuretics, a nonstimulating diet, cold applications to the spine, an air or water bed to minimize pain, and hydrotherapy for fever are other measures upon which some stress has been laid. Among the drugs tried, hexamethylenamine has been accorded some slight confidence, experiments on monkeys having suggested that if given very early it might exert a beneficial effect. Intraspinal injection of adrenin solution was said to have been a serviceable measure during the 1916 epidemic. Lumbar puncture as a therapeutic meas-

ure has been advocated by Le Boutillier, 1917. Definite results have been obtained in some cases by intraspinal injection of serum from subjects recently recovered from the disease—a method first used in a considerable series of cases by Netter in 1916. Experimental work directed toward the development of an effective specific agent is being continuously carried out, and the results already obtained give promise that such an agent will ultimately be available. After the first two or three weeks frequent passive movements and bathing of the paretic parts in warm water are recommended. Active movements are also encouraged and massage and electric treatment availed of. Braces, developmental exercises, and surgical measures planned to afford improved muscular power, with the necessary nerve supply, to the affected parts constitute the chief elements in the later treatment.

(To be continued)

Treatment of Chronic Gastric Ulcer.—Louis Rene Kaufman (*International Journal of Surgery*, July, 1919) asserts that the diagnosis and treatment of gastric ulcer are among the most difficult problems that confront the general practitioner. The borderline cases to which the majority of gastric ulcers belong tax the resources of the physician to the utmost. There is a group of cases in which the symptoms vary from the classical ones along broad general lines. Often medical treatment is but a temporary relief and is ineffectual. There is a sharp line of demarcation between the acute peptic ulcer, and the chronic callous ulcer. In the former causes are pain, nausea or vomiting, and hemorrhage. The treatment of this type is medical but extremely complex. A callous ulcer is frequently silent over varying intervals of time and is situated at the pylorus or to either side of it. The duodenal ulcer occurs within the first one and a half or two inches of the duodenum, while the gastric appears as a single ulcer with marked infiltration and adhesion to the omentum along the lesser curvature.

Surgery should be resorted to only when the diagnosis is reasonably plain and confirmed by the x ray. In the majority of cases which present definite surgical indications contraindications to operation exist in those which respond to medical treatment and in those with pronounced neuresthenic symptoms in which the x ray evidence alone demonstrates abdominal lesions remotely related to the neurotic symptoms. Among the most important indications for operation is the failure of medical treatment. Patients may show long intervals between attacks when they are free from symptoms and such latent periods may be followed by symptoms which require surgical treatment. The failure should be amply proved and the patient should have at least five weeks of adequate treatment, persisted in longer if there are any signs of improvement. The mechanical effects of gastric ulcer demand surgical intervention and are a contraindication to medical treatment. In addition to obstruction with retention and stagnation, persistent hyperchlorhydria, which does not yield to medical treatment, and chronic cases with recurrent attacks of violent pain and tenderness require operation.

The likelihood of the development of cancer in ulcer cases, ulcer carcinomatosum, constitutes a very strong, urgent indication for surgery. The possibility of perforation in callous ulcer and septic peritonitis seems to justify the radical cure of the ulcer. The general operation for ulcer of the stomach and duodenum is posterior gastroenterostomy. Any method used is satisfactory provided the anastomosis is at least two inches long placed on the inferior margin of the stomach, and looping of the proximal jejunum is avoided. In definite callous ulcer it is useful as it provides drainage at the dependent part of the stomach, affording an opportunity for healing by rest, permitting the alkaline intestinal juices to overcome gastric acidity, and in preventing spasm of the pylorus. The cases in the sufficient obstruction at the pylorus recognized by the x ray or at operation, gastroenterostomy will alone permit drainage by short circuiting without the possibility of gastric contents passing over to the ulcer site. In cases where the pylorus is patulous gastroenterostomy does not seem to suffice since the gastric contents will pass equally through the pylorus and vitiate the object of the operation, i. e. to permit healing of the ulcer by rest. Where the pylorus is patulous it should be mechanically occluded in order to short circuit the ulcer area. Simple gastroenterostomy may be limited to cases in which there is pyloric stenosis and to those in which the pylorus is patent to perform artificial pyloric occlusion. It is almost certain that no method of pyloric occlusion can remain permanent and ultimately most of the gastric contents will pass out in the natural path. The method permits sufficient rest for healing to take place. In patients with neurotic symptoms caused by long continued indigestion and pain the result will be marred by the persistence of certain indefinite symptoms. Immediate gain in weight, in strength and in ability to eat ordinary food without the use of drugs and the relief of constipation are the rule. Operation should be accompanied by attention to general hygiene regulation of diet so as to keep within the boundaries of safety.

Desensitization in Serum Therapy.—Charles B. Drake (*Minnesota Medicine*, October, 1919) states that horse serum in itself is harmless even when injected in large doses of one hundred c. c., that Von Pirquet and Cole have never seen a fatal case of serum sickness; and that there has never been seen any unfavorable influence on the progress of the cases. Diphtheria antitoxin likewise is perfectly harmless. The frequency and severity of the serum reaction has been reduced by the use of the precipitated globulin content of the serum and, by starving the horses for twenty-four hours preceding the bleeding, eliminating products of digestion in the blood. The writer's method is to test both diphtheria and pneumonia patients by the intradermal or Schick injection of a minim of serum. The skin reaction at the end of two, twenty-four and forty-eight hours was observed. A history of previous serum administration, asthma, sensitiveness to horses, or a marked inflammatory reaction about the skin test was followed by a subcutaneous injection of one c. c. of serum.

Treatment in Military Orthopedic Hospital.—Percy G. Sharke (*International Journal of Surgery*, August, 1919) states that a typical patient in a military orthopedic hospital is a man whose primary wound has healed, but who suffers from some deformity interfering with the functions of the affected parts. Surgical operations, massage, baths, electricity, and gymnastics are used for the restoration of function. Stiff joints are made mobile, nerves are united and tendons of active muscles are attached to paralyzed muscles so as to restore movement. When men had reached the workshop centres they had gone through many other hospitals and had become acclimated to an idle life. To these men occupation is essential for recovery. The operations in the hospitals included splint making, boot making, carpentering, tailoring, upholstering, general and motor car engineering, printing, cigarette making, sign writing, painting, anatomical drawing, clerical work, photography, gardening, music and cinematography.

Full particulars are taken on the admission of the patient in regard to his prewar occupation. As a bed patient the men take up some occupational work, such as needlework, or headwork, until they are fit for some kind of light duty. Then as soon as he is considered fit he is given work in the curative work shops. Voluntary work is always more satisfactory. The men are encouraged to take up their prewar trades when it is possible. If this is not possible they are taught some new occupation which will render them support when they leave the hospital.

The treatment is divided into two groups, direct and indirect curative treatment. In direct treatment the man is made to use his injured limb in the course of his work. In the indirect treatment the man does not actually use his injured limb to begin with, but it is brought into play by the work he does, as a man with a stiff ankle who is sawing wood. The psychological factor is considered most important in both the direct and the indirect treatment. Congenial employment is a great aid in bringing about this condition. The elementary industrial training which is given is an important factor.

The Extraction of Diseased Teeth.—Thomas B. Hartzell (*American Journal of Surgery*, May, 1919) insists that the dental profession is not aware of the magnitude of its responsibilities. Heart, joint, and kidney lesions are largely of oral origin. The isolation of the *Streptococcus viridans* from the heart's blood and from ulcerating surfaces of the hearts of individuals who have died from endocarditis, has been proved. Heart disease is a greater menace than tuberculosis and to a large extent is preventable by proper mouth sanitation. The principal source of infection is the enormous growth of *Streptococcus viridans* in the oral cavity and on the tooth surfaces, whence it enters the circulation through pyorrhea pockets, chronic dental abscesses, and tonsil crypts. The dental profession in years gone by were chiefly engaged in conserving teeth without reference to or knowledge of the fact that they were doing serious damage to the patient. The profession accepted the erroneous statement made by Bass and Johns and Barrett and Smith that the

ameba was the cause of pyorrheal infection and that it could be cured by emetine. There now exists a large group of medical men and a few dentists who aim to control the death rate from mouth infection and ruthlessly sacrifice valuable teeth.

A study of the mouth flora shows that while there are many bacteria found in the mouth at different times there are really only four important organisms: *Streptococcus salivarius* or *Streptococcus viridans*, *pneumococcus*, various members of the *staphylococcal* group, *albus*, *aurus* and *citreus*, and the *fusiform bacillus*. The *Streptococcus* is the only one which is regularly reobtained when animals are inoculated by all of the organisms present. The organism produces varied lesions and comprises about half the mouth growth. The first organism to appear in the mouth is the *Streptococcus*, which is found at the sixth hour. These organisms are found in various locations and can not be gotten rid of by the general extraction of teeth. A more vigorous method is the adoption of systematic mouth sanitation and a diet planned to prevent intestinal putrefaction. The number of bacteria in a clean mouth is far less than the number in a dirty mouth. The clinical picture that would demand extraction is as follows: Early history of tooth and tonsil infection, swollen glands draining the mouth and throat area, poverty of red cells, reduced hemoglobin, and a markedly increased or decreased leucocyte count. If there is evidence of secondary infection, myocarditis, endocarditis, or nephritis accompanied by joint or kidney disease, extraction is justified.

The Surgical Treatment of Traumatic Epilepsy.—Arthur C. Strachauer (*Minnesota Medicine*, October, 1919) writes that prophylaxis is the most important consideration, and begins with the recognition or diagnosis of a fracture and cerebral hypertension. Every depressed fracture should be at least elevated or have the fragments removed, but this is usually not enough. The construction of an osteoplastic flap with the depressed area at its centre has the advantage of permitting a careful examination of the dura and the brain. Hemorrhage is controlled and extradural clots removed. Depressed fractures over the longitudinal or lateral sinuses should not be disturbed; a decompression elsewhere, preferably a subtemporal Cushing decompression, being performed to relieve and offset the increased intracranial pressure. All skull injuries complicated by cerebral hypertension, as shown by the ophthalmoscope and the mercurial manometer, should have a single or bilateral subtemporal decompression done. In cases of traumatic epilepsy the patients should be operated upon as early as possible after the incidence of the convulsive attacks, that is, before "epileptogenic changes" occur in the brain. The chance of betterment diminishes in inverse ratio to the duration of the epilepsy. Small adhesions may be carefully separated without sacrificing the dura; cysts should be evacuated and the sac removed either wholly or in part. A cortical scar should be excised and foreign bodies removed by a clean incision into the cortex, if necessary, rather than by laceration.

Making the Cure of Goitre Safe.—Louis Levy (*New Orleans Medical and Surgical Journal*, October, 1919) thus describes the operation: After novocaine infiltration, the usual necklace incision is employed (an incision corresponding to a line where a string of beads would cover it if put on the neck). The skin, superficial and deep fascia, and platysma are dissected up to a point well above the gland, exposing the sternohyoid and the sternothyroid, the inner portion of the sternomastoid and the omohyoid. In medium sized growths, muscle separation will permit of the delivery of the tumor. The muscle section of the sternohyoid and thyroid group, if made, should be near their upper attachment, so as not to interfere with their nerve supply. After the removal of the gland the severed muscles are carefully united by suture. The upper section also permits of early ligation of the superior thyroid artery. The tissue covering the gland is then divided down to the true capsule of the gland, the gland elevated and brought into view and removed from above and behind, the object being to allow the posterior capsule, with a small part of goitre tissue, to remain. After exposing it the upper pole is elevated and the superior thyroid artery is cut between forceps. Forceps are then clamped in twos along the posterior capsule, always remembering to include a portion of the capsule with the goitre tissue. If this is not done, unnecessary bleeding occurs, as goitre tissue itself seldom holds forceps. The capsule is followed down and seized between forceps until only the posterior capsule and the small amount of goitre tissue remain. The capsule then may be sutured over and perfect hemostasis secured. The tissue capsule is then sutured over the goitre capsule, more completely establishing perfect hemostasis. The muscles, if they have been cut, are now sutured. The same operation is done on both sides, and, if the capsule is closely followed, the recurrent laryngeal is never injured, the parathyroids seldom seen, and the isthmus not touched. The skin is now brought down and sutured with interrupted sutures and Michel clamps. Drainage may or may not be employed, but in most drainage is not used. After operation, with the principle of anociassociation still in mind, morphine is used, not by doses, but by result. Goitre patients must be kept absolutely quiet, even if respiration has to be brought down to twelve a minute for the first three days. After leaving the institution, patients should have continued rest, quiet and congenial occupations until all vestige of toxicity disappears, and nearly all patients can then lead normal lives.

Indications for Cæsarean Section.—J. C. Applegate (*American Journal of Obstetrics*, August, 1919) reports his conclusions as to the indications for Cæsarean section from experience in ninety-five cases subjected to this operation. A previous Cæsarean section is always an indication for the operation at subsequent pregnancies. Eclampsia alone is not an indication for it; a woman overloaded with toxic material is not a good subject for a major operation, especially one involving the peritoneal cavity. Cæsarean section is certainly indicated where dystocic factors exist in addition to

the eclampsia, e. g., a thick, rigid, and undilatable cervix, and pelvic contraction or deformity, when the traumatism and exhaustion in forcible delivery by the natural route would be greater than the shock from section. In placenta prævia three conditions are positive indications for section, viz., placenta prævia with a contracted pelvis of a degree sufficient to create disproportion—which could only occur near term—and with a living child; placenta prævia with a rigid, unyielding os and living child; placenta prævia centralis, with a living child past the age of nonviability, regardless of the size of the pelvis. In disproportion the author adheres to the rule that if any doubt exists as to the possibility or impossibility of birth by the natural route, including the aid of forceps, the patient is to be given the test of labor, not to the point of exhaustion, but until one is convinced of the necessity of Cæsarean section.

Fracture of the Lower Epiphysis of the Tibia and Arrest of Growth of Bone.—R. C. Elmslie (*Journal of Orthopedic Surgery*, April, 1919) in a review of a case in a young man aged seventeen, states that the arrest of bone growth due to injury in the region of the epiphyseal line is due to the fact that the injury leaves a scar across the new bone at the extremity of the diaphysis. The actual growth of the bone at the epiphyseal line is due to the ingrowth of vascular loops furnished with osteoblasts from the cancellous spaces of the extremity of the diaphysis into the proliferating cartilage of the epiphyseal line. The existence of a scar will diminish the rapidity of such an ingrowth or, perhaps, stop it altogether. An arrest or diminution of the growth may be expected at the inner side of the epiphyseal line with a normal rate of growth at the outer end of the line. This is seen in cases of arrest of growth of the lower end of the tibia in which a varus deformity arises. In order to prove conclusively the theory of the origin of interference with the growth of the lower end of the epiphysis an instance should be shown where the fracture was followed after an interval by arrest of growth and varus deformity.

Relation of the Thyroid to the Female Sexual Sphere.—Joseph Bear (*Virginia Medical Monthly*, August, 1919) reviews various observations on the relationship of the thyroid to menstruation, pregnancy, and lactation. There is sufficient clinical proof in support of the theory that what is called a normal, physiological hyper-activity of the thyroid gland is a valuable defensive agent against the toxemia of pregnancy. The conclusion is also justified that there exists such a relation between the physiology and pathology of the reproductive organs and the growth, function, and degeneration of the thyroid as to make one carefully consider the pelvic organs in all cases of impaired thyroid functions. The growing girl should receive greater attention at puberty, for the physiological disturbance of the thyroid at this time may extend into a pathological process in later years. Patients showing marked enlargement of the thyroid during pregnancy should be carefully managed. Any signs of hypothyroidism, toxemia, or eclampsia should be promptly attended to.

Miscellany from Home and Foreign Journals

Bone Transplantation.—Barney Brooks (*Annals of Surgery*, February, 1919, showed in a series of experiments that a relatively large proportion of instances in which the ordinary bone transplant with periosteum and endosteum failed to regenerate a bone defect when the transplantations were made in animals which were not young. In other experiments similar transplants of bone in young animals have been successful when there was no obvious reason, such as infection, for their failure. The experiments showed that transplants of growing bone resulted in a much larger proportion of successes than the normal bone transplants. The success or failure of a transplant was determined by both internal and external factors. The latent power of the osteoblasts to multiply and produce bone is an internal factor and would seem to depend on the intrinsic latent power of regeneration of the bone from which the transplant was taken. The adequate supply of nutrition for growth of the bone producing cells must come from the bed into which the transplant is placed and is an external factor. It is not clear whether the large number of failures of free bone transplantation in old animals was the results of internal or external factors. It was also not clear whether the growing bone transplant is successful in a larger proportion of instances than the normal bone transplant because it contains cells with greater power of growth or because the growing tissue with its numerous thin walled vessels and tissue spaces more readily acquired nutrition from the bed in which the transplant was placed. It was concluded that autogenous transplants of normal bone with periosteum and endosteum fail to regenerate successfully in bone in a relatively large proportion of instances if such transplants are done in animals well advanced in life. Autogenous transplants of growing bone succeed in a larger proportion of instances than autogenous transplants of bone note in the state of the active growth or regeneration.

Congenital Hypertrophic Stenosis of the Pylorus.—H. Tyrrel Gray and George R. Pirie (*Lancet*, September 20, 1919) in this, and in a preceding paper by Pirie, in the same number bring forth an array of evidence and argument to show that the occurrence of congenital hypertrophy of the pylorus is due to a condition of hyperadrenalism. The hypertrophy alone is not the cause of the stenosis, the latter being due to the occurrence of spasm of the hypertrophic muscle arising from one or more of the following conditions: 1. The inhibition of the pancreatic secretion as a result of the original hyperadrenalism. 2. The superadded gastritis from continued slight delay in emptying and defective digestion. 3. The reflex spasm due to phimosis. 4. Reflexes from various unknown causes. Special reference is laid upon the great importance of phimosis as an aggravating cause of the spasm, and statistics are cited to show the much greater frequency of symptoms of pyloric stenosis in boys than in girls, and the almost total absence of the con-

dition in Jewish boys. The pancreatic function is originally antagonized by the existence of hyperadrenalism and remains deficient for some time after the latter condition has ceased to exist. The deficiency of the pancreatic secretion delays the neutralization of acid chyme from the stomach and keeps the pylorus closed for an abnormally long relative time during digestion. In turn the diminution of flow of acid chyme into the duodenum further inhibits the external pancreatic secretion and thus sets up a vicious circle. Gastritis develops from the retention of food in the stomach and this causes some degree of inflammation of the mucosa of the pylorus which further interferes with the ease of passage through it. In the diagnosis of these cases it is essential that a tumor of the pylorus should be found before one can be positive of the existence of true hypertrophic stenosis. The treatment should always be palliative at first, except in fulminating cases. The palliative treatment should include frequent small feedings of peptonized milk; frequent gastric lavage; circumcision; the subcutaneous infusion of saline containing two per cent. of glucose; and possibly the administration of hydrated chloral. Palliative treatment should not be continued for more than forty-eight hours without evidence of improvement in cases of much wasted and very weak infants, while in the majority of others it may be continued for ten or twelve days before operation is decided upon. This latter period is necessary for the restoration of pancreatic function. Failure to improve in this period of time constitutes an indication for operation in boys, but in girls the development of symptoms is slower and recovery from them is also correspondingly slower so that a longer period of palliative treatment may be maintained. The operation of choice is the Rammstedt operation of complete longitudinal division of the peritoneum and muscle from without. Certain details should be observed in the performance of this operation to insure success and to avoid the danger of perforating the mucous membrane at the duodenal end where it is reflected upward for a short distance. The precise technic is described by the authors.

Suggestions for the Control of Fibroid Tumors.—H. E. Pearce (*Journal of the Missouri State Medical Association*, October, 1919) suggests a palliative course with the administration of mammary extract ten to fifteen grains four times daily in patients who have small tumors with little inconvenience; in patients too ill to undergo a serious operation; in patients with other serious disease and in patients who refuse operation. When operation is done the following rules are observed: Myomectomy, when the tumors are in the fundus; supravaginal hysterectomy, where the age of the patient or the condition of the uterus does not warrant a possibility of child-bearing; panhysterectomy, where tumor of the cervix, laceration, or severe infection endangers the life of the patient.

The Freudian Doctrine of Lapses and Its Failings.—A. A. Roback (*American Journal of Psychology*, July, 1919), while not denying the soundness *per se* of the principle of determinism which forms the background of the Freudian theory of lapses, questions the right to create a cause when the direct antecedent is in most cases apparent. He sums up the failing of the Freudian interpretation of lapses in the word *misinterpretation*. In most cases emphasis is laid on irrelevant details, while essential facts are ignored. The Freudians seem to put a premium on the introduction of as many factors as possible, leaving no room for simple explanation. There is no need of resorting to unknown and hidden unconscious forces that are constantly distilling sexual and other complexes. In most cases cited where positive and negative concepts have been unintentionally interchanged, the fact is that in practically every instance the lapse is brought about by the elimination of the prefix *un* or *in*. Emphasis should be laid on the actual association in the speaker's or writer's mind between the word intended and the misexpression. When a student writes April 11, 1911, instead of April 22, 1911, what simpler and more plausible explanation may be resorted to than the fact of motor anticipation? The mistake is often only the expression of motor habit. The association most frequently is verbal but may also be kinesthetic or organic. The writer would lay down the rule that first the word, sentence, or sentences preceding or following are to be examined, then possible associations that may have determined the mistake, and only in default of such clues is it legitimate to hunt for a new principle of explanation.

Malaria Control.—C. C. Bass, (*Southern Medical Journal*, August, 1919) discusses this subject in eight papers, four of which are presented here, the remaining four elsewhere. His first paper deals with the relative frequency of malaria in different ages and age groups in a large area of great prevalence. In an area of 328 square miles in Bolivar County, Mississippi, during 1916 and 1917, blood examination of all people living in this area showed malaria parasites to be present in 23.56 per cent. of persons under twenty years of age, as compared with 19.22 per cent. of persons over that age. The highest five year period is from five to nine, inclusive. Negroes were found to have 36.61 per cent. more infection than whites, and the high point is reached with negro children much earlier than with white. Approximately fifty per cent. of all the malaria in the locality was found in persons under twenty years of age.

Concerning the frequency of malaria infection without recognized symptoms, compared with the frequency of recognized attacks, he found that in this locality where 40.30 per cent. of all the people give a history of having one or more recognized attacks of malaria during a year, and where at least 21.18 per cent. have malaria parasites in their blood, 55.09 per cent. of all the malaria demonstrated by blood examination is in persons who have had recognized attacks, and that 44.91 per cent. either does not produce any symptoms at all or symptoms

that are not recognized as malarial. History of attacks alone cannot be depended upon to indicate the presence of malarial infection; it indicates only 55.09 per cent. of the existing infection. At least 15.93 per cent. of those who give negative histories as to present or recent symptoms have parasites in their blood; hence finding parasites in the blood may lead to a diagnosis of malaria and to overlooking other important conditions.

Regarding the proportionate dose of quinine required to obtain the same results in treating malaria in children of different ages as in adults, Bass considers ten grains to be the proper dose for adults. This should be given about three times during every twenty-four hours for the first three or four days in treating acute cases, and then once a day for at least eight weeks in all cases for the purpose of disinfection and prevention of relapse.

As regards immunity, he says that immune bodies are produced in malaria, that the immunity processes contribute largely to the elimination of the infection, and that they are usually sufficient to eliminate the infection in time without the aid of specific medication. But he also finds that this immunity is not lasting and is not effective against new infection.

Fractures of the Upper End of the Humerus.—James H. Stevens (*Annals of Surgery*, February, 1919) has come to the following conclusions:

1. Fractures of the upper end of the humerus, i. e., above the insertion of the pectoralis major, will in nearly all cases conform to three types and their subdivisions. All should be treated in abduction and external rotation with tractions varying from a few days in mild cases to twelve days in complicated cases.

2. Passive motion must be begun early and active motion must follow quickly if the tendency to restriction of motion is to be prevented. It must always be used with care and with due regard to the anatomy and pathology. In the mild cases it is safe to begin early since there is little tendency toward displacement.

3. A right angled splint in the severe cases and a firm pillow splint in the mild cases always with traction is the ideal method of treatment.

4. External rotation in abduction as a treatment is almost an impossibility of accomplishment unless the patient remains in bed. Then it is the simplest method and does not require an uncomfortable position on the part of the patient.

Actinomycosis of the Heart.—Letulle and Hufnagel (*Bulletin de l'Académie de médecine*, July 29, 1919) found in the literature twenty-two cases of cardiac actinomycosis, about half of which were merely instances of metastatic ray-fungus embolism in the heart. Of cases in which the disease spread to the heart by direct contiguity of tissues, as in the authors' case, only about ten have been recorded. Their patient was a man aged thirty-four years, who had been suffering three years from an apparent pleurisy with bronchitis. Later anasarca set in and dyspnea and cough proved troublesome symptoms. At the autopsy the base of the right lung was found firmly adherent to the pericardium, mediastrium, chest wall, and diaphragm.

Value of Biological Principles in Surgical Practice.—J. Shelton Horsley (*Journal A. M. A.*, May 3, 1919) calls attention to the fact that surgery should be more a science than an art and that biological principles are often neglected. He cites as an instance the neglect of appreciating the value of hyperemia in the cure of tuberculosis peritonitis and of the fallacious deductions that have been drawn in so-called reversal of the circulation because of the extreme dilatation of the capillaries which would permit arterial blood to go through unchanged. He calls attention to the fact that pain in gastric or duodenal ulcer is due to pressure of peristalsis on the sensory nerves of the stomach and that gastroenterostomy is not a physiological operation for this condition. Surgical drainage accomplishes results, not by mechanical means but because circulation of lymph in the local lymphatics is reversed in the effort to expel the drainage material which acts as a foreign body. The attempt to plate bones with iron screws and plates causes an osteoporosis which is due to an effort by nature to extrude the irritating metal by first absorbing the lime salts in its neighborhood. This favors nonunion. Skin grafts and transplantation of organs are dependent on biological laws. Skin grafts from others than the patient practically never take. Reconstruction of the bile duct from a vein or tissue having no biological immunity to irritating effects of bile is always a failure.

Mosquitos in Relation to Yellow Fever.—Hideyo Noguchi (*Journal of Experimental Medicine*, October, 1919) found that mosquitoes which were allowed to suck the blood of a yellow fever patient on the third day of the disease were capable of transmitting the disease to a guineapig after a period of twenty-three days. When tested five days after the feeding the guineapigs did not succumb to the disease. The female stegomyias were also ineffective for guineapigs after sucking the blood of an animal experimentally infected with *Leptospira icteroides*, and these mosquitoes could transmit the disease eight days after they were engorged with the blood of the infected animal. The optimum temperature for that organism, and for the mosquito which carries and nourishes it, is 26° C., which is that of most of the tropical countries.

Oxygen in the Venous Blood of Patients with Anemia.—Christen Lundesgaard (*Journal of Experimental Medicine*, August 1, 1919) finds that the values of the oxygen in the venous blood in cases of anemia increase proportionately with the increase in hemoglobin, giving values for the oxygen unsaturation within the normal limits—2.5 to eight volumes per cent. The oxygen unsaturation of the venous blood is independent of the oxygen capacity, unless the latter is reduced below the normal value for oxygen unsaturation—about five volumes per cent. From a study of the results recorded on these patients it appears that the resting organism does not increase its circulation until all the reserve oxygen is used, or in other words, that the resting anemic patient does not need or use any compensation for the anemia until the hemoglobin is below thirty per cent., when the organism increases its blood flow in order to secure to the tissues the normal amount of oxygen.

Relation of the Pneumococcus to Hydrogen Ion Concentration, Acid Death-Point, and Dissolution of the Organism.—Frederick T. Lord and Robert N. Nye (*Journal of Experimental Medicine*, October, 1919) report that the pneumococcus is killed by hydrogen ion concentrations above about 6.8 with a rapidity which bears a direct relation to the hydrogen ion concentration, so that the greater the hydrogen ion concentration the more rapid will be the death of the organism. The pneumococcus will live in suitable culture media at a pH of 6.8 to 7.4 for many days at least. In the growth and death of the organism in fluid media containing one per cent. of glucose the production of acid is the most important bactericidal factor. Dissolution of organisms in lower hydrogen ion concentrations than about 5.0 were found to take place in cloudy suspension of washed pneumococci in hydrogen ion concentrations varying from 8.0 to 4.0. The dissolution is seen at the most acid end of the scale, while some is noted toward the more alkaline end.

Action of Organ Extracts on Induced Hyperglycemia.—Achard, Ribot and Binet (*Presse médicale*, July 17, 1919) studied in dogs with Ebstein's technic the hyperglycemia induced by intravenous injection of glucose. The duration of the hyperglycemia seemed to give useful information as regards the utilization of glucose by the system. Injection of a non-assimilable sugar, lactose, was followed by a marked rise of blood sugar content, and this content remained high for a long time in the absence of combustion or reserve storage of the sugar. In the case of glucose, the hyperglycemia was dependent upon the amount injected, persisting twenty minutes where 0.5 gram of sugar per kilogram of animal had been injected and forty minutes after one gram of sugar. Simultaneous injection of glucose and adrenalin was followed by a prolonged hyperglycemia, more marked than that induced by injection of either of these bodies alone. Simultaneous injection of glucose and pituitary extract gave similar results, while fresh extract of pancreas reduced and shortened the hyperglycemia when injected along with glucose. Where glucose, pancreatic extract, and adrenalin or pituitary extract were injected together, the antagonistic action of pancreatic extract to the adrenalin and pituitary was shown, the hyperglycemia resulting being very slight and of very brief duration.

Relation of the Pancreas to the Diabetic State.—Dwight M. Ervin, (*Journal of Laboratory and Clinical Medicine*, September, 1919) performed a series of experiments to test the glucose consumption in an animal rendered diabetic by removal of the pancreas. Six hours after operation the animals developed a hyperglycemia and glycosuria, while the consumption of glucose remained normal. The hyperglycemia and glycosuria are believed to be dependent upon the rate of synthesis of glucose into glycogen, and not upon interference with the normal oxidation rate. The author thinks that the internal secretion of the pancreas is an enzyme, similar to the external, but that it is diverted into the portal blood for the rapid synthesis of glucose into glycogen, and that its failure to perform this function is the cause of pancreatic diabetes.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Thirty-Second Annual Meeting, Held at Cincinnati,
Ohio, September 15, 16 and 17, 1919.*

The President, DR. JOHN F. ERDMANN, of New York,
in the chair.

(Concluded from page 668)

Cancer Significance of Mammary Adenoma.—DR. WILLIAM J. GILLETTE, of Toledo, Ohio, said that adenoma of the primary type or stage in persons under thirty years of age might be removed, together with their capsule and a wide margin of the adjacent stroma, and a very favorable prognosis furnished, but in women over thirty years of age this type of growth should be considered potentially malignant. Cases of secondary hyperplasia should be considered as precancerous and while they did not require so extensive an operation as the removal of the underlying muscles together with the axillary glands, yet no portion of the mammae should be left.

The tertiary type was fully developed cancer and should be treated as such. The early examination by the pathologist of all neoplasms of the breast was urged, and if he made a diagnosis of adenoma the surgeon should be ready to carry out immediately such radical procedure as might be necessary to deal properly with this type of growth. With all due deference to the conservative pathologist, clinical experience proved that so-called benign adenomas of the mammary gland were often anything but benign. The teachings of such men as MacCarty, Ziegler, Bloodgood, Mallory, Bainbridge, Means, and Moseley were pretty generally accepted that conditions which could be considered as precancerous did exist and were recognizable.

Tumors of the Breast, Based on a Study of Seventy-Seven Cases Personally Observed.—DR. MILES F. PORTER, of Fort Wayne, Ind., said that the present study was based upon all of the cases of tumor of the breast that had come under his observation since November, 1905, except a few cases, perhaps twenty-five or less, in which the patients were operated upon either in private homes, in outside hospitals, or under other circumstances which rendered the keeping of anything like adequate reports impossible.

Of the seventy-seven cases reported, forty-nine were malignant and twenty-eight were benign. The types of malignancy observed with the number of each type were as follows: adenocarcinoma, seven; scirrhous carcinoma, seventeen; duct cancer, four; lymphosarcoma, one; gland cell carcinoma, one; squamous carcinoma, two; medullary carcinoma, two; metastatic carcinoma, one; cylindrical cell carcinoma, two; not classified, twelve.

In eleven of the cases there was, in addition to the tumor present, either depression of the nipple, ulcers of the skin, or fluid discharging from the breast. The fluid discharge was in some cases colorless and in others, bloody. The youngest

patient in this group was seventeen years of age; the oldest patient was seventy-one. This latter patient had a scirrhous cancer. Thirty-three of the women had nursed children and of these twenty-five had malignant tumor. Of the forty-two women who had tumors of the breast and who had not nursed children, only nineteen had malignant tumors. Fifty-seven of these patients were married. Of the women over fifteen years of age in Indiana, sixty-five per cent. were either married, widowed, or divorced. In Doctor Porter's series of cases, seventy-six per cent. of the malignant tumors of the breast occurred in women who had nursed children, while only twenty-four per cent. occurred in single women, and forty-three per cent., in women who had not nursed children. In forty-two cases a primary radical operation was done. In fourteen cases a radical operation was done following an excision of the tumor and an examination of a frozen section. In twelve cases the gland only was excised. In only a little more than fifty per cent. of the malignant cases was an immediate radical operation regarded as necessary. There was no operative mortality. The only hope for improving the results in the treatment of cancer lay in earlier operation.

A Study of Certain Bands in the Right Upper Abdominal Quadrant.—COMMANDER WILLIAM SEAMAN BAINBRIDGE, M. C., U. S. Navy, of New York, stated that his object was to draw attention first, to some points which had proved of practical value to him when operating upon the abdominal viscera; second, to report in brief some selected illustrative cases.

1. The prone position often failed to give the surgeon an exact conception of the conditions present when the abdomen was opened. Early bands and adhesions were often overlooked or their importance not realized. The reverse Trendelenburg would be of assistance in arriving at an exact diagnosis, but this frequently was not sufficient. We must put traction downward on the hollow organs so as to picture what would be the relations if the erect posture was assumed.

2. It was only after the anatomist placed the body erect, froze it in that position and made sections, that the exact anatomy of the body cavities and their organs was determined. The roentgenologist early realized that much could be learned by an examination in the upright position. Would not a few dissections made by the abdominal surgeon, with the body upright, be of great value in preparing him for his work? Doctor Bainbridge had found it so.

3. Many a small band or adhesion when seen in time, and its significance understood, would, if treated adequately, prevent more serious conditions.

4. Breaking up of adhesions was an unfortunate term. In very bad cases that might be all one could do; that is, literally tear out these bands and hope that chance would bring those which would inevitably reform in places where they would not do as much harm as before. Success sometimes followed such a course, but more often failure. By

carefully dividing bands transversely and suturing longitudinally, by flaps of peritoneum or of omentum or skin grafts, many a case of distressing adhesions could be cured.

5. Early adequate attention to bands and adhesions in the right upper abdominal quadrant often made such operations as cholecystotomy, cholecystectomy, and gastroenterostomy unnecessary.

6. Might it not be possible that by a just estimate of the mechanics of the abdomen and careful attention to the lessons learned, we might better order our lives from the beginning and so often prevent the formation of bands and adhesions, thus obviating their serious sequellæ?

Clinical Facts Concerning the Stem Pessary.—DR. THURSTON S. WELTON, of Brooklyn, N. Y., drew the following conclusions: In the absence of infection a stem pessary may be introduced, provided the patient refrains from sexual relations while the pessary is in place, puts herself under constant observation, and reports to her physician at the first early indication of trouble. We do not condemn the pessary as an unnecessary instrument; it has given excellent results in properly selected cases of dysmenorrhea, but otherwise our results with it have been negative. A pessary can be the starting point, the exciting cause, of a pathological condition, either limited to the cervical tissues or invading the deeper structures and ascending and involving the field higher up. From which conclusions he made the plea that the use of the stem pessary, often held lightly and without appreciation of its contraindications and dangers, should be discouraged in the hands of the casual gynecologist ignorant of its menace to the welfare and health of the patient.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Gynoplastic Technology. With a chapter on Sacral Anesthesia. By ARNOLD STURMDORF, M. D., Clinical Professor of Gynecology, New York Polyclinic Medical School; Visiting Gynecologist, New York Polyclinic Hospital; Consulting Gynecologist to the Manhattan State Hospital; Fellow of The American College of Surgeons; Fellow of The New York Academy of Medicine; Fellow of The American Medical Association, etc. Illustrated with 152 half-tone Photo-engravings in the Text, some in colors, and 23 Full-page Plates, with 35 Figures, all in Colors. Philadelphia: F. A. Davis Company, Publishers, 1919.

Doctor Sturmdorf presents an elaborate work dealing essentially with gynecological surgical technique. Every phase of the subject is carefully described. He has drawn generously upon the works of various gynecologists with careful discernment, usually selecting the simplest and most logical of

the methods presented. Throughout the entire work the directness and simplicity with which important points and often overlooked are driven home is noticed. Too little attention has been given in the past to the important details in this all important branch of surgery. The colored illustrations are excellent. They tend to simplify the text by bringing the various pathological pictures to the eye of the reader and also illustrate the general appearance of the parts during the various stages of the operations. Various malformations and their corrective treatment are described and an extremely important topic which is fully covered is the mechanism of intrapelvic visceral support. With the better understanding of the underlying physical principles which can be derived from this chapter a more comprehensive grasp of the entire subject may be secured. Several chapters are devoted to the important topic of endocervicitis. The cervicoplastic treatment of sterility is given. Enough importance is attached to sacral anesthesia to give it an entire and a rather extensive chapter. On the whole the book is a valuable addition to the literature on gynecology.

Births, Marriages, and Deaths

Died.

BARGE.—In New York, N. Y., on Thursday, October 23rd, Dr. Albert C. H. Barge, aged thirty-two years.

BANCROFT.—In Baltimore, Md., on Thursday, October 16th, Dr. John Dozier Bancroft, aged forty-nine years.

BEIERMEISTER.—In Rochester, N. Y., on Friday, October 24th, Dr. John Frederick Beiermeister, aged thirty-two years.

BROWN.—In Montclair, N. J., on Saturday, October 18th, Dr. Willett W. Brown, aged thirty-six years.

EAKES.—In Philadelphia, Miss., on Wednesday, October 22d, Dr. Pettygrew M. Eakes, aged forty-one years.

FARLEY.—In Rochester, N. Y., on Saturday, October 18th, Dr. Porter Farley, aged seventy-nine years.

FOSTER.—In Olney, Ill., on Monday, October 20th, Dr. Martin D. Foster, aged sixty-two years.

HUDSON.—In Brooklyn, N. Y., on Friday, October 24th, Dr. George V. Hudson, aged seventy-six years.

HUMPHREY.—In Union City, Pa., on Sunday, October 19th, Dr. William J. Humphrey, aged fifty-nine years.

LUTZ.—In Brooklyn, N. Y., on Friday, October 17th, Dr. Stephen H. Lutz, aged forty-seven years.

SEARS.—In Portland, Conn., on Tuesday, October 21st, Dr. Cushman A. Sears, aged eighty-two years.

SMITH.—In New York, N. Y., on Saturday, October 18th, Dr. James F. Smith, aged sixty-two years.

SPANGLER.—In Philadelphia, Pa., on Thursday, October 23d, Dr. Gideon T. Spangler, aged eighty-two years.

STELWAGON.—In Philadelphia, Pa., on Saturday, October 18th, Dr. Henry Weightman Stelwagon, aged sixty-six years.

SWEETMAN.—In Ballston Spa, N. Y., on Tuesday, October 21st, Dr. James T. Sweetman, aged eighty-five years.

VERNLUND-FARMER.—In Paris, France, on Saturday, October 4th, Dr. Carl F. Verlund and Miss Alice Havens Farmer, both of Hartford, Conn.

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Original Communications

THE SIGNIFICANCE OF FOOT TROUBLES AND DEFORMITIES.

By J. MADISON TAYLOR, A. B., M. D.,
Philadelphia,

Professor of Applied Therapeutics, Medical Department, Temple
University.

Among the most cherished privileges of human liberty is to deform the feet. And yet so serious do the effects become that a large proportion of heterogeneous miseries are not only increased by foot defects but many are caused by them alone. When one has come to realize their full significance it is often too late to radically remove the effects or limit the causes. Nevertheless honest effort properly guided can do much to restore the disabled members, and it is well worth the trouble. So dominant is the impulse, or false mental reaction, by which mankind is moved to distort and deform their feet that we may take issue with Professor Locke who wrote a treatise on *The Human Understanding* meaning the brain and its functions, and affirm that we are not far wrong in insisting that the foot is the true human understanding, whereas the other is the overstanding. However, foot distortion induces psychopathological conditions and the victims are so bewildered by the sufferings produced, that the analogy of misunderstandings is not far afield.

Popular attention has fortunately been directed to foot defects among civilians by recruiting and the rejections which they caused. This is now becoming mercifully reflected on the entire problem of footwear and the choice of shoes. The more progressive shoe merchants realize that men, at least, are coming to their senses and will hereafter refuse to suffer from distortion and disablement of their feet. As to women—we can only hope they may exhibit a similar awakening and come to resent their thralldom to fashion. Let us consider first the esthetic aspect of distorted feet. By common consent any man or woman who has a right conception of the fitness of things, who appreciates their appearance, will think twice before acquiring a hobbling gait inevitable in one whose feet have become so ruined they are no longer capable of walking gracefully. In the young the foot is so plastic that it may be forced into a pinch toed, high heeled, small shoe. But this does not hold when age creeps on and approaching senility is precipitated by misshapen joints, bunions, corns, broken

arches or ingrowing heels. The entire body is distorted and deformed through the effects of misshapen feet.

A prominent orthopedist has shown (1) that women require corsets as a result of deformed feet, on account of the body being thrown out of plumb; this also produces a sunken chest, protruding belly, backache, stooped shoulders, uterine displacements and other confusions in the internal organs, among which are also diverse digestive impairments, bad breath, dead teeth, constipation, piles, and asthma.

To be sure, a few people are happily able to escape. Some are of such admirable conformation, have such tissue adaptability, poise, and symmetry, in short possess such a splendid hereditary equipment, that they escape deformity. Few, however, can rely on such endowments, they do not have the groundwork. They are like those excellent ladies who aspire to be beauties and who purchase the clothes, corsets, shoes, hats, and other fineries, such as they see worn by young models; they then fondly assume that it is only needed to wear the same habiliments in order to present a fascinating appearance.

The present theme is the foot and its covering, which includes the stocking, which when too small parallels the shoe in deformability. Of course fashion is obdurate and no reason for conduct is required by her votaries, only wishful thought impulses. Some impression might be made upon women in the selection of footwear if they could only be shown a future picture of themselves, after their youthful plasticity has faded and the evil days of bunion decrepitude come on. How is it that intelligent people can justify the almost universal custom of producing costume deformities? Upon what sophistries do they justify such amazing deceptions?

Let me appeal to any woman who fondly assumes that her feet are so exquisitely arched that she can only be comfortable in a French boot. Her physician has assured her that she must wear high heels or her back will ache. Of course there is not a word of truth in this except that the feet of women are higher arched than men. To be sure, she has worn this type of shoe so long that any other shoe will feel queer till she becomes accustomed to it. Meanwhile she is serenely laying the foundation for lameness, limping, and a waddling, slouching, shuffling gait.

When you see a person hobbling, with a forward pitching gait, toes turned outward, the feet placed cautiously like a lame horse, it is a sign of fallen or weak arches and bunions or acquired lameness in the ball of the foot caused by long walking on an

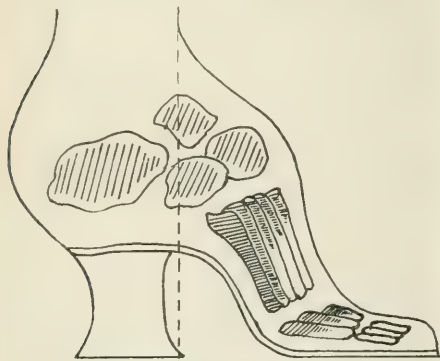


FIG. 1.—Showing maldormation caused by French heels.

open joint (see diagram). The cure is perfectly simple in the young, and is fairly possible among older people. It is only a question whether the patient is content with such a fate or has pride enough of appearance, or of grace and agility, to courageously pursue the necessary training. As Douglas H. Stewart says of the hideous and destructive shoes in fashion, they are made "with the idea in mind that a big, strong, straight, well arched, uncalloused and undeformed foot is a monstrosity, once admired perhaps, though only by Greek sculptors and pagan sandal wearers, but having no tolerance among the hobblers who parade the middle aisle among the so-called lucky ones, or among the unfortunates who stand behind a counter or before a piece of machinery."

Be on guard when certain symptoms appear: Pains in the hips, knees, shoulder blades, at the small of the back, twists or sagging of the spine, painful or weak ankles, a tendency to stumble, a disinclination to walk. These are the more likely to reveal bad feet, especially if one has lost interest in physical activities, has grown too stout and short of breath. The pains are peculiar but distinctive, and, while due to transferred irritation from bad feet to the ankles, to leg or back or even to neck and head, will resist all curative measures except those directed to the feet.

Let me merely refer (2) here to "one of the most important single factors in the production of lateral instability of the foot" . . . "the more or less globular shape of the inferior bearing of the os calcis" which "because of its firm union to the anterior part of the foot and its rounded surface"—exerts intimate causal effects on foot, leg and back strain. (3)

The thrust of the superimposed weight, to one or other side, throws a stress on one or other lateral support and a stretching ensues at the calcaneo-scapoid joint, causes a sagging of the head of the astragalus and the scaphoid, producing the classical

weak foot. Therefore, as a measure of relief some form of lateral support to the os calcis is needed. In the milder conditions commonly met, I find it sufficient to use the device described in the *NEW YORK MEDICAL JOURNAL*. This includes a cuplike rim of leather into which the calcaneum fits and is prevented from undue rotation.

We will first make a summary of the abnormal conditions deserving correction, removal or limitation. Among these are impaired (longitudinal) arches which may arise in constitutional weaknesses, notably hypofunction of the ductless glands. Most of these would disappear if the conduct of the individual could have been controlled from the beginning. There is included in the category certain anomalies of bone, of joint structure, of ligament, of tendon, or other structures, which should have attracted the attention of competent physicians during their incipency, but for some reason were neglected. The largest group of defects become exhibited in weaknesses of the arches at some time. With these are errors in placing the legs, causing disadvantageous attitudes which should first receive attention and correction.

Then follow the acquired foot deformities, environmental defects, joint disorders, arthritisms, bunions, anterior metatarsalgia (Morton's painful foot), the plebeian corn, the annoying callus, the agonizing and often poisonous ingrowing nail, and sundry other miseries. The direct effects are bad enough and obvious enough. Those which are indirect embrace the entire list of transferred pains, tonic protective spasms, with consequent fatigue neuroses, backaches as well as headaches and puzzling psychopathies.

Can these deformities be cured and the essential causes removed? Yes, a great many. At least the worst conditions can be mitigated. How? By revising the acts of walking, of gait, standing, posture, and attitude; by suitable corrective bodily movements and exercises, by corrective poise and balance, and by the use of properly adjusted footwear, especially with low heels. For temporary relief the right kind of local supports will help much, but only as long as they may be imperatively needed. The real cure is training the structures of the foot, ankle, and leg so that the original functions of these parts may be restored. This cannot be done radically but often far beyond our expectations.

Of great importance in the correction of deformities of the feet is the acquirement of normal attitudes in standing and walking and the correction of these disadvantageous attitudes. Briefly, the achievement of economic attitudes is possible by self direction but vastly more readily by expert control. The key to right posture is the position of the pelvis, next the thorax, then the head and legs. The legs in standing should be extended firmly and accurately till the line of support runs straight from top to bottom in one direct line. The weight should rest upon the heel rather than the arch, i. e., the foot should be placed firmly in standing and in walking. This is only possible with a low (one half inch) heel, or no heel. All attitudes should be free from stress and overtension.

The patient should be at ease in or out of active movement. The aim should constantly be to secure and maintain correct equilibration, poise, grace of attitude, readiness to change or readjust, or to make full or complete movement in any direction or degree. For example, note the carriage of the Indian, or of other primitive peoples who have strengthened their feet by barefoot walking.

Next in importance to normal attitude, in the correction of foot deformities, is normality in locomotion in any form or direction. The act of walking properly may be learned spontaneously but this is exceedingly rare; usually there is required expert guidance.

Whatever views are held on normal locomotion, the following points are important in order to gain relief from weak arches and, incidentally, from other foot deformities. The pelvis should be kept as near to the level as possible (Goldthwait says thirty per cent. to the horizontal at least) the symphysis pubis well up in front, the spinal column nearly vertical, the head poised so as not to be to the front nor to the rear; the forward swing of the leg will then bring the heel forward and free from the ground. On stepping the whole foot should be firmly and evenly placed, resting rather on the heel than the ball of the foot, to avoid any stress on the calcaneometatarsal articulation and particularly the metatarsophalangeal articulation. The leg is provided with an equalized group of flexors and extensors. Most walking, I note from observation, most military marching, is done chiefly by the extensors and with little action of the flexors. Speed, power, ease and economy are achieved by equalized action of the flexors with the extensors; the back pull of the flexors being rather more important than the forward push of the extensors. In this way any undue stress is avoided on the joints of the foot or ankle. The toes should be turned slightly in and the weight resting on the outside of the foot, and the knees held straight as they pass the perpendicular to the rear. The ball of the foot must not be overworked. The whole foot should come down as a unit and not in sections, especially when the plantar fascia and ligaments are weak and the condition of the joints is doubtful.

A foot with a defective arch needs special exercises in prehension. If started early enough and adequately trained, all weak arches could be made into strong arches. Fallen arches in a young man certainly can be vastly improved. Weak arches in older subjects can be ameliorated. It is a biological fact that the foot was, and can again become, a prehensile organ, and defective arches made sound in proportion as the foot can be restored to its prehensile capabilities. Therefore, curative measures should be chiefly directed to reacquiring the primal power of prehension and flexion.

The patient should also make voluntary efforts to perform acts of flexion with the toes, i. e., to bend down or flex the toes as near as possible to an angle of ninety degrees. A good plan is to stand on a step, project the toes over the edge, and touch the vertical with them. This movement is a normal but long lost flexor function. When flexion can be performed readily, the arch has practically

become normal. There are in addition many other accessory movements of equal importance to be performed. Among these are placing the bare foot on the floor about twenty inches forward and then pressing down with the toes, drawing the foot backwards, at the same time rotating it inward, describing the quadrant of a circle, avoiding compensatory knee actions. Of course this involves work, hard work, vigilant and persistent correction of faulty action until the acts become automatic.

The foot by original conformation was closely analogous to the hand. Through ages of disuse civilized man has lost pedal flexor functions which, under any circumstances, are well worth regaining. Many Indians (especially the Stoneys, of Alberta) have excited my admiration by their prehensile action in climbing mountains. They quietly and lazily lounge ahead of the sturdiest and cockiest white guide, while the degenerate city sportsman is left far behind.

All feet should be clothed with suitable footwear. Those which have suffered defects must be allowed freedom from restraint, compulsion. The heel of the shoe should be not above a half inch high and the shank should be flexible. There is no need to offer full specifications for the ideal shoe. Army shoes fulfill most of the requirements, especially the Munson last, excepting the shank, which should be flexible; the heel, too, is rather short and wide. Many other good lasts are available.

Badly fitted stockings may cause half the trouble. Socks must be amply large and long or the toes are constantly compressed. The shoe should be sufficiently roomy to accommodate a thick cushioning stocking. Doctor Longstreth, an expert, and the deviser of the elevation described, insisted on two pairs of stockings, one of thin white cotton, the other of stouter stuff worn over them; this is for the admission of air in between.

This cushion effect of a stout stocking is of vast importance. No vanity is more childish than thin, blister encouraging stockings. To be sure, some military experts prefer a stout bandage to march in—the German *lappan* has much to commend it. All lumberjacks and *coureurs des bois* use two pairs of stockings. Now that the soldier has learned the

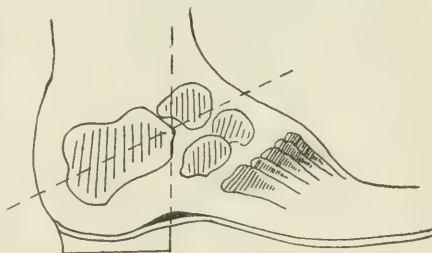


FIG. 2.—Position of foot with heel of half inch elevation.

desirability of soft footwear many may continue to wear them in civil life. By the way, the shoe needs a vent. This is readily supplied by an awl and piercing the ornamental holes in the toe piece. Then the act of walking pumps air in and out.

When a person with malformed feet can be induced to walk in moccasins the most prompt and complete results are achieved. This I have proven on myself and on scores of intelligent patients. I often walk many miles in the mountains barefoot. It is decidedly agreeable.

Feet with weak or fallen arches may need support of the right kind and for temporary use in order to encourage the rotation of the calcaneum into its normal position, but under no circumstances should this support press against the whole arch, otherwise the ligaments and fascia will become progressively weakened.

The forms of support ordinarily used, even some of those ordered by orthopedic surgeons, do far more harm than good. I speak with some confidence on this point, having had ample experience with the effects of these arch supports, including those prescribed by well known orthopedists. By omitting the arch supports, and employing the simple elevation which I will describe, the normal state of the arch is frequently restored. Crandon avers the reason some patients improve by plates is that they develop muscles through trying to escape the pain of uncomfortable supports.

This simple device (of Doctor Longstreth's) must be understood and used to be appreciated. I sincerely hope it may come to be widely employed. It is useful in the majority of foot troubles for it supplies just the help, support and adjustment most often needed. Should there be any pronounced lesion present, that should receive particular attention. This elevation suffices for not only the milder, less definite foot troubles but for those more urgent and disabling. It is vastly preferable to any form of complete arch support. It consists of two or three pieces of leather one over the other, so shaped as to form a slight ridge (as shown in the diagram), and extends back on both sides of the heel to form a cup to hold the os calcis in firm position. The ridge of the elevation should be from two and one quarter inches to two and three quarter inches from the rear line of the heel, and fall promptly away within one and one half to two inches.

The device is not a marketable one, but can be added to any shoe to meet local requirements. It is merely a special, simple, and rational orthopedic device. Any competent cobbler should be able to make one or a pair from careful specifications. The outstanding excellence of the elevation is that support is confined to the locality where it is required and it does not exert excessive pressure throughout the entire longitudinal arch, which is not only unnecessary and objectionable, but causes

impairment of tone in the plantar fascia and astragaloscaphoid and calcaneometatarsal structures which may cause lameness. This device or elevation holds the foot back from the tendency to gravitate forward; it thus prevents compression on the toes and encourages the calcaneum to rotate into a normal position; it also prevents crowding of the toes. This holding back not only prevents corns and calluses, but tends to cure them; it also protects the tender areas in anterior metatarsalgia.

The action can be demonstrated by resting the hand palm down with the heel of the fist just over the edge of a table. On pressing down, the wrist bones fall slightly backward and the knuckles rise, forming the analogue of the plantar arch. In the same way the toes tend to spread normally (see diagram).

Directions for making the elevation.—Use harness leather and trim a piece about three and one half to four inches long which is thickest in centre tapering to each end (about two inches each way); round out the section to enclose the heel and attach firmly to the upper surface of the sole so as to bring the apex of the elevation against the anterior edge of the lower part of the calcaneum as it rests on the ground.

On the inside of the foot the elevation should be higher than the outside to throw the foot on the outer edge. For the rest intelligent direction, in addition to the cobbler's skill and the desire to cooperate, will suffice. Of course the apex or ridge must not be too sharp; it should be gradually carefully graded down. In the diagram the ridge is graphically emphasized. It can be hammered down to suit. I can confidently recommend this device to orthopedic surgeons.

The chief objectives to be achieved in the repair of acquired foot deformities are the following:

1. The release of contractures whenever and wherever present in feet or plantar fascia and posterior muscles of the leg, or restrictions in flexion of foot action.
2. Rest for the impaired, toneless, overstressed structures concerned in body weight bearing, also economies in the distribution of the load upon these subnormal structures.
3. Rotation of the calcaneum into its normal position, so that it is held comfortably in position but without interfering with the integrity of the plantar fascia or interossei or other muscles concerned in foot function, the chief of which is prehension.
4. The astragalus forms the keystone, the two limits of the arch being the os calcis posterior, and the astragalus anterior. A foot that has only a low arch, but which is able to flex or grasp, and which under weight bearing does not abduct the foot, is a good foot and useful for all purposes. A foot that looks apparently normal when off the ground but which shows an inner convexity at the astragaloscaphoid joint, also with abduction of the foot during weight bearing, is a weak foot and generally useless. A foot which when off or on the ground shows an inner convexity at the astragaloscaphoid joint with abduction of the foot is a real flat foot and qualitatively dangerous.

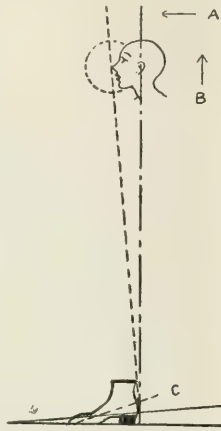


FIG. 3.—Normal axis of the body and tilting forward caused by high heels.

5. Restoration to normal attitudes and adequate tone of the body as a whole, in order to attain and maintain the economies of weight bearing and locomotion. The pelvis should be level, i. e., thirty degrees from the horizontal. This is more important while standing, because then the greatest tension stress is maintained.

6. While in this erect standing posture, the toes may be turned out to widen the base, but it is better to throw the weight on the outer surfaces of the foot and to widen the distance between the feet.

Man in his evolutionary stages from a quadruped to an erect biped was constructed originally to walk on the outer side of his feet, and they were placed in parallel lines, the toes were not turned out. Any turning out impairs the grasping power, the holding on and also the holding back, while going down hill. In the act of climbing over rough ground or hillsides, it is more effective to turn the toes distinctly in. Man needs the full flexibility of the front part of his foot, with command of the five digits well spread out, and they must not be cramped. In order to hold back, in the absence of toes spread, man adds an elevation to his heel. This heel piece forms a forward incline down which his foot tends to slide, thus compressing his toes. A harmful attitude is leaning forward in walking; this throws the weight constantly and excessively on the ball of the foot and, when the arch is weak, increases the stress which, when carried too far, causes strain and pain.

7. Locomotion, gait and walking action should be carefully revised. The foot should be placed firmly down with the weight evenly distributed between the extensors and flexors, so that the gait is an equitable mixture of push and pull. Avoid lurching forward, or an alternate dipping down and straightening up, as this causes waste motion, and loss of power in the effort to rise and overcome the drop which is equal to several foot pounds.

While walking it is most important to turn the toes in and to acquire the habit of throwing the weight on the outer surfaces of the feet; also to use both the flexor and extensors in each leg alternately; to pull back with the flexors immediately and fully, as soon as the extensors are released. In this way the knees are kept straight, i. e., the thigh and leg are retained in a direct line as the leg comes back. It is also desirable to place the whole foot—heel, ball and toes—down together, and not to rest the weight on the anterior portion of the foot.

Fairweather points out that in a man five feet seven inches in height the effect of a three-quarter inch heel is to throw the vertical line nine inches from the perpendicular at the head. This compels a stress of fifty-six pounds energy to pull back to the vertical, by compensatory action of erector spinae and extensors of thigh and foot. Also the peroneus longus and brevis, while extending the foot, also evert it, and the tibialis anticus which supports the arch and inverts the foot becomes elongated and ceases to act. The fifty-six pounds back pull added to sixty pounds equipment makes 116 pounds weight, and carrying this contributes to neurocirculatory asthenia.

In Fig. 2 is shown the elevation in place under a normal foot which does not disturb normal relationships, but merely encourages the posture of greatest advantage for the calcaneum, the top of the ridge coming just under the calcaneoastragaloid juncture and permitting its full action. The calcaneum is thereby supported slightly in front, preventing the sliding of the foot forward and avoiding compression of the toes, thereby placing them in a position of advantage for broadening and exerting prehension, relieving pressures on the metatarsal joints which, when metatarsalgia exists, prevents pressure pain.

If the longitudinal arch is weak the support afforded can be made ample to give relief, at the same time there is not that degree of support or pressure exerted on the plantar fascia capable of interfering with full function. In this manner full action is allowed to the interossei muscles.

When a barefooted man of five feet seven inches (Fig. 3) stands vertically, the weight is then exerted in a straight or vertical line running from the middle of the head to and through the longitudinal arch of the foot. When the heel is raised three-quarters of an inch this line is thrust forward so that at the top of the head it is nine inches in front of the vertical. Also the foot is then on an inclined plane and tends to slide forward, which may also exert compression on the toes by the sides of the shoe.

In a foot with weak or relaxed or fallen longitudinal arch, the alteration in direction from the normal is considerable and the elevation is in situ, which encourages the flattened calcaneum to rotate into a normal position and to be held there without in any way interfering with the function of the joints or the plantar fascia or the interossei muscles.

A foot with flattened longitudinal arch supported throughout its length by the ordinary arch support causes the support to be in excess of the required amount and displaces the functions of the structures constituting the arch, to their ultimate damage.

A foot wearing the ordinary French heel is seen

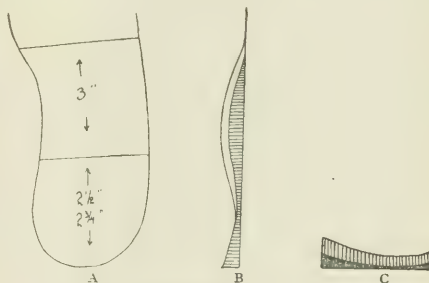


FIG. 4.—Showing device for foot support.

in Fig. 1 and, while the calcaneum is fairly well supported (and could be better supported by using the elevation recommended), the gravest danger is that the metatarsal joints are kept open at their under surfaces when the subject stands and walks upon the delicate structures of an overstretched

half open joint which is thereby subjected to constant peril of overstress and trauma, to say nothing of the profoundly disadvantageous position of the muscles and ligaments of the ankle and leg and knee, and hip and back bone.

The diagrams in Fig. 4 are designed to show the piece (or superimposed pieces) of leather forming the elevation for a right shoe, A, looking down on it in place; B, lateral view from the right. At the inner edge (to the left in Fig. A) it is higher than the right—designed to evert the foot; and C, a posterior view showing the cup for the heel and the crest or ridge of the elevation in situ.

The elevation is made of four heights each of one eighth inch. The one most used is No. 2 (one quarter inch) and less frequently No. 3 (three eighths inch). For conditions of cavus No. 4 one half inch is usually high enough, but an even higher elevation is sometimes useful. If the elevation causes pain it is due to either too sharp an edge or that the foot structures are exceptionally tender, as of a mild arthritis. In either case the crest can be hammered down on the required side somewhat flattened.

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- 1504 PINE STREET.

SODIUM CITRATE IN THE TREATMENT OF PNEUMONIA.

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In a paper on this subject published in the *New Orleans Medical and Surgical Journal*, September, 1912, we showed that a crisis or rapid lysis could be induced in pneumonia by the administration of full doses of sodium citrate in from twenty-four to forty-eight hours, occasionally running to the fourth day. Ten cases were reported at that time, all successful.

Our continued success with this method of treatment in thirty-five additional cases, which were reported in a paper read before the Louisiana State Medical Society, session of 1918, in New Orleans, has impelled us to make further investigations in order to establish a scientific basis for its action.

In order to remove any suspicion of empiricism in its use, and place it within the domain of scientific medicine, the history of its first application should be given. While doing some laboratory work on the blood, a sodium citrate solution was used in its preparation for making blood counts. Its action in maintaining, if not increasing, the fluidity of the blood was a demonstrated fact.

In a case of pneumonia in a girl nine years of age, with a solid lower lobe, sodium citrate was given for the sole purpose of testing its fluidifying power and thus facilitating the circulation of blood in the diseased lobe. The temperature was 103.5°; pulse, 140; respiration, forty-five, at the morning

visit. Sodium citrate was given in ten grain doses every three hours night and day. The following morning the temperature was 98.6°; respiration, twenty-five; pulse, 100; lung apparently clear. Diagnosis was doubted, and medicine reduced one half. The following morning's visit showed decided consolidation, temperature, 102°; pulse, 120; respiration, thirty-seven; confirming the original diagnosis. Ordered medicine given in the original dose. At the next morning's visit, the lung was clearing, only a few subcrepitant râles remaining; temperature, respiration, and pulse normal. While this was evidently a mild case, it served to show what an active remedy we were using, and encouraged its further trial.

Forty-seven cases have been reported, forty-five of which have been successful; "success" meaning that recovery ensued within about forty-eight hours as a rule, after the correct dose was given. A case that goes on to recovery in the usual time is not a complete success, the correct dose being probably misjudged and inadequate. Complications, of course, may interfere with a complete success.

Two unsuccessful cases were reported, one occurring in an alcoholic at the age of sixty-five years and the other a terminal pneumonia in a woman aged ninety-one years. In these cases nothing was expected of the treatment, except to determine its limitations. These cases have not run the usual course of five to eleven days, with recovery in the usual way, but have been cut short in every instance. A new treatment which will not bring about an immediate change for the better, with recovery inside of four days at the most, would hardly be worth while discussing, and would take many hundreds of successful cases to establish its claim to our attention. On the contrary, the uniformity of recovery in forty-five successive cases by an induced crisis is convincing. According to all the rules of prognosis, at least six of the forty-five patients should have died. One case complicated with pleurisy with effusion and severe cardiac disease; two cases of postoperative pneumonia after severe surgical operations, both patients very greatly prostrated by previous disease; and four almost hopeless cases of bronchopneumonia in children.

Microscopic examination of the exudate in pneumonia shows air spaces filled with clotted fibrin, in whose meshes are held red blood corpuscles, pus cells, and changed alveolar epithelium. The interlobular connective tissue may be infiltrated with leucocytes and fibrillated fibrin, but the bloodvessels in the walls of the alveoli remain pervious though collapsed by pressure. Osler says that if the lung is removed before the heart, it is not uncommon to find solid molds of clot filling the bloodvessels. This condition of the bloodvessels constitutes a greatly increased resistance to the flow of blood through that particular lobe or lobule, and the result is that there is no circulation in it, the blood taking the path of least resistance through the other healthy lobes. At least blood of high viscosity will not find its way through those collapsed capillaries any more than glycerine can be forced through a fine hypodermic needle. Hence, the degree of

viscosity of the blood in pneumonia is a matter of the greatest importance, as it constitutes the internal resistance to the blood current in contradistinction to external resistance due to the small size of the capillary bloodvessels and pressure on them and the larger bloodvessels exerted by the inflammatory exudate surrounding them. As a result of these conditions, the leucocytes and antitoxins with which the blood is charged do not gain access to the diseased tissues. This stagnation persists until the exudate or coagulum in the hepatized area undergoes some change of its own through contraction of the fibrin, its solution or digestion by the alexin in the blood serum, when the circulation is suddenly restored and the leucocytes and antitoxins as rapidly destroy and carry away the products of the primary inflammation; that is, the crisis occurs and there is an uneventful recovery.

Anders says (1): "Peteresco has found that large doses of digitalis administered at the onset will jugulate the pneumonia. His experience covered 1,192 cases, and showed the surprisingly low mortality range of 1.22 to 2.66 per cent. This plan of treatment is rational, since it aims at meeting the chief pathogenic indication of pneumonia by passing through the lung tissue an adequate proportion of leucocytes and thus reestablishing the cardiopulmonary circulation." This is quoted only to show what Professor Anders considers to be the chief indication in pneumonia—"restoration of the cardiopulmonary circulation," without which there can be no recovery from this disease. Our knowledge of the peculiar pathological condition of the affected lobe or lobes compels that conclusion as to the rational indication.

In lobular or bronchopneumonia, patches of consolidated lobules are scattered here and there through the lungs. The pathology of the lobular inflammation is much the same as in lobar pneumonia, save that the plugs of exudate are more mucous than fibrinous. We have the same urgent necessity for the restoration of the circulation and practically the same treatment has been successful in all our cases.

After many years of conscientious labor, by the most approved scientific methods, by the very best workers in those lines, there has been no antitoxic serum produced that has been successful, or has appreciably reduced the mortality rate, or the morbidity of this disease. In the light of what Professor Anders considers the chief pathogenic indication, we ask the question, is it possible for antitoxins to reach the diseased tissues without previous restoration of circulation in those tissues? Where there is no circulation of blood there can be no antitoxic or restorative action.

Restoration of the cardiopulmonary circulation is largely a problem in mechanics or hemodynamics. The volume of the flow depends upon three elementary conditions. First, blood pressure; second, fluidity of the blood or viscosity; third, size and length of the bloodvessels. The degree of viscosity of the various liquids has been measured by instruments of precision, and is based on the viscosity of water as the unit, and stated as the coefficient of viscosity.

Mathematically considered, the volume of the flow varies inversely as the coefficient of the viscosity, other factors remaining the same, that is, pressure, and length and diameter of tube or capillary. The coefficient of viscosity of human blood has been found by Ewald, Nicholls, R. Burton Opitz, and others to be "about five times that of water." Alcohol is one ninth that of water; ether one fourth that of water; glycerine eight hundred times that of water, in C. G. S. units.

Hence, the blood pressure remaining the same, one fifth as much blood as water would flow, and, if the viscosity of the blood is reduced more nearly to that of water, it will necessarily flow that much more freely. Conversely, if viscosity is increased, the flow is reduced. Carbon dioxide, ether, and chloral have been found to increase viscosity. Opitz demonstrated that the infusion of large quantities of normal saline solution, and of distilled water, reduces viscosity; also, "that viscosity reacts sharply to heat and cold." Warm water baths decreased viscosity very considerably, while cold water had the opposite effect. Loss of water which the body suffers from any cause, such as drinking an insufficient amount of water, dry hot air, and high temperature, increases the viscosity of the blood, rendering recovery more difficult. Opitz concludes "that, other factors remaining constant, the magnitude of the flow must become greater the less the viscous resistance."

Regarding the relationship existing between viscosity and coagulability, it should be stated that viscosity is due to internal or molecular friction. As this molecular friction increases, the fluid becomes gradually less fluid, approaching and finally becoming thick, semisolid, then solid. This may be brought about by heat or cold, or by some chemical change in the molecular constitution of the substance—cold solidifies pitch, heat coagulates egg albumen, chemical change coagulates the fibrin of the blood without heat: internal or molecular friction has arrived at its highest point and the substance no longer flows, but solidifies.

Reliable observations made by Lee and Dochez (2) seem to show that "the coagulation time of the blood in pneumonia is delayed." This delay in the coagulation time and the resultant reduction of viscosity makes it easier for the blood to find its way through the obstructed bloodvessels of the lung. During hepatization of the affected lobe, there is a deposit of a considerable portion of the fibrin forming elements of the blood and prolonged coagulation time and increased fluidity would be the natural result. High viscosity and coagulability at this time would certainly not conduce to restoration of the cardiopulmonary circulation and recovery.

The action of the sodium ion on coagulation is discussed by Lyle (4) who says that "the calcium ion appears to exert an action the reverse of that of the sodium ion. In blood clotting the calcium activates the thrombokinase and so the inactive thrombogen is converted into active thrombin, or fibrin enzyme. If the blood clots too quickly, it may be partly decalcified by administering sodium citrate. A milk diet may predispose to thrombosis in virtue of the large amounts of calcium salts it contains. This

may be counteracted by adding citrate of sodium to the milk. This fibrin formation may be prevented by the addition of a certain quantity of a salt, such as magnesium sulphate or sodium citrate which forms a double salt with calcium which according to Martin is not available for the clotting of blood. Blood so treated is known as "salted blood." Now, this condition of salted blood can be established by the administration of sodium citrate until the calcium of the blood has been saturated—sufficient for the prevention of clot formation—with probably solution of recently and loosely formed clots in bloodvessels, such as Osler says are found in pneumonia.

Lewisohn (3) in his original paper on transfusion of blood says: "We can introduce five grams of sodium citrate into an adult without any risk of toxic effect. The .2 per cent. dose therefore allows us to transfuse as much as 2,500 c. c. of blood at one time. The slightest error under .15 per cent. would allow rapid coagulation."

"Ottenberg has reported a most interesting study of the effects of a citrate transfusion on a hemophilic. After injection of 150 c. c. of citrated blood (.2 per cent.) the coagulation time dropped within ten minutes from one hour and twenty minutes to seventeen minutes, after twenty-four hours, the coagulation time had gone back to one hour, fifteen minutes." "Ottenberg injected twenty c. c. of a three per cent. citrate solution into patients, and noted a sudden drop in the coagulation time in the same manner referred to above. Forty-eight hours after the injection, however, the coagulation time had nearly doubled." Thus in the hemophilic, there seems to be a temporary reversal of the usual action of sodium citrate, possibly due to some other condition.

This peculiar property of sodium citrate in preventing coagulation and reducing viscosity of the blood is recognized and in use today as a scientific fact, and should need no further proof. There are some other points in favor of the use of sodium citrate that make it doubly valuable in the treatment of this disease.

While alkaline salts are necessary for the reasons mentioned above, these salts are rapidly eliminated and are not replaced from the restricted diet upon which most fever patients place themselves by loss of appetite and other causes. The degree of alkalinity of normal blood expressed in terms of sodium hydrate is equivalent to from 182 to 275 milligrams to 100 c. c. of blood, so that a wide variation is not incompatible with health.

Löwy and Richter (8) and others maintain that a medium degree of alkalinity of the blood is necessary in order that it may exert its normal antitoxic power. They have shown that "leucocytes increase in numbers in proportion as the alkalinity of the blood becomes more marked." Acidosis gives the opposite effect.

A number of experimenters have also observed that immunity to infection increased with the increased alkalinity of the blood and diminished when the alkalinity was reduced. Metchnikoff (9) states that alexin (the active principle of which is a trypsinlike ferment) acts only in the presence of

alkaline salts, and when relieved of the salts by dialysis, the serum loses its hemolytic power, but is instantly restored on the addition of the salts. Hence, with increased alkalinity of the blood must come increased antitoxic power, an active leucocytosis, and its greatest possible fluidity, all of which are necessary in order to meet the chief pathogenic indication in pneumonia.

In order to meet the indications as outlined, we give sodium citrate in large doses with plenty of water at the rate of fifteen to twenty grains an hour, or forty grains every two hours, sometimes more, to a full sized adult, continued night and day until the result is attained. Occasionally, this dose will act as a purge, and the salt passes off through the bowels. This should be checked by a few doses of an opiate. The medicine should be continued into the second or third day, after the crisis, to assure complete resolution. It should be firmly insisted upon that small doses have no effect and will be disappointing.

It is understood that citrates are converted into carbonates in the blood in the ordinary doses in which they are given; but with the larger doses, certainly some of it may go over into the blood as citrate, and when the point of saturation of the calcium ion is reached, the blood will not coagulate so readily and is of the highest possible fluidity; then it begins to find its way through the pervious but collapsed bloodvessels of the hepatized lobe. If the blood pressure is low from cardiac disease, old age or other causes, and the pulse rapid, digitalis and strychnine should not be forgotten. In our most severe cases of pneumonia and bronchopneumonia, recovery has not been delayed beyond the fourth day.

Since this article was written, we have passed through one of the most severe pandemics in the history of civilization—influenza—with many forms and degrees of mixed infections, the most important of which were two peculiar and often fatal forms of pneumonia. The pathology of influenzal pneumonia, as given by Douglas Symmers and others, shows that it is not an ordinary pneumococcus or croupous pneumonia, but is characterized by a mixture of several different pathological processes, the result of mixed infections.

Influenzal bronchopneumonia, is due to hemolytic streptococcus, usually fatal, and influenzal lobar pneumonia, is due to the combined infection of the influenza bacillus with the pneumococcus. No treatment seems to have been of much avail in the streptococcic pneumonias. In the lobar form, sodium citrate would reduce temperature when other measures failed; but the consolidated lobe cleared up only after the lapse of from one to three weeks. Its action was proved in some of my cases by omitting it for a day or two and iodide of potassium given in its stead, when the temperature would run two or three degrees higher. Upon resuming the sodium citrate, the temperature would again subside to or below its former level, with recovery somewhat slow, but sure. In all our cases of lobar pneumonia of influenzal origin the patients treated with sodium citrate recovered, but not by crisis, as in the noninfluenzal pneumonia concerning which this paper was written.

CONCLUSION.

The method of treating pneumonia by full doses of sodium citrate has led to a marked reduction in morbidity as well as in mortality. In lobar pneumonia it is almost specific. No comparable results have been obtained by any other method.

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THE AMBULANT TREATMENT OF ANORECTAL DISEASES.

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Ambulant rectal surgery, or the treatment of rectal diseases in the office or dispensary under local anesthesia, owes its existence to the quack or traveling pile doctor, who treated hemorrhoids by the injection of carbolic acid. This method through very extensive advertising was preferred by the patient, to the tedious operating of the general surgeon which meant: 1, A general anesthetic; 2, a long stay in the hospital; 3, a financial loss due to inability to attend to his business; and 4, a great sacrifice of social duties or obligations due to this loss of time.

Rectal cases *per se* have been neglected by the general practitioner, who either takes the patient's diagnosis for granted, and prescribes some lotion or powder or suppositories—but who does not examine the patient for fear of soiling his fingers, or he sends his patient to the hospital, where these rectal cases are turned over to the general surgeon. The general surgeon usually looks down upon the rectal cases (unless they are cancerous) as a minor operation, and too much beneath him, and out of the fullness of his heart, he transfers the rectal cases to the house surgeon for operation. The house surgeon who has not been given the privilege of learning the newer, more up to date and advanced methods in rectal surgery, and who is still saturated with the idea that rectal diseases consist of only hemorrhoids, fissure and fistula, operates according to his textbooks which, although published and printed this or last year, still advise the employment of the same methods as were advocated in the original books mentioning rectal diseases, which had been copied and recopied for years until the present day. In the meanwhile the patient has been in the hospital for three or four days, has been starved and dieted, purged and cleansed with salts and enemas, and after having been

thoroughly scared on account of the extensive and excessive preparations—he is taken to the operating room and anesthetized; then after the muscular fibres of his sphincter muscle have been torn under the cloak of stretching the anus, either the obsolete Whitehead operation is performed with its resultant stricture, or the incomplete clamp and cautery method is resorted to, with very frequent burning of the skin about the anus. The ancient, antediluvian, prehistoric and barbaric whistle consisting of rubber hose surrounded with iodoform gauze-mesh is inserted, and then the surgeon feels happy, but the poor patient is carried to his bed, with much retching and vomiting, his pains which are severe, excruciating and unbearable come to the fore even before he has fully come out of the general anesthetic. The rectal plug acts as a foreign body which produces irritation to the sphincter. The external sphincter tightens and contracts, and tries to expel this plug. Normally the muscle is in a state of contraction sufficient to close the canal and to prevent the discharge of fluids, gases and solids. This extreme contraction of the external sphincter is a painful condition. The pain does not cease until the muscle is paralyzed through fatigue, or the plug removed. The presence of this plug increases the danger of hemorrhage and also necessitates constipating the patient. The resultant absorption of toxins during constipation delays tissue repair and early convalescence. The diet of bismuth and opium ties up the bowels of the patient for five days to a week. The patient is on his back, without any food. The first movement following the withdrawal or removal of the barbaric whistle, the gauze meshes of which are filled up with newly grown granulations, and the profuse bleeding due to the tearing off of these granulations, to say nothing of the agony of the patient is followed by a convalescence lasting two or three weeks. With this picture in your mind can you blame any suffering mortal for preferring the quack to the general surgeon? This being the case, it behooves the sufferer of a rectal ailment to either neglect himself or go to a quack, who accomplishes a certain proportion of temporary relief or cures with little inconvenience to the patient.

Every specialty must overcome certain objections, and the general practitioner is the stumbling block. We live in an age of specialization. No general surgeon can equal in efficiency the work of the conscientious specialist, and this is especially true in proctology.

To begin with, hemorrhoids or piles are a varicose condition or enlargement and dilatation of the anal or rectal vessels, having a tendency to bleed or protrude or both. These vessels may contain fluid or coagulated blood or both. They may be internal or external or both external and internal, called combined hemorrhoids. We also have skin tags, which point to the presence of internal hemorrhoids above. A history of protrusion of the rectum is not sufficient to make a diagnosis of hemorrhoids. It is necessary to ascertain the color and consistency of the protrusion, whether it returns spontaneously or must be returned manually—whether it occurs during defecation only or at irregular intervals—

whether it is of continuous and long standing or of recent origin, and whether it is attended with bleeding or with pain or with both. Hemorrhoids are classified as external and internal according to their location, and these may always be distinguished from each other, although both varieties may exist in the same patient at the same time. External hemorrhoids are covered by the skin and lie outside of the sphincter muscle, do not come from the rectum proper, and cannot be forced back into the rectum or above the external sphincter muscle. Internal hemorrhoids are covered by mucous membrane, originate within the rectum, and may exist for a long time without making an appearance externally; and as a result of straining at stool or increase in size, or due to a lax condition of the sphincter muscle, these hemorrhoids do show themselves outside of the anus, but with proper management they may be returned within the rectum.

We often find hemorrhoids presenting the characteristics of both the external and internal hemorrhoids—their lower portion covered with skin and their upper part covered with mucous membrane. These are known as combined or externointernal hemorrhoids, and require the same treatment as the internal variety. There are two varieties of external hemorrhoids, the thrombotic or venous and the cutaneous, which consist of thickened hypertrophied folds of skin, and are commonly known as skin tags. Internal hemorrhoids are also divided into two varieties according to their structure—the venous and the capillary.

Hemorrhoids are a very common disease—in fact the most common of all diseases, and humanity has been subject to its influence from the time of Hippocrates to this very day. It is very rare indeed to find a person of middle age who has not at some time or other been a sufferer from hemorrhoids in one or another of its forms and varieties. In fact, so frequent is the occurrence of hemorrhoids that it is looked upon by some people as a necessary inconvenience. Hemorrhoids are no respecter of persons—occur as frequently in both sexes, under all conditions and in all walks of life. Their most frequent cause is constipation, resulting from irregularities in sleeping, eating and responding to calls of nature, and sedentary life; straining at stool, pregnancy, or any other affections of internal organs which may interfere with the return of venous blood are well recognized causes for hemorrhoids.

The wellfed and the well to do are the most frequent sufferers from hemorrhoids, and overindulgence in highly seasoned foods and alcoholic beverages does much toward increasing the number of sufferers from hemorrhoids. Warm climates predispose to hemorrhoidal conditions due to the prevalence of dysentery and other intestinal diseases. Heredity as one of the predisposing causes for hemorrhoids has been overrated by some proctologists, who have become hyperenthusiastic on the subject and have put more stress on heredity as a predisposing cause than on the more simple and logical causes, due perhaps to having run across a series of cases where the ancestors of their

patients also were sufferers from hemorrhoids. The physiology and hygiene of defecation should be taught in our public schools. The regulation of habits, especially the prompt response to the desire to defecate is as necessary and as important for the wellbeing of our future citizens, as is the requirement of our health and school boards to have tonsils, adenoids, teeth and eyes properly examined and attended to.

Except when extensive operations are to be done, such as excision or resection, it is not necessary to put the patient to the inconvenience of an elaborate preparation. In hemorrhoids, fissure, fistula, hypertrophied papillæ, ulceration, hypertrophied sphincter, and in other conditions where the wound is left open for drainage and healing by granulation—the patients really need very little preparation. My patients are ordered to take an enema the night before the operation, and those that come into the office or clinic unprepared for operation and desire or require immediate operation, are washed thoroughly with green soap and water, the rectum is cleansed with a cotton swab moistened in a weak lysol solution to remove the small fecal particles and bits of mucus, which may adhere to the mucous membrane or become lodged in the crypts or folds of the rectal wall. This cleanses the lower inch or two of the bowel, which constitutes the operative field feasible for local anesthesia. This cleansing process prevents postoperative pain in operations under local as well as under general anesthesia.

I have discarded the use of cocaine, beta-eucaine, novocaine, stovaine, holocaine, and other solutions of the cocaine group, on account of the extreme postoperative pain, the greater tendency to bleeding, as well as the toxic symptoms produced as soon as within five minutes after operation, even with a solution as weak as one eighth per cent. Recently I have become partial to quinine and urea hydrochloride in one half, one quarter, or one sixth per cent. strength solution, which produces anesthesia within one to three minutes after injection, gives very little or no afterpain, prevents bleeding by almost immediate production of fibrin, which has a tendency to compress the lumen of the blood-vessels from without, and by its pressure on the nerve endings produces anesthesia; and is free from toxic effects, besides which the anesthesia produced lasts for a period of from three to ten days, a sufficient length of time for healing to take place. A stronger solution than one half per cent. in mucous membrane work, and a one fourth or one sixth per cent. solution where skin tissue is involved should never be used.

A fresh solution of quinine and urea hydrochloride must always be used, and should be injected slowly; a fine needle with a sharp point should be used for more easy and less painful introduction, and as soon as the parts begin to assume a blanched appearance in the form of a white swelling, desensitization is produced, and you may begin to operate with safety. The needle point should not be permitted to perforate the skin or the tissues to be operated upon, for fear of allowing the solution necessary to produce anesthesia to escape. Nor should the needle reach the lumen of

a fistulous canal, or an ulcer or a fissure. Thorough anesthesia is never acquired in infiltration anesthesia without the presence of pressure, and any escape of the fluid would interfere with the production of complete anesthesia.

Postoperative pain in rectal operations is caused by the presence of small particles of fecal matter irritating the fresh wound, which is the result of dribbling caused by purging or enemata given two or three days previous to or the night before the operation. In a series of over twenty-five hundred rectal cases requiring operation, local anesthesia has proved both successful and dependable in my hands in about seventy to seventy-five per cent. of cases. And the most satisfactory of all local anesthetics, I have found to be quinine and urea hydrochloride.

Of course, I do not wish you to infer that general anesthesia is to be discarded in rectal operations. I resort to general anesthesia in all cases where I do not know in advance exactly what is to be done before operating, where there are any complications or conditions that would prevent thorough or complete work, or in major operations, where excision, resection or sutures are to be employed. Some patients even prefer a general to a local anesthetic, saying that they do not wish to be aware of anything while the operation is going on. But local anesthesia is a blessing, and is positively indicated in pulmonary tuberculous, nephritic and cardiac patients. It should be used in patients suffering from profound anemia as a result of extreme exsanguination due to neglected ulcerated hemorrhoids, and where a general anesthetic might prove dangerous or even fatal; in patients who fear being put to sleep, and in those who cannot spare the time to be laid up in the hospital, on account of important social or business engagements.

I do not wish you to mistake the operation under local anesthesia for the injection method of treating piles by means of carbolic acid, which is very unsatisfactory, is unsuited for hemorrhoids of any large extent, or in which there is much hypertrophy of connective tissue. The injection of carbolic acid is followed by pain, ulceration, marginal abscess, fistula, and the impossibility of giving any definite prognosis as to the length of time necessary to produce a cure, or the amount of suffering the treatment will entail; and the fact that the treatment does not result in a radical cure, but that the tumors reappear after two or three years—the hemorrhoidal tumor being converted from a soft vascular mass, into a hard mass consisting of fibrinous tissue, assuming the consistency of a fibroid. This method is only feasible in small piles which bleed freely, and are located above the grasp of the sphincter.

Skin tags, external hemorrhoids, and thrombotic hemorrhoids are injected with a sufficient quantity of quinine and urea hydrochloride one quarter per cent. solution to distend the tissues until they become blanched or assume a glassy white appearance; then with a pair of scissors, the external hemorrhoids or skin tags are snipped off, and the thrombotic hemorrhoids are removed *en masse*. No ligatures are necessary, and the wound is permitted

to heal by granulation. The clamp and cautery should never be used where skin tissue is involved. A small drain is inserted, a sterile gauze pad and a T binder is applied, and in eight or ten days you get complete healing without having interfered with the patient's business or social functions.

For internal hemorrhoids, the patient is placed in the exaggerated Sims's position, the edges of the anus are everted, and with the patient straining down, the tips of the hemorrhoids will protrude sufficiently to enable you to inject your solution of one half per cent. quinine. The hemorrhoids in this manner deliver themselves into view, and when they began to show a pearly white appearance you have anesthesia. They are then individually and successively grasped with a clamp, and nicked at the mucocutaneous junction, after having drawn hemorrhoids down so as to get as much of the redundant tissue as possible and then ligated tightly with a heavy linen thread to assist in more rapid sloughing. When large, they are excised leaving a sufficiently large stump to prevent slipping of the ligature and bleeding. All of the hemorrhoids are in this manner excised and ligated, the stumps are returned into the rectum; a narrow strip of gauze is then inserted to stimulate contraction of the sphincter, a tight gauze pad and T binder applied and the patient goes home and about his business. When many hemorrhoids are to be removed, it is wise to remind you that they should be ligated in different planes, so as to prevent narrowing of the lumen due to the formation of an annular scar with subsequent stricture. Always leave healthy strips of mucous membrane between removed hemorrhoids, and in external hemorrhoids the same holds good with skin tissue. The clamp and cautery may be used but the objections to this method are: the fear of the glowing cautery, the danger of postoperative hemorrhage, and burning of the skin, and due to the thickness of the clamp used, the operation is incomplete. The Whitehead operation is now obsolete. It consists in excising the lower two inches of the pile bearing area, and uniting the divided edges of the mucous membrane to the skin. This is usually followed by delayed healing, pain, stricture, and incontinence, severe ulceration, itching, and loss of sensation when primary union fails.

The prognosis in hemorrhoidal operations is as follows: If the operation is done at the age of about thirty, there is a possibility of a return within about ten or fifteen years. If the operation is done at the age of forty, the chances for recurrence are nil. The reason for this statement is as follows: The hemorrhoidal vessels on the right side have four branches, and on the left side three or four branches. A patient at the age of thirty presenting hemorrhoids usually has three or four hemorrhoids, which when removed, will still give him an opportunity at the age of forty or over to have three or four more.

Fissure ani is the most distressing rectal ailment, and than which no other human affliction causes more severe and excruciating pain; the relief of which is followed by the most sincere expressions of gratitude by the patient. With the Saphir

syringe for local anesthesia (1) inject one fourth of one per cent. solution of quinine and urea about one half inch posterior to the anal margin directly into the tissues between this point and the fissure, and into the sphincter muscle. The solution should bring the fissure into view. With a blunt pointed straight bistoury, or with a pair of scissors, the tissues including the sphincter muscle are divided; the sentinel pile is removed, and under no condition should the wound be sutured; a strip of moist gauze is inserted to the bottom of the wound for drainage and healing by granulation should be resorted to, the same as in a fistula, a sterile pad and T binder are applied and the patient may go home.

In fistula the division method of operation is the operation of choice. The tissues above the fistulous tract are injected with one fourth of one per cent. quinine and urea hydrochloride solution very slowly. In all operations where skin tissue is involved, the solution should be injected slowly to prevent pain from too rapid distention. Insert a probe into the canal, and inject the solution until you get thorough infiltration which will manifest itself by a blanching of the tissues. Be careful that the needle does not enter the canal, otherwise you lose the solution and will not get proper anesthesia. Pass a grooved director through the external and into the internal opening in the bowel, and with a curved bistoury or pair of straight scissors, divide the tissues overlying the fistulous tract in the path of the grooved director. Trim the edges of the wound to assist in proper drainage, insert a strip of moist gauze, apply a sterile pad and a T binder, and the patient may go about his affairs. If the sphincter muscle is in the line of the fistulous tract, cut the muscle at right angles to the circular muscular fibres, without any fear of incontinence.

Prolapsus ani of light degree may be treated the same as so many internal hemorrhoids. Inject portions of the mucous membrane, grasp with a clamp and ligate.

Hypertrophied papillæ and polypi may be injected with one half of one per cent. solution of quinine, then ligated and clipped the same as for internal hemorrhoids. Abscesses, cysts, diseased crypts of morgagni, hypertrophied sphincter, hypertrophied Houston's valves, impaction of feces, the removal of foreign bodies, the modified Ball's operation for pruritis ani can all be as successfully operated upon under quinine as a local anesthetic as the conditions above described.

In conclusion, I wish to emphasize the fact that:

1. Too many unnecessary general anesthetics are given to patients who could as successfully be operated upon in the office or at the clinic under the influence of a local anesthetic.

2. The ambulant treatment of rectal cases requiring operation is a safe, feasible, and rational procedure.

3. A complete radical operation can be performed under local anesthesia.

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345 WEST EIGHTY-EIGHT STREET.

THE NARCOTIC ADDICT IN RELATION TO THE HEALTH DEPARTMENT.*

By ROYAL S. COPELAND, M. D.,

New York,

Commissioner of Health of the City of New York.

The complications surrounding the administration of the narcotic law seem destined to result in added hardship to the members of the medical profession. I sympathize with them because as a member of that profession I know what it means to have detail added to detail in the practice of medicine. "No man e'er felt the halter draw without a poor opinion of the law," particularly when that law has to be studied with care, and all its provisions carried out with precision. I am congratulating myself just now that I am in an office where the city provides a staff of lawyers to advise me on the legal aspects of the many situations that arise in the official practice of medicine, and I am not surprised at the opposition on the part of the private profession to all the intricate details that seem necessary to control the drug evil.

Is there any doubt what the members of the medical profession would say if the health records of this city, day after day, week after week, and month after month, showed any preventable disease to have no reduction in the curve, but a continuous high incidence, without any effort on the part of the health commissioner to control it? Its verdict would be unanimous that the commissioner was not doing his duty. In drug addiction we have to deal with a disease condition that the average physician does not care to handle or to treat. I think that physicians, almost without exception, do not care to treat drug addiction. So, if there is in the community a high incidence of this disease and the physicians will not treat it—while we all agree, including the present health commissioner, that under ordinary circumstances it is not the function of the health department to treat disease, then it is clearly the duty of the health department to deal with the problem.

Have we such a problem to deal with? Forty days ago the federal government inspired the police department to make a raid in New York city and as a result fifteen physicians and druggists were arrested and taken to court; immediately the health department found on its hands 2,000 drug addicts. There may not be 100,000 or 200,000 drug addicts in this city, but I can swear that there are 2,000, because the health department is treating that number, and such wrecks of humanity I never saw. If any one doubts the propriety and wisdom of this move against narcotic addiction, before he forms his final judgment I would counsel him to go to 145 Worth Street any afternoon and he will see such an aggregation of human failures as he never gazed upon before.

In December, 1918, thirty-three drug stores sold 2,600 ounces of narcotic drugs; that is enough to supply twenty grains a day, thirty days in the month, to 2,000 persons. One drug store alone sold 585 ounces. These are the statistics of thirty-

*Read at a meeting of the New York Academy of Medicine, May 26, 1919.

three drug stores and there are 2,600 in this city. Whether we approve of prohibition or not there can be no doubt that with its advent there will be an increase in narcotic drug addiction, unless something can be done to prevent it before the new habit is acquired.

I have been trying for a long time to get a report from the federal government regarding the situation as to drug addiction in the United States. It appeared in the press today. A committee delegated to gather these statistics reports that there are 1,000,000 addicts in America, one per cent. of the population, and it is said that the number may in reality be three or four millions. According to that ratio, the number in this city would be 60,000, and there is no doubt in my mind that the number is anywhere from one hundred to two hundred thousand. I believe that there is one addict in from thirty to sixty persons. The importation of opium into this country in the year 1918 was 476,000 pounds, enough to supply thirty-six grains per capita, and there was not another civilized country on earth with an amount per capita exceeding three and one half grains last year. These facts indicate the tremendous importance of the problem with which we have to deal. That is the reason why the health department is so anxious that some reasonable method of control shall be formulated.

There is opposition by a few physicians to the registration of drug addicts. The fewer the number opposed to any legislation the louder the noise; where there is real opposition to any project there is a quiet determination not expressed by hysterical speech. The State commissioner of the New York Department of Narcotic Drug Control, Senator Walter R. Herrick, has determined to establish a system of registration, and in spite of all unreasonable and unwarranted opposition, whether from the interested or from the misinformed, so long as I am commissioner of health of New York city, he will receive the hearty support of the health department in his every effort to cut the heart out of the narcotic monster.

There are four possible sources of narcotic supply at the present time: the health department through its clinics, the honest doctor, the dishonest doctor, and the "bootlegger." We cannot control the two last, but they are going to be controlled by an active federal government and the police department. At present the 2,000 addicts at the health department may get their drug there after examination by our physicians. The addict having gotten his fifteen grains from the department may go to an honest doctor and, by using another name, after being examined, will be prescribed for and can get another quantity, and can use still another name and go to still another honest doctor and get still another quantity. He can get more of the drug than he needs so he has some to pass on to others. If that is not a situation demanding the cordial support of the medical profession I do not know what is. It will cause annoyance to be obliged to use certain forms and sign certain papers, but I am certain that every honest member of the medical profession wants to wipe drug addiction off the map and I know of no way to do it except by the

registration of the addicts. The matter has been gone into very carefully and the subject has been discussed by those in authority from every angle. It is not the intention that any patient legitimately sick, who has incurable cancer, or any other painful condition necessitating the legitimate prescribing of forbidden drugs, shall be fingerprinted or photographed. It is only necessary in such a case for the physician to write on the triple blank the diagnosis or the statement "incurable" and this statement will permit him to prescribe ten barrels of the drug to a patient legitimately entitled to receive it. The only person to be registered is the person who is a drug addict pure and simple, who has no desire to be cured, no foundation of will power on which to build; of such a person will be demanded a passport, such as any of us would require to travel on a steamer going to Europe, or the driver of a taxicab must have to drive a taxi on the streets of New York city, with his description and his photograph. Is it unreasonable to require that of the confessed addict? Those who are practising honest medicine, dealing with legitimate disease, have no reason to believe they are going to be imposed upon. This system of registering is to cover the addict who has to be watched because even though he may be in the high walks of life, when it comes to getting morphine he is absolutely incapable of refraining from lying. So long as I am commissioner of health, impossible as success may be, I am going to do my best to cure every disease within the precincts of New York city, whether infectious, venereal, or due to drug addiction, and I think the members of the medical profession should do all in their power to help me overcome a situation they alone cannot control. I am sure your official servants will be cordially supported by the Medical Society of the County of New York.

ANTIPITUITARY SERUM.

In Arteriosclerosis and Diabetes Mellitus.

(Preliminary Communication.)

BY C. LEGIARDI LAURA, M. D.,
New York.

From the complex literature of the last twenty years on the physiology of the pituitary body, two facts, among others, have been objects of many investigations. They are: The action of the pituitary extract on blood pressure, and the influence of the pituitary body on general metabolism, and more notably on sugar metabolism.

In regard to the action of the pituitary extracts on blood pressure we can still accept the following conclusions of De Bovis: 1, The injections of anterior lobe extract has no action on blood pressure; 2, the administration of posterior lobe extracts increases the blood pressure to above normal, while the pulsations become stronger and less frequent. This action is also evident on animals after division of the nervus vagus. The nature of this blood rising property is still under discussion, for while Lewis, Miller, and Matthews, among others, believe in the existence of a pressor substance and of a depressor one. Sajous still adheres to his opinion

that the pituitary body is not a secretive organ at all. This author believes that the blood rising property of the pituitary is due to its content of chromaffin substance. This opinion is founded on the research work of Wiesel and Soulier, who have found that both the adrenals and the pituitary are rich in chromaffin cells, that all have a common embryonic origin and are present in all sympathetic ganglia. Wiesel has also proved that the chromaffin substance, no matter from what organ it comes, has the same action as the adrenal has.

As for the influence of the pituitary internal secretion on sugar metabolism, Vassale and Caselli had noted in their early work, that the administration of posterior lobe extract to animals, would cause glycosuria. This fact has been confirmed by other observers, notably by Goettsch and Cushing. According to Jacobson (quoted by Cushing), "normal posterior lobe activity is essential to effective carbohydrate metabolism; an intravenous injection of posterior lobe extract produces glycogenolysis and its continued administration in excessive amounts leads to emaciation. A diminution of posterior lobe secretion, occurring in certain conditions of hypopituitarism, leads to an acquired high tolerance for sugar and the resulting accumulation of fat." Cushing has observed that "after hypophysectomy, a temporary spontaneous glycosuria would usually ensue, followed by a short period during which the assimilation limit was below normal. Subsequently the animal would gradually acquire such a tolerance for sugar, that it often proved difficult to produce alimentary glycosuria with such amount of glucose or cane sugar as could be retained when administered with a stomach tube." According to Shiff, Bolaffio, Tedesco, and others, the extract of *pars intermedia* increases the elimination of phosphorus, calcium, and nitrogen; the respiratory metabolism is also increased.

It is important to note that the thyroid has a similar action on sugar metabolism, as observed by Falta, Eppinger and Rudinger and later confirmed by King. McCurdy finds that the removal of the thyroid increases the limit of tolerance for dextrose. According to this author, the thyroid probably inhibits the direct combustion of sugar in the muscles. These findings are important to my subject in view of the admitted correlation of the thyroid and the pituitary.

The administration of adrenalin is occasionally followed by glycosuria. It was formerly thought, by F. Blum and by the school of Vienna, that adrenalin had a direct influence on sugar metabolism. This has been disproved by later experimenters, beginning with Ringer, who since 1910 has observed that adrenalin does not cause a transformation of fat in sugar. Other physiological as well as pathological findings tend to prove the fundamental differences between adrenal and pituitary glycosuria.

1. Adrenal glycosuria is now admittedly due to increased elimination and not to an increased glycogenolysis; it is not strictly speaking a process of metabolism.

2. While the experimental destruction or removal of the pituitary increases the tolerance for sugar

and its utilization with consequent accumulation of fat this does not happen after destruction nor during spontaneous diseases of the adrenals.

3. The adrenals do not show any influence on general trophism, which so distinctly appears to be connected with the physiology of the pituitary as seen in acromegaly and in dystrophia adiposogenitalis.

4. If the alterations in blood pressure and general metabolism which follow the removal of the pituitary body were due to the adrenalin or chromaffin content of the pituitary it would be impossible to understand their gravity, when we know that the needed chromaffin (adrenalin) would be supplied abundantly by other organs, notably by the adrenals. It is now admitted by all authorities that adrenal glycosuria has nothing to do with diabetes. Recently Mackenzie has shown that epinephrin does not produce its effects by inhibiting glycolysis. The disturbances of sugar metabolism following the administration of adrenalin have little or nothing to do, according to this author, with the loss of glycolytic power, which is probably a part of the altered metabolism in diabetes mellitus. We can therefore accept the statement that the posterior and infundibular part of the pituitary body and his extracts have a direct influence on general and sugar metabolism and that hypopituitarism causes increased capacity to metabolize sugar.

Under the guidance of these premises, I have tried to produce a serum by immunizing the horse with extract of posterior and infundibular pituitary. The possibility of obtaining an antiendocrine serum is still to be proved, notwithstanding that Blum and later Beebe had tried it, by using two different glands as antigen.

The work of Popielski, proving that while the first injection of secretin increases the pancreatic secretion, the successive injections are inactive, and the experiments of Houghton and Merrill confirming in this respect the experiments of Howell, i. e., that repeated injections of pituitrin are followed by less and less increase in blood pressure, until no effect is noted, lead one to the opinion that the so-called hormones determine in the living organism reactions analogous to the ones caused by any disagreeable substance. This work was done in order to see if to the logical anticipations the facts would actually correspond, and if, by using pituitrin as an antigen, antipituitary serum would result; the physiological terms of comparison to be the action of the new serum on blood pressure and on sugar metabolism. The serum obtained from the horse immunized with pituitrin proved to be cytolytic, as we know any other glandular substance, similarly used, would be.

ACTION ON BLOOD PRESSURE.

The new serum was used on about forty patients, who received several intramuscular injections of serum, in doses of from one to three cc., at intervals of from two to five days. The larger number of cases were patients suffering from diabetes, but some had arteriosclerosis and others were suffering from different illnesses and two were healthy individuals.

In all of the patients, except two, and after every injection, the blood pressure was affected with small as well as with larger doses. The fact proceeds very regularly as follow: With doses of two or three c. c., or more evident with five c. c., the pressure begins to fall from fifteen mm. to twenty mm. according to individual sensitiveness, after about thirty minutes from the time of the injection, gradually reaching maximum depression in one or two hours and remains down for several hours. In one patient the pressure was still low after twenty-four hours; I have not made more extensive studies on this action, but I think that it would be interesting to follow it up in arteriosclerosis, especially as in one case, which seemed to show a therapeutic reaction.

The reported case was a woman patient, aged thirty-nine, with a history of hemorrhage into the brain with marked disturbance of vision. There was a pronounced arteriosclerosis with a blood pressure of 175 to 185 mm. mercury. She was given potassium iodide internally and two and one half c. c. of serum. In a few hours her blood pressure dropped from 175 to 144 mm., and stayed down for over two days. It rose slowly and two and one half c. c. was again given with the same result. During the last six weeks she had twelve or thirteen doses of two and one half c. c. each about twice a week. The blood pressure has been practically normal, and her vision markedly improved.

Aside from the possible practical applications, I think that the above results indicate that this serum is physiologically antagonistic to the secretion of the pituitary gland, as far as the blood pressure is concerned.

ACTION ON DIABETES MELLITUS.

I have the reports of thirty cases of diabetes mellitus, some of them treated by me, some by others. Of these thirty patients, eight did not respond to the treatment with any noteworthy diminution of glycosuria, fourteen had a complete disappearance of the sugar from the urine while the intake of carbohydrates was notably increased, eight had a diminution of glycosuria, or, to be more correct, an increased tolerance for sugar. I consider the fourteen cases as completely favorable, because not only their sugar tolerance was greatly increased, but because the general conditions of these patients were benefited as well in special symptoms such as neuritis, retinitis, emaciation, headache, pruritus, polyuria, and polydipsia. In this respect I note that in these clinical experiments I have seen that polyuria commonly disappears with rapidity, even in the most unfavorable cases.

In order to give an idea of the method employed and of the course of the treatment I am reporting some of the most interesting cases.

CASE I.—A man, aged sixty-two, recognized as suffering from diabetes two years previous to this record. On that occasion he was affected with diabetic gangrene in the left foot and amputation of the limb above the knee had to be performed. At the time of this record the patient had been readmitted to the hospital while he was in an emaciated condition and suffering from chronic bronchitis, probably tuberculous. January 1, 1917, patient was

put on a soft diet, starch and sugar omitted. Urine: 488 c. c. in twenty-four hours. Specific gravity, 1.032; alkaline reaction, fourteen grams of urea to the litre. Sugar 2.48 per cent.; no albumen. January 26th, blood pressure at noon 145 mm. Five c. c. of serum was injected at one p. m.; blood pressure at six p. m. 135 mm.; at ten p. m. 130 mm. No change in pulse and respiration, no local or general reaction. January 28th: Diet increased with a quart of milk and 100 grams veal or chicken, and about 100 grams of bread a day. Ten c. c. serum administered. January 31st, urine sugar, 8.32 per cent. February 2d, fifteen c. c. serum. Diet unchanged. Urine specific gravity 1.020. Sugar .68 per cent.; no albumin. February 4th, diet unchanged. Urine amount 1,095 c. c.; specific gravity 1.008; no sugar. February 6th, diet unchanged; urine amount 915 c. c.; specific gravity 1.006; sugar .12 per cent.. February 7th, diet unchanged; seven c. c. serum; urine sugar free. Since this date, the urine has been examined several times and found free from sugar. Patient put on mixed diet beginning February 17th, and urine continued to be free from sugar. The patient was feeling and looking better when discharged, on February 22d. The urine was examined once in March and once in October and found to be free of sugar.

CASE II.—Woman aged thirty years. Mother died as the result of diabetes; patient is obese, does not remember having had any illness of importance. Sugar in urine first discovered about four years ago. Submitted unwillingly to occasional dietetic treatment, with no result. January 11, 1917, patient was kept on a starch free diet during the last two months. Urine, twenty-four hour quantity about four litres; specific gravity, 1.040; sugar, 4.95 per cent. January 11th, blood pressure at three p. m., 130 (S). Five cc. of serum given at 3:15; Blood pressure at 3:35, 120. January 12th, urine, specific gravity, 1.038; sugar six per cent. January 14th, urine, twenty-four hour quantity two and one quarter litres. Sugar, 2.38 per cent. January 15th, blood pressure at three p. m., 130; five c. c. of serum given at 3:05 p. m. Blood pressure at 3:15, 120. January 26th, urine, two litres daily. Sugar 3.80 per cent. January 28th, ten c. c. serum. January 30th, thirty c. c. serum. February 2d, urine, twenty-four hour quantity two quarts; sugar 4.60 per cent. March 19th, the patient was again treated, at this time the urine twenty-four hour quantity was one and a half litres. Sugar, 1.25 per cent. March 21st, the patient was given five c. c. serum. March 23d, urine quantity for twenty-four hours one litre; specific gravity, 1.021; no sugar. Sugar free for about one week more when patient discontinued treatment.

CASE III.—Miss C. B., aged fifty years, history of no importance. She was seen by me for the first time March 20, 1917. Her glycosuria was recognized about two months before, when the sugar in the urine was .68 and 1.25 per cent. at another examination. At the time of my first examination, the urine contained 1.10 per cent. sugar. After five days of a strict carbohydrate free diet the urine became free from sugar. Then I allowed the patient four ounces of white bread and two ounces of

small noodles a day. Added to this was the quantity of carbohydrates contained in the green vegetables and milk which the patient was then taking. The diet consisted of a little over one hundred grams of carbohydrates a day. The urine remained sugar free until April 15th. The carbohydrates were increased to 300 grams of bread and noodles and fifteen grams of cane sugar with milk on April 23d. April 25th, urine, twenty-four hour quantity two and one half litres; specific gravity, 1.030; sugar one per cent. Five cc. of serum was given; blood pressure 175 before injection; dropped to 150, fifteen minutes after the injection. April 27th, urine sugar, .20 per cent. April 30th, diet unchanged, with the exception of the cane sugar which was removed. The urine was sugar free. Five c. c. of serum was given. The urine of this patient had been examined several times, at intervals of from one to three months up to the present time, and usually found sugar free, up to October 14, 1918, when traces of sugar reappeared. One injection of five c. c. of serum, was followed by a rapid disappearance of glycosuria. The same thing occurred in January of this year. As the patient has been kept on mixed, uncontrolled diet during all this long period of time, I consider her as practically cured.

CASE IV.—G. D., a man aged forty-six years. Nothing of importance in his family history. The patient had articular rheumatism, from infancy until his twenty-sixth year, and was declared unfit for the army in Italy, on account of heart trouble. At twenty-nine years of age he had another attack of articular rheumatism, which lasted about three months. He had always been a drinker of wine and beer, until about a year ago. His illness began about six years ago, with a feeling of progressive weakness, diminution of weight, progressive sexual debility, obstinate constipation and almost constant headache. Three years ago, he began to have sciatic pain, and sugar was discovered in the urine by the attending physician. Since that time, the sciatic pain had never disappeared so that the patient had to stop working for periods of several months at a time, until about a year and a half ago when he had to give up his position entirely. He followed dietetic treatment consisting in a suppression of farinaceous food, since July of last year. During all this time his general condition was growing progressively worse.

Present history.—March 9, 1918, patient emaciated, arteriosclerotic, very weak, has aortic murmur; his urine contains 5.10 per cent sugar. He complains of pain along the region of the right sciatic nerve. He was admitted to the private ward of the Columbus Hospital on March 13th and discharged on the eighteenth, when he was transferred to ambulatory treatment. March 13th, mixed diet; urine acid; specific gravity, 1.036; sugar, 4.75 per cent. March 14th, diet: three eggs, one grape fruit, one cup of broth; protein twenty-one grams; fat, eighteen grams; carbohydrate, thirty grams, calories, 380 grams. March 15th, diet unchanged. Urine: specific gravity, 1.024; sugar, 1.25 per cent; urea, twenty-three grams to the litre; no albumin; acetone and diacetic present. March 18th, diet un-

changed. Urine, acid; specific gravity, 1.014; sugar traces; urea, thirteen grams to the litre; blood sugar, .46 per cent. This patient's tolerance for sugar was less than thirty grams. March 19th, diet: one orange, one egg, 100 grams meat, 100 grams vegetables (five per cent.). March 22d, diet unchanged; urine, specific gravity, 1.024; sugar, 1.25 per cent.; five c. c. serum administered. March 23d, diet unchanged; urine, no sugar. March 24th, diet, one orange, one egg, 100 grams meat, 100 grams green vegetables, 100 grams white bread. March 26th, diet unchanged; five c. c. serum given. April 4th, diet unchanged; urine: sugar, .80 per cent.; acetone and diacetic present; urea, nineteen grams to the litre. April 6th, diet unchanged; ten c. c. serum; April 10th, diet unchanged; ten c. c. serum. April 13th, diet unchanged; five cc. serum; urine, no sugar. April 14th, diet, one egg, 150 grams meat, 100 grams vegetables, 120 grams bread, or protein fifty-three grams, fat forty-eight grams, carbohydrate seventy-five grams, calories 970. April 15th, diet unchanged; urine, no sugar. April 17th, diet increased, one egg; protein sixty grams, fat fifty-four grams, carbohydrate seventy-five grams, calories 1,053. Patient feels well; added two pounds in weight during last week. April 19th, diet unchanged; urine, sugar one per cent.; acetone present; four c. c. serum given. April 24th, diet unchanged; general conditions good; urine sugar, .80 per cent. April 25th, diet unchanged; four c. c. serum given. April 26th, diet increased; bread 200 grams, one quart of milk added, meat and vegetables. April 28th, diet unchanged; sugar in urine two per cent. April 29th, five c. c. serum. May 2d, five c. c. serum; urine sugar, two per cent.; acetone present; no diacetic. May 6th, eight c. c. serum. May 9th, five c. c. serum; injection is followed by dyspnea which disappears in two minutes; urine sugar, 1.25 per cent. May 10th, diet unchanged; urine sugar, .80 per cent. May 13th, diet unchanged; urine no sugar. May 15th, same diet; urine sugar, .50 per cent. For some reason the patient suspends treatment until May 28th, no sugar in urine; blood sugar, .26 per cent. June 2d, urine no sugar. June 10th, diet as the last reported; urine no sugar. June 15th, diet increased, is now: meat 300 grams, vegetables 200 grams, two eggs, bread ninety grams. June 22d, diet unchanged; urine, specific gravity, 1.028; urea, twenty-three grams to the litre; sugar, .65 per cent; traces of albumin; no casts; one c. c. serum. June 30th, sugar present; two c. c. serum given. July 5th, five c. c. serum given. July 17th, urine sugar, .85 per cent.; three c. c. serum administered. July 23rd, urine no sugar. July 29th, patient eats about 200 grams bread a day; urine contains traces of sugar.

Since this time the patient was put on practically normal diet. Glycosuria disappeared, sugar reappeared only occasionally in traces, when an occasional administration of serum was followed by the disappearance of sugar. The patient, who had been unable to work during the last two years, reassumed regularly his occupations on September 2, 1918, and has been working ever since. The sciatic pain has completely disappeared and the general conditions are very good, as I could see a

few days before these notes were sent for publication.

CASE V.—Woman aged fifty. Nothing important in her family or personal history. The present illness began apparently four years ago, with polyuria, polydipsia, pruritus, headache, sugar in urine. During the last two years there was progressive weakening of vision, for which the patient consulted an eye specialist. A diagnosis of diabetic retinitis was made and the patient referred to an internist for treatment. The patient followed the dietetic treatment more or less strictly, but the glycosuria never disappeared; the sugar content of urine varied from one to three per cent. Moreover all symptoms persisted too, and her vision became so weak, that she had to give up her occupation entirely. I saw the patient the first time about the middle of last December, when her condition was bad, her sight so impaired that she was not able to write her signature, and her urine contained about two per cent of sugar after a restricted diet. During December and January, she had six injections of serum, in doses of from three to five cc. at intervals of from three to eight days. On January 22d sugar in urine disappeared; the patient was then brought rapidly to a mixed diet, and sugar did not reappear in the urine until April 10th, when traces were present. A single dose of three c. c. serum was then given and the urine has been sugar free, up to the present time, while full diet has been allowed to the patient. The general condition of the patient is very good, the daily amount of urine is normal, pruritus has disappeared, and what is more notable, the vision has been restored to a notable degree. In consideration of the influence which the thyroid secretion has on sugar metabolism, I have been working on a combined antithyroid antipituitary serum. I shall report on this at a later date.

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STAMMERING IS NOT AMNESIA.

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On one point, and probably only one, is there unanimous agreement in regard to the question of stammering, and that is the immeasurable confusion which exists concerning it. With millions of stammerers in the world, suffering acutely from the galling affliction, and with thirty thousand new cases annually in our own country, the investigators continue to increase the fog which bars relief from them.

Since science can bring order out of intellectual chaos, and as this has not been done with respect to stammering—rather the reverse—it is incontestable that research in this field has been conducted along unscientific lines. There has been some scientific work, it is true, in America's small share, of which Fletcher's unappreciated *Experimental Study* (7) stands high; but facts are not separated from fiction and the truth remains in the darkness while the error attains a popularity which baffles understanding—witness the great wave of Freud-

ianism which has swept into the field of stammering, in which it seems to have no logical place.

Another comparatively new cloud of confusion is spreading from the transient-auditory amnesia theory. Hudson-Makuen accepted it so completely as to wish that he had thought of the expression (15), and soon after renounced it (13). Fletcher classed it with Swift's visual-centre asthenia and pronounced both so palpably wrong that a lengthy investigation into their merits seemed unnecessary (9). A few others have condemned it, but very many others have accepted it, and among the latter Robbins, who confirms it as the result of a lengthy experimental study (17).

Let us give a little attention to the auditory amnesia theory. Its author says, "The stammerer's difficulty is transient auditory amnesia: he is unable to recall the sound image of the vowel that he wishes to enunciate" (2). Incidentally, give credit to Bluemel, Robbins, and a number of others for using the word stammer where it belongs. The speech impediment accompanied by fright is stammering; stuttering is repetition, and it may be a simple habit or a manifestation of stammering (19). We may show the fallaciousness of the theory itself, or we may show the superiority of another theory: in scientific procedure the first showing would eliminate the theory altogether; and the latter would discard the inferior theory, for it is a fundamental rule that the theory which best accounts for the related facts must be accepted as a working theory. This theory in its turn must be discarded if a better one appears, and so we progress until we have a theory which accounts for all the related facts and which we finally accept as the truth, in the absence of anything better. We have so accepted the heliocentric theory of planetary motion: it fully accounts for the related facts, and no better theory has appeared.

THE AUDITORY AMNESIA THEORY.

The auditory amnesia theory is overwhelmingly inadequate. Bluemel, the very author of the theory (if it is new), says, "The two causes of stammering which do not produce aphasia are association and imitation. Stammering arising from these causes is not of the amnesic form; . . ." (5). Let the reader think of this a little: would we have accepted Keppler's laws or Newton's laws or the biogenetic law or the law of evolution if they had applied to only half of the field to which they pertained? Not much thought is necessary to satisfy us that we generally reject a theory which is so fallacious. Of course, we have no accurate statistics to show that imitation and association cause half the stammering; but those two causes certainly account for a great proportion of it and Fletcher thinks for more than half (11).

The auditory amnesia theory is fallacious. It is common knowledge that when the stammerer fears a word he uses a synonym if he can find one. Bearing in mind that "he is unable to recall the sound image of the vowel which he wishes to enunciate" (2), how can he select synonyms? If he fears that he cannot say the word all and can not recall the sound image of the vowel he might substitute ell or ill and thereby talk nonsense. In his effort to

say ten he would resort to tin or ton, and so on. His speech would be jargon, and such is not the case. It is true that he frequently makes slips of the tongue, such as the omission or mispronunciation of a word; but this is fully accounted for by the agitation in which he finds himself, and those slips no more constitute jargon than do the slips of a fluent talker under the influence of fright.

The auditory amnesia theory is totally inadequate. How do we distinguish auditory amnesia from other forms of aphasia? Let Bluemel himself tell us. He says, "Ball records a case that shows clearly the effect of auditory amnesia. . . . he said, 'the words I can't pronounce are the words I can't hear'" (4). Consequently, if the stammerer has auditory amnesia he has defective hearing. Is that true? Positively not. When I was stammering my worst I had my hearing tested by a specialist, and he pronounced it normal. At the numerous stammering schools, in which I allowed ignoramus to meddle with my speech and make it worse under the delusion that they were curing me, I met many stammerers, knew them intimately, lived with them, kept in touch with them for years; and I can not recall one of them who had defective hearing. But let us settle the matter beyond peradventure. Dr. G. Hudson-Makuen says in his report of 1,000 cases of stammering, "In only three per cent. of the cases was there subnormal hearing, and this seemed to be purely accidental and in no respect related to the affection" (16). By rights this should finish the auditory amnesia theory of stammering: there is no auditory trouble to speak of, and even that little seems to be "in no respect related to the affection." But a popular misapprehension has more lives than the proverbial cat, and it must be killed interminably before it will die. We shall proceed to kill it further.

The auditory amnesia theory is disproved by Robbins's work. Robbins shows the admitted fact that stammering is generally accompanied by fright. Then he assumes that it is accompanied by cerebral congestion ("I hope . . . I can prove this supposition that stammering, like shock, is accompanied by cerebral congestion") (18). It would follow that the stammering would be proportional to the fright. Is this so? No, it is not so. Frighten the stammerer sufficiently and he becomes eloquent. The stammerer can be frightened out of his stammering more effectively than a baby can be frightened out of its hiccough. Denhardt cites the case of a stammerer frightened into fluency by a stroke of lightning (6), and similar occurrences are so numerous that citations are superfluous.

The fallaciousness of the auditory amnesia theory is nowhere near exhausted, but what more proof does the reader want? Must we multiply words to show what is evident? Let us proceed now to the other method of disposing an unsatisfactory theory. We will show that another theory is all sufficient, in which case not only the amnesia theory, but all theories which are in any way insufficient, must be discarded.

THE SPEECH INTERFERENCE THEORY.

Normal speech is automatic. Through an accident or incident an individual makes a conscious

effort which blocks his normal speech. The resulting conflict attracts ridicule. In order to avoid repetition of the ridicule, further effort is made and further impediment results.

The speech interference theory is self-evident. The remark was made at the beginning of this article that the proceedings in the field of stammering have been unscientific. That is incontestable from the results obtained. But in what respect are they unscientific? We might cite the demonstration of the auditory amnesia theory (1), in which affirmative evidence was magnified and negative evidence was discredited or denied—witness the denial of stammering on consonants; or we might cite the Robbins's discussion (17), in which the deduction was obtained from the experimental results by means of two assumptions, namely, cerebral congestion and a mental defect; but the real trouble in the procedure is more fundamental: it is ignorance of what science is. Anyone who would question this statement had better think twice, for the proof of the charge is before us. We have just stated the speech interference theory. What is that statement? Is it a labored effort to explain the mysterious? No; it is not that popular misconception of science. It is simply a comprehensible description: and that is science. Take heed, all you scientists who have been laboring on stammering. The cause of the disorder has been in plain sight all the time for countless centuries—as plain as the nose on one's face—indeed, more so, for we all stare at stammering but rarely observe noses. What was needed to solve the mystery? Merely a comprehensible description of the occurrences; and you have just read the description. But what about shattered nerves, abnormal brain, and all that? Again, be scientific. Desist from describing the nonexistent. The stammerer has none of these, and when you describe what is not, you only add to the confusion and discredit yourself.

Now let us put the speech interference theory to the test. We may try first the tests which explode the auditory amnesia theory, and then try some more severe ones. I wish I was in a position to call for tests, so that everyone might be satisfied; for if I should fill pages with tests someone might think that an essential test had been left out. However, we shall try to give satisfaction with what space is available.

The speech interference theory accounts for the origin of stammering by association and imitation. How does one imitate stammering? By interfering with his normal speech. Not only does the theory account for the origin by imitation, but that origin accounts for the theory. When the imitation passes through the fun stage to the serious stage and the imitator fears he may "catch" the disorder, he makes a conscious speech effort in order to avoid catching it, and by that very effort he makes it catch. The ridicule is visited on him, and thenceforth he continues the efforts in order to avoid the ridicule. The origin by association is the same except that the first speech interference is done unintentionally instead of intentionally.

The speech interference theory accounts for fluency under extreme fright. Let us endeavor to

convey a clear idea of the stammerer's fright. It is fear of humiliation. Society is so unkind to him when he stammers that he dreads repetition of his stammering because that promises repetition of the unkindness. The nonstammerer innocently protests, "Why, I never humiliate a stammerer," but the protest is not sustained by the evidence. The quick glance, the shadow of a smile, the look of pity, these and other inadvertent actions are detected by the stammerer, for he is expecting them; and they hurt him so that he will endure extreme deprivation and even pain of other kinds in order to escape that humiliation. It was not long ago that a stammerer left his home State, went to a neighboring State and killed himself. A message found near his body stated that he preferred death to the taunting of his friends (friends, mind you) and that he had gone away to kill himself because he did not want them to know that they had driven him to death. The same fear of unkindness makes the stammerer struggle with his speech. Incidentally, there is no need of investigating that fear; because the stammerer admits it freely. He sometimes expresses it as the fear of stammering or the fear of speech difficulty, but neither of these are painful. If he analyzes his fear he finds that it is really fear of the attention attracted by his difficulty.

In addition to his fear of punishment for his impediment he of course experiences the other fears that are common to mortals, the fear of sickness, of poverty, of death, and so on. The fear of death, for instance, banishes the fear of humiliation for stammering; so the stammerer is fluent when he fears death, or when he fears anything which banishes his speech fear. This is almost a platitude, for we know perfectly well that a stammerer is fluent whenever his attention is distracted from his speech. The distraction need not be an overwhelming fear. The so-called cures—the breathing exercises, articulatory exercises, and so on—are distractions, and therefore cause an improvement which is represented to be a cure. The trouble with them is that they inculcate conscious speech and thereby ultimately intensify the stammering. Notice again that the speech interference theory not only accounts for the fluency of the stammerer under severe fright of a general nature, as well as under distraction, but also these phenomena verify the speech interference theory.

The speech interference theory accounts for the alleged immunity of the women. Little girls contract stammering just as extensively as little boys do; but the girls stay at home more, where they are not allowed to stammer extensively and where they have ample opportunity for spontaneous speech; so recovery ensues in approximately eight ninths of the cases. When the effort in the field is directed to the benefit of the race instead of the benefit of individuals, as now, all stammerers will recover before they have completed their elementary schooling (21). The recovery of the girls has been demonstrated so many times that it is superfluous to make a demonstration here (20).

The speech interference theory discloses the common causal factor. Probably the crucial test of

any theory of stammering is the common causal factor. Less than three years ago there appeared an article by Hudson-Makuen containing this statement, "The problem of finding a causal factor which is common to all stammerers, therefore, remains unsolved" (14). Since the title of the article is, *Some Recent Theories of the Causation and Treatment of Stammering*, we may conclude that this finding by Makuen was reliable. A pause for reflection here will be profitable. Think of the hundreds—or even thousands—of theories that have been advanced with positiveness; that have been pronounced sufficient (note Bluemel "The theory that stammering is occasioned by the speaker's inability to recall the auditory image of the vowel color is borne out by practically every manifestation of the defect and every phenomenon connected with it") (3); that have been praised and endorsed and reiterated—and yet every one of them has been so inadequate as to lack a common causal factor for the disorder! But what is the use of talking about one inadequacy of all these theories? Their general characteristic is inadequacy. None has accounted for the scarcity of women stammerers, none has accounted for the origin by imitation, none has accounted for immunity in advanced life. Nevertheless all of them have appeared under the cloak of science! Save the name. If there had been enough real science to warrant the name the disorder would have been extirpated before a dozen volumes were written.

Let us return to the common causal factor, the unsolved problem. A factor must be found which is common to origin by sickness, injury, fright, or imitation. These four classifications are sufficiently comprehensive for illustration; but the factor is common to all causes. What is that factor? It is temporary interruption of normal speech. Sickness interrupts normal speech. The sufferer makes a conscious speech effort to correct the disturbance; misdirects the effort, because he knows not how to direct it; blocks the normal speech; experiences humiliation; repeats the effort, this time in order to avoid more humiliation; and becomes a stammerer. Generally the sickness is sufficient to bring about unconsciousness, either through debility or a convulsion. During the recovery from the unconsciousness the normal speech may still be somewhat incapacitated, and the conscious speech effort is then made. McBeath mentions the consequence of this interruption as " . . . the exaggerated effort to speak, such as occurs during and after debilitating diseases" (12). Scripture accurately describes the origin of stammering in this way (22). Fright brings about the same interruption to normal speech, and similarly the misdirected efforts follow. When imitation is the inducing cause the temporary interruption is intentional, as we have already shown. Fletcher recognized the temporary interruption of normal speech as a causal factor in the case of a man who had his speech interrupted by a dental harness which he was wearing; and Fletcher shows comprehension of the generic nature of that interruption by the remark, "The genesis of stuttering through imitation may, in the writer's opinion, be accounted for on the same prin-

ciple" (8). If he had followed out this clear vision and made the application of the principle to all causes of stammering he would have solved an important problem in the field. This is only one of many cases in which he had discovered the light, but failed to follow it far enough to bring much benefit to humanity or credit to himself.

A long article would be necessary to show the satisfactoriness of the speech interference theory in its application to all the phenomena of stammering; but that showing is unnecessary. The mere showing that the theory is more satisfactory than other theories is sufficient—for scientists—to relegate the other theories to the background.

CONCLUSIONS.

The transient auditory amnesia theory is utterly untenable *per se*. No one who is at all scientific can entertain this in comparison with the satisfactory speech interference theory.

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610 NORTH EL MOLINO AVENUE.

CLINICAL NOTES FROM FRANCE.

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SLEEPING SICKNESS.

(Concluded from page 551.)

In a very large proportion of cases of sleeping sickness the physician can estimate the date of the onset of the disease within a few months. In cases where the mental disturbances are intense the friends must be questioned, but ordinarily the psychic disturbances arise during the evolution of a trypanosomiasis already diagnosed, the onset of which has already been ascertained. In cases where the history is doubtful, lumbar puncture will give important data. In the early nervous forms there is a slight lymphocytosis; in the late nervous ac-

cidents there is a marked lymphocytosis with numerous mononuclears and degenerated plasmatzellen. The detection of the parasite is of less value. It is more commonly found in the late forms of the disease.

MEDICATION.

We at present possess several drugs which have an unquestionable action on the trypanosoma, the first of which is atoxyl. Treatment with this drug to obtain results, must be judicious. Atoxyl should be given exclusively in subcutaneous, or better still, intramuscular injections, dissolved in sterile water or physiological salt solution. Contrary to the general opinion that sterilization of the solution should be obtained by filtering it in a Chamberland filter and not by the action of heat, Martin and Darré, who have had a very long and extensive experience with this drug, believe that the solution should be sterilized in an autoclave at 120° C. and what is yet more important is that atoxyl heated at this temperature becomes less toxic and better tolerated by the organism.

The question of dose is all important. The ideal would be to obtain a cure at one stroke, but this *therapia sterilisans magna* is a very dangerous procedure. On the other hand, if the doses are too small to bring about a permanent cure they will then create atoxyl resistant trypanosomes which will remain thereafter insensible to the action of the remedy. The most important result obtained from experimental researches is that from the start as large doses as possible should be given in order to avoid this condition.

The drug should therefore be used in rather large doses and continued for months, even years. When the case is a mild one, an injection of fifty centigrams of atoxyl given every fifth day will suffice, but if the manifestations are severe intensive treatment must be resorted to. This consists of progressively increasing the dose. The first injection is fifty centigrams; two days later one gram; two days later one gram fifty centigrams, in other words three grams in five days. An interval of cessation of one week to ten days is then allowed, after which fifty centigrams are injected every five days. This treatment must be continued without interruption for five to six months and in some cases it has been carried out for several years without any untoward effects. These large doses may be safely given because atoxyl is very rapidly eliminated from the body and Tendron has shown that fifty per cent. of the arsenic is already eliminated twenty-four hours after the injection.

Certain precautions are absolutely essential. The patient must be kept in bed and a lactovegetarian diet ordered, while the slightest pathological manifestations must be carefully looked out for. It is often useful to reinforce the action of atoxyl by the use of other drugs. In some patients, atoxyl, even when employed in large doses, has no action and does not cause the parasite to disappear from the blood, even temporarily. In these circumstances other trypanocides must be resorted to, and they are numerous. Occasionally other arsenical compounds succeed, such as acetylated atoxyl, and particularly arsenophenylglycine.

A number of experiments have been made to ascertain the effects of the salts of antimony on animals. The chemical relationship between arsenic and antimony should naturally suggest this experimental work, and the results obtained have been eminently satisfactory. Consequently, the treatment has been applied to human trypanosomiasis. Emetic of potassium or of anilin has been employed in weak solution intravenously. A daily injection of 100 c. c. of a 1:1,000 solution—in other words ten centigrams of emetine—is given for fifteen to twenty days successively. Three weeks later another series of injections may be given, followed if necessary by a third series after a repose of one month.

Among other drugs adjuvant to atoxyl, the only one worthy of mention is oripiment introduced into human therapeutics by Laveran. It must be used in large doses, at least one gram in twenty-four hours in divided doses. The drug must be chemically pure, free from any trace of arsenious acid and it is well to combine it with a little extract of opium. The atoxyl oripiment combination offers the great advantage of being easily employed under any circumstances, particularly in the colonies as oripiment can be given by mouth. But this combination is less powerful than the association of atoxyl and emetine in intravenous injections.

TECHNIC OF ADMINISTRATION.

The technic of associated medications is at present the method of choice in the treatment of human trypanosomiasis and experimental data also prove combined medication is logical. The medicaments combine their action on the parasite because these different substances do not become fixed on the same organs of the trypanosome. On the other hand, the combination does not always increase its toxic action on the organism because the toxicity of various substances does not always act upon the same cells and clinical data are quite in accord with those obtained experimentally. The immediate results of these treatments are usually excellent when the case is treated at an early period of the disease. The psychic disturbances and headache very quickly disappear and only the pain due to radiculitis persists for some time. The trypanosomes disappear from the blood and lymph nodes.

Atoxyl will often cause the early major nervous manifestations to subside completely, be they symptoms of meningomyelitis or even somnolence. In the late psychoses its action is less evident by far, although in many cases a considerable amelioration of the symptoms may be noted, to such an extent that they may temporarily disappear. Treatment lessens the nervous excitation, hypochondriacal depression and mental confusion. It has less influence upon the phenomena of dementia as well as upon delirious states, hallucinations and impulses, because after very slight and temporary improvement the treatment becomes powerless. In the majority of cases, even when the mental symptoms disappear, the trypanosomes persist in the nervous centres and are a perpetual menace and explain the occurrence of relapses.

Late results of treatment differ according to the case. From this viewpoint it is essential to dis-

tinguish those patients who have been treated regularly from the onset of the infection from those who have followed an irregular treatment or only from the advanced stage of the disease. In the former the trypanosomiasis may change in two ways. Sometimes the patient, after having presented slight or serious symptoms for a certain length of time, returns to an apparently perfect state of health, and if followed for several years no morbid manifestation will arise and the case can be considered cured.

LATE MANIFESTATIONS.

Often, however, regardless of regular treatment—which causes the first symptoms to disappear—the disease continues its evolution after a silence of several months or a year. Recovery may still be hoped for, but usually from three to six months after the first relapse late nervous manifestations arise in all their gravity. They retrogress at first by treatment but death finally ensues in from two to four years from the onset of the disease. If patients are treated too late in the process or very irregularly recovery is impossible; the affection continues its evolution, either progressively, or, what is more common, intermittently with relapses and short remissions. In the late nervous forms in which both atoxyl and emetine have failed arsenobenzol has been used with encouraging results. Besides the specific treatment directed against the parasite, there are other therapeutic indications which must not be neglected. Concomitant diseases must be dealt with. Paludism must be systematically treated with quinine even when there is apyrexia. Mercurial treatment must be applied in syphilitics even when the process is latent. The general health of these patients must be looked after and climate and hygiene must be considered as a matter of course.

Pneumonia as a Complication of Epidemic Influenza.—A. V. Bock and J. L. Stoddard (*American Journal of the Medical Sciences*, September, 1919) report thirty-nine cases. Lobar pneumonia occurred in twenty-five and bronchopneumonia in fourteen. The cases of lobar pneumonia were characterized by lung signs typical of consolidation, high sustained temperature curves, blood tinged mucoid sputum, and a shorter course. The cases of bronchopneumonia showed indefinite and variable lung signs, fluctuating temperature curves and purulent sputum, and tended to run a more prolonged course. The total mortality of seventy per cent. was the same in both types, but was thirty per cent. higher for the American patients than for the British. Positive blood cultures were obtained in thirteen cases of lobar pneumonia; no organism except the pneumococcus was recovered, Type II occurring in 84.6 per cent. The sputum of the patients with bronchopneumonia always contained the bacillus of influenza in large numbers, and a few contained the pneumococcus as well. The pathological picture at autopsy, in general, was that of typical lobar pneumonia in some cases, of bronchopneumonia in others, and combinations of both types of pneumonia in a few cases.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CXCVIII.—*What is the proper equipment for a rural physician?* (Closed.)

CXCIX.—*How would you make a diagnosis of pregnancy?* (Answers due not later than October 15th.)

CXCX.—*How do you treat insomnia?* (Answers due not later than November 15th.)

CXCXI.—*How do you treat surgical shock?* (Answers due not later than December 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication.

The prize of \$25 for the best answer to Question CXCVII has been awarded to Dr. J. Balensweig, of New York, whose paper appears below.

PRIZE QUESTION CXCVII.

TREATMENT OF FRACTURES OF THE FEMUR.

By J. BALENSWEIG, B. S., M. D.,
New York.

The classification of fracture of the femur to be followed is as follows: 1, Fractures of the upper end: a, separation of the epiphysis, fracture of the head, b, fracture of the neck, and, c, fracture of the great trochanter; 2, fracture of the shaft: a, upper third, b, middle third, and, c, lower third; 3, fracture at the lower end: a, intercondyloid, b, separation of epiphysis, and, c, fracture of the condyles.

The rules applying to fractures in general also apply to fractures of the femur:

1, Unnecessary manipulation under improper surroundings should be avoided. Treatment should commence as soon as the surgeon sees the patient, by splinting in the long axis of the limb, and transporting to a suitable place for further treatment. Morphine should be used if the shock or pain is severe; 2, reduction of the fracture as soon as possible after injury; not beyond two or three hours; 3, anesthesia to be given for the reduction unless contraindicated; 4, x ray plates, two views, before and after reduction; 5, every fracture to be treated by traction should have an x ray plate taken with the traction apparatus in position and in full operation; 6, the joint above and below the fracture should be immobilized, and included in the apparatus; 7, further treatment should not be delayed if the x ray or manipulation shows unsatisfactory results; 8, operation, if deemed necessary, should be done within a fortnight after injury.

The types of treatment applicable to fractures of the femur are: 1, manipulation with fixation by some external device after reduction, i.e., plaster of paris splints or Whitman spica; 2, methods of extension—a, by adhesive plaster with straight limb (Bardenhauer and Cologne school), b, by adhesive plaster with flexed limb (Zuppingier Hodgen, and the combined traction of Stimson); c, by transfixing rods, nails, etc. (Codville, Steinman, Lambert, Quenu-Mathieu, Finocchetti stirrup, Pearson

caliper, Hey-Groves horseshoe screw clamp); 3, open operation (Lane plate, Parham-Martin band, bone peg, etc.).

Fracture of the upper end: a, separation of the epiphysis occurs between the ages of twelve and sixteen, the object of the treatment is to reduce under anesthesia and place the limb in the typical Whitman position; b, fracture of the neck occurs at all ages ranging from four to ninety. In the young the characteristic fracture occurs at the base of the neck at its junction with the shaft and the trochanter. In the older patients the fracture most often involves the neck proper. When in doubt about the diagnosis in the aged, treat as a fracture (L. A. Stimson). The method of choice is Whitman's method. 1, Anesthetize the patient; 2, place him on a spica box or device such as a Hawley or an Albee table; 3, the sound limb is to be abducted to the normal limit and held; 4, the injured limb is then slowly abducted and rotated inward, the surgeon supporting the joint with his hands and pressing the trochanter gently downwards; 5, when the normal limit of abduction is reached it may be inferred that the proper relation between the neck and the shaft of the femur have been restored; 6, limb in this attitude of complete extension, abduction, and slight inward rotation is then securely fixed in a long plaster spica; i.e., from toes to the nipple line.

It may be necessary to break up an impaction by flexion of the limb and internal rotation prior to step four of the procedure. This method applies to all ages; in the aged the head of the bed should be raised six inches so as to lessen the danger of hypostatic congestion. The lungs should be examined often and treated symptomatically.

Robert Jones states: In impacted cases it is advantageous to disimpact in every case where there is considerable shortening and external rotation of the limb, leaving only those cases where the shortening is trivial and where there is no rotation. The results are far better than when the old practice was followed of leaving all the impacted cases to unite as they were.

Fractures of the neck proper: F. J. Cotton says that these fractures never unite if unimpacted; hence the practice of mechanically causing impac-

tion. This is to be followed by the application of a long plaster spica. Patients are to be kept in the original plaster for from three to four months. Reapply splints or a short spica for two or three months more. The patient is not to touch the floor with affected limb for at least five or six months after the injury. Thereafter a modified hip splint is desirable for six months more. This is to be combined with intelligent massage and active and passive exercise.

Ununited fractures having received the routine treatment without result, open operation is advisable. Method devised by Davison of Chicago or Henderson of Rochester. The former in a recent issue of *Surgery, Gynecology, and Obstetrics* advises the use of transplant in early unimpacted fractures. The operation consists in driving bone peg through a previously prepared hole extending from just below the great trochanter upwards and medially through the head. Place in long spica with the limb in complete extension, abduction and slight internal rotation.

In hopeless cases the head should be removed from the acetabulum; the trochanter removed and displaced downwards on the shaft, and the remaining portion of the neck implanted in the acetabulum. Where the head and the neck have been absorbed, Davison transplants the upper end of the fibula into the upper end of the shaft of the femur.

For fractures of the great trochanter the Whitman abduction treatment should be used. If unsuccessful, operation should be resorted to.

Fracture of the upper third of the shaft: The commonest type of deformity is that of flexion, abduction, and external rotation of the upper fragment. The upper fragment is too small to be controlled, it being necessary therefore that the lower fragment be brought in line with the upper. In infants it is often advisable to bind the extended limb to the abdomen. In children up to six years of age vertical suspension is by far the most convenient and satisfactory. Both legs put up with adhesive straps such as the Buck's extension method, and suspended directly overhead to a fixed support, so that the pelvis rests lightly upon the bed. This is well borne and it is very easy to keep the child clean and dry. For older patients the Whitman abduction method should be used consisting of a Hodgen splint plus the combined traction of Stimson with some abduction of the limb. After considerable consolidation has taken place and it is deemed advisable, a Thomas caliper splint or a modified hip splint may be used.

In fracture of the middle third the displacement varies depending on whether the fracture is closer to the upper or lower thirds. This type of fracture is difficult to treat because of the difficulty in keeping the ends in apposition. The method of choice in treatment is that of Hodgen splint with the combined traction of Stimson. The adhesive plaster should be put on from the knee to the hip and should extend above the fragments, so that when traction is made, all the muscles and fascia from the knee to the hip will be under tension, and then the fragments will be pulled into place. This may be replaced later, after some union has taken place,

by a long spica with limb in same position as described above and suspended by means of incorporated hooks and overhead suspension. The ward treatment becomes much simplified. Operation is the last resort. A Lane plate or an intramedullary bonepeg or a sliding graft should be used. Crile proposes a complicated mechanical device for the holding of the fragments in apposition. This latter method is too complicated for general hospital or private practice.

Fractures of the lower third show a deformity which is very constant. The lower fragment is displaced markedly backwards and slightly inwards, due to the action of the gastrocnemius, popliteus, and abductor magnus muscles. Robert Jones disregards the traditional treatment with the knee flexed, and maintains the limb in extension, using a Thomas knee splint. Other types of treatment advocated are many and varied, including: 1, Hodgen splint with the combined traction of Stimson, and some abduction; 2, double inclined splint, with traction in the line of the fracture; 3, Robert Jones's method using the Thomas knee splint; 4, Finochetti stirrup upon the posterolateral aspect of the calcaneus; 5, Steinman pins passed either through the condyles of the femur or through the upper end of the tibia; 6, Pearson calipers; and the, 7, Hey-Groves horseshoe screw clamp; a Balkan frame can be used with much advantage, as it simplifies ward treatment.

Fractures of the lower end are divided into the following: a, the intercondyloid type of fracture may be overriding and angular displacement not being so marked as above, continuous traction may therefore be applied for a short time, followed by the application of a plaster from toes to groin or including the pelvis if deemed desirable, with the knee flexed about fifteen to thirty degrees; the patient is allowed to leave the bed quite early. Must be on the watch for complications; i.e., injury to the popliteal vessels; b, for fracture of the condyles the Thomas knee splint with traction below knee and firm bandage about the knee starting above the condyles is used. This may readily be done without an anesthetic. As a last resort, operation is advised; c, in the majority of cases in separation of the epiphysis an operation must be performed. The fragments being held in apposition by the use of a Lane plate. Put the limb in plaster with the knee flexed from thirty to forty-five degrees.

8 WEST SIXTEENTH STREET.

(To be continued.)

The Blood Picture in Amebic Dysentery.—Walther Fischer (*China Medical Journal*, March, 1919) found in cases of noncomplicated amebic dysentery a moderate neutrophile leucocytosis. The eosinophile cells of the blood were not increased, but rather diminished. The number of the large mononuclear and transitional cells was not altered. Therefore there is no typical change of the blood picture in cases of amebic dysentery. Consequently, the blood picture in these cases does not give much valuable information for diagnostic or therapeutic purposes.

Editorial Notes and Comments

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PROHIBITION AND SUGAR CONSUMPTION.

One of the marked effects of prohibition, where it has been reasonably enforced, has been a great increase in the consumption of candies and sweets. This is so well recognized that candy manufacturers have looked forward with confidence to the introduction of nation wide prohibition as representing a magnificent boom for their business. Immensely larger quantities of candy have been bought in the Southern States, where prohibition has been in existence for some years, than before that regulation was introduced. This is due partly to the fact that families have more money to spend on extra necessities than before, but principally to a craving for something to replace alcohol, and sugar has been found to do this to a certain extent. The expectation of the candy manufacturers and the bottlers of various kinds of temperance beverages is likely to be fulfilled. Americans generally are going to consume a great deal more sugar than before and this will make the developments that are impending of special interest to physicians. One well known American authority on diabetes did not hesitate to say some years ago that there are probably half a million people alive in this country who either now have diabetes or will have it before they die. The disease is becoming of much more frequent occurrence in this country than formerly. It is also attacking the younger members of the population and, as is well known, it is the diabetes of patients under forty that may be serious,

while that of patients under thirty practically always is.

This increase in diabetes has gone hand in hand with the increase in sugar consumption. Sugar is a highly artificial concentrated product, in its way quite as artificial as alcohol, though in dilute state both of these substances commonly exist in nature. Sugar as we know it is a comparatively modern invention the use of which came into general vogue only during the nineteenth century. A little more than one hundred and fifty years ago any one who wanted sugar went for it not to the grocery store but to the apothecary shop and bought it by the ounce quite as we buy drugs now. It was used as a drug because of its diuretic action, but also as a flavoring material, especially for the medicines of the young and the food of the old. Households did not have sugar on the table, as we have, or when it was served, it was in very small saucers containing a few irregular lumps of the old fashioned loaf sugar.

About the beginning of the nineteenth century sugar consumption had increased only to the extent that something less than a thousand tons of sugar supplied all the world's needs. Tea and coffee and candy were beginning to make inroads on the annual sugar crop. The year before the war sugar consumption had advanced so much that something more than 22,000,000 tons of sugar were required for the world's use and in this country every man, woman, and child had to have on the average nearly a quarter of a pound of sugar a day. For a great many people the consumption of this much sugar will not be at all disturbing. Their physiological relation to sugar is entrenched in a high tolerance. There are, however, many persons who will be seriously hurt by it; many of them will have their physiological capacity for sugar overcome and the pathological elimination of it will begin with the formation of a habit of enforced elimination from the system which will gradually lead to the serious disturbance of all sugar metabolism. This will come in the form of diabetes, but the exaggerated use of sugar may lead to that near relative of diabetes, obesity, in which the sugars are burnt to supply heat and the fats are deposited.

If now we are going to have a still further increase of sugar consumption, as seems inevitable, it is easy to understand that health will suffer from it. Alcoholic morbidity was indirect. What may be expected from an increase of sugar consumption,

however, is direct and will make itself felt in a very short time. There will soon be much more need than before to look out for the first symptoms of diabetes which are so often insidious, and we shall have a very interesting demonstration of the breakdown of a physiological process under the stress of a series of dietary allurements.

The medical profession throughout the country probably could do nothing more valuable for public health than to note the conditions which will develop in connection with the conscious and unconscious use of substitutes for alcohol, and particularly sugar.

A FUNCTIONAL VIEW OF THE NEUROSES AND PSYCHOSES.

The bursting open of compressive limitations by the expansion of dynamic force is the very law and essence of growth. It has, however, always been more difficult to recognize and accept this in the affairs of human life than when it takes place in the plant world. Yet without recognition of this principle and admission of it to practical psychiatric problems, how shall the psychiatry of the present and future permit of the progress and the actual service to the public in combating mental disease? Dr. Edward J. Kempf, who has made practical application of such a necessary dynamic approach to these problems, comes forward with a suggestive classification of mental disturbances which admits such a functional and therefore interpretative attitude where older classifications have tended by their rigidity to compress clinical understanding and therapy into cramped and obscuring molds. (Edward J. Kempf: *The Mechanistic Classification of Neuroses and Psychoses Produced by Distortion of Autonomic-Affective Functions. Journal of Nervous and Mental Disease*, August, 1919.)

The classification which he offers for consideration is based upon an appreciation of the very fluctuations and transitions which in any individual case have been the despair often of those attempting to use the accepted rigid classifications of the past. Even more emphatically would he recognize the functional dynamic nature of the neurosis as a conflict resulting from autonomic affective cravings the mode of handling which varies with different individuals, and at different periods and under different environmental and metabolic conditions with the same individual. His system aims to allow for such fluctuations and to recognize them both as of diagnostic value and also as indicating the manner and opportunity for an intelligent approach working toward a readjustment to society. It affords the physician opportunity for a coopera-

tive appreciation of the patient's form or difficulty, his attempted handling of the mental conflict involved, and the engaging of the patient's cooperation to lead him back to a better adjustment, perhaps to perfect health.

Attention is given to the division of neuroses into acute, chronic, and periodic. Emphasis is laid upon the even more important division into benign and pernicious forms, which determines largely the approach and the prognosis. The benign forms represent those modes of handling the conflict occasioned by the affective striving which still recognizes the personal origin of these cravings as within the self and then seeks one of the various forms of handling them, or it may be a combination of forms. There may be active compensatory striving, accompanied by increased muscular and visceral activity, which may prove detrimental where a deficient organ is involved. The neurotic manifestation may be that of regression, in which effort and struggles are given up and the ego makes no resistance to affective cravings. With this there will be a lowering of autonomic and striped muscle tonus. These forms may fall under a simple suppression of the sources of conflict, which merely keeps them from overt expression, or they may belong under a repression which forces them completely from consciousness, when dissociation of the personality will occur. Then there may be hallucinated manic or depressive states in which the cravings get a satisfaction in a physiological neutralization, or active paranoid conflict may be maintained, or there may be complete yielding to fear and despair as in catatonia, or to an apparent external agent which seems to sanction or instigate gratification, as with the epileptoid. There may be evident only the disturbances of sensory and motor functions which have been so frequently manifested in the war neuroses, and which the dissociation makes resistant to treatment.

The pernicious neuroses, which also embrace these various forms, are distinguished by the fact that the patient no longer recognizes the source of the wish or craving to be within himself but attributes it to some mystic and extraneous cause. Psychotherapy must therefore be directed to withdrawing the patient gradually from such an interpretation to a recognition and an acceptance of the cravings as a part of his own personality, when he can, like the benign patient, make a readjustment of these cravings to society which will accord with health and efficiency. In the spontaneous progress of a neurosis the transition may be made from one to the other form, benign or pernicious, in either direction. This has caused much of the difficulty

of diagnosis and the necessity for frequent change in diagnosis. Such a classification as this one suggested should permit of the necessary diagnostic flexibility and so make the physician more alert to its functional clinical possibilities.

VIEWS ON DIET.

Views on diet vary widely. Some insist that man requires little or no meat; in fact, that he is naturally essentially vegetarian. Others express the opinion that milk is the most valuable food and that to have a shortage of milk is a public calamity. On the other hand, there are many who still retain their belief in the nutritive, invigorating and health giving properties of meat and hold that there is no efficient substitute. Dr. Harry Campbell, who writes on the subject in the July number of the *Practitioner*, presents a brief for meat and, at the same time, criticizes adversely what he terms the extravagant views which prevail as to the food value of milk. Or to be strictly accurate, he points out that after lactation a child does not require milk. Indeed, he asserts that cow's milk, while a good enough food if pure, has destroyed hecatombs of children through tuberculosis, and it has further operated injuriously by favoring an undue consumption of the messy "milky" pudding which is swallowed without any attempt at efficient mastication. Campbell lays down the definite proposition that milk in any shape or form is not necessary for the weaned child. As for meat, he contends that man is not vegetarian by nature because in the evolution the prehuman ape abandoned the forest and became a hunter solely on account of his instinctive craving for animal food. Therefore, animal food is to be regarded as a natural food for man.

Although there are many who do not agree with Campbell or only partially agree with his views as to milk and meat, there are few who disagree with his opinions regarding the need for mastication and the ill effects produced by the constantly increasing quantity of foods which call for little or no mastication. In consequence of this tendency and because of cooking no laborious mastication is demanded to break up the nondigestible cellulose framework of the starchy foods; the starch is not well mixed with the saliva, great strain is thrown on the digestive organs and indigestion ensues. Moreover, and hence, the jaws, teeth and salivary glands are insufficiently exercised, with the usual results.

Like several other medical authorities of note, Campbell makes very severe strictures upon the immoderate use of sugar and advocates the consumption of butter, margarine, bacon fat or dripping

rather than jam with bread. He thinks that a taste for salads should be cultivated early in life and avers that far too little raw vegetable food is consumed, and that the people of England are too fond of soft puddings and sugar. The criticisms of the British author apply with greater force to the manner of food eaten in this country than in Great Britain. Soft, predigested food appears to have become a habit here and the consumption of sugar is larger than anywhere in the world. It would be well if more hard food was eaten, both because the highly milled foods are lacking or deficient in the vitamine element and they provide practically no exercise for the jaws. Campbell propounds the following sound general rule: eat in moderation what you can best digest, and chew all starchy foods thoroughly.

ADHESIVE PHRENOPERICARDITIS.

The diagnosis of pericardiac adhesions is often a matter of difficulty. They are sometimes supposed to exist when in reality there are none and as shown by autopsies they are as frequently overlooked during life. Radioscopy has rendered much service of late, particularly in the case of phreno-pericardial adhesions. As to the symptomatology, the patient complains of oppression, palpitations and pain in the precordial area. The oppression follows an effort, sometimes from walking or during digestion. The pain which worries the patient, is characterized by a feeling of weight, thoracic constriction or a pinching sensation in the left side of the thorax. Occasionally the pain assumes the clinical aspect of angina pectoris and extends to the left shoulder and arm. Given these symptoms, the physician is naturally led to search for the usual causes of angina pectoris but a most minute examination fails to disclose the presence of aortitis, arteriosclerosis, chronic nephritis, or diabetes.

However, some cardiac phenomena exist, of little import undoubtedly, such as tachycardia, a doubling of the first sound, and an indistinctness of the cardiac sounds. Nevertheless, the examination denotes valuable signs as far as inspection and palpation are concerned, because whatever method is used the apex shock cannot be elicited either during deep expiration or when the patient lies on the left side. The diagnosis therefore wavers between a cardiac symphysis, angina pectoris, and irritable heart, but radioscopy will furnish the solution of the problem. The left cardiophrenic sinus is opaque, the opacity forming a triangle with the base at the diaphragm, the apex at the lower portion of the border of the left ventricle. This represents a band uniting the heart to the diaphragm

and should not be mistaken for a thickening of the pericardial layers or for a collection of fat, all the more so that during their respective movements the diaphragm and heart are hindered.

Recent writers have pointed out that during deep inspiration the external limit of the triangular opacity comes near the ventricle and seems to spread between the heart's shadow and the contour of the left diaphragm whose movement of descent is notably limited. When the apex of the heart descends it no longer approaches the median line as in the normal state, but becomes displaced vertically or slightly outwards. When the patient leans to one side or the other the heart apex remains immovable or does not become displaced except when the patient leans to the left, the only position in which a triangular adhesion can allow the heart its normal play.

Generally speaking, the paroxysms of the pseudoangina occur in the day after some exertion or emotion and rarely take place at night. They are also irregular in the dates of their appearance. The angina syndrome naturally finds its explanation in the hindrance caused to the heart's functions; there is neither stenosis of the coronaries, neuritis, nor neuralgia. The etiology of phrenopericarditis is that of all types of cardiac symphyses, rheumatism, tuberculosis, infectious diseases and very rarely acute diffuse pericarditis. The initial phase of the affection is latent and it is only after the lapse of four or five years that the onset of symptoms occurs. The prognosis does not appear to be bad but it is logical to suppose that cardiac dilatation and asystolia must eventually arise.

AN ECONOMIC PHASE OF THE STUDY OF MEDICINE.

From time to time someone, doubtless interested in his kind and certainly more interested in the general run of his fellows than in the physicians, raises the cry that doctors are becoming scarce. It is admitted that there is no shortage in cities, but it is stated that there are too few physicians in the rural communities. As positive evidence a list of doctorless places in one state was recently published.

Careful investigation usually shows that there is an ample number of physicians. But the question is brought up because a few families in the place would like another doctor. The local talent may be poor enough, but a new importation would probably starve on the small amount of work he would find to do. In one such place which was investigated a physician just leaving, in order to sell his own house and furniture, stated that the village

was without a doctor. In another town those who desired another health minister were frank enough to admit that the man who served them would be obliged to do a little farming on the side in order to make ends meet. If departments of health are willing to help new physicians earn a living by offering them salaries for acting as health officers, well and good, but otherwise they would better not encourage young men to study medicine for the purpose of filling imaginary needs of rural practice. Such encouragement is the more absurd when it is considered that the cities are overstocked with physicians whose training cost much less than medical study today. Let these fill the gaps if there are any to fill.

When it comes to research work there is a plethora of good men—some with the best of training and years of experience being secured by large universities at a salary of a \$1,000 a year. Women are being urged by overzealous sisters on educational boards to enter this large field, but they are in demand only as assistants and at small salaries. If one enjoys the study of science, is willing to risk making a very small living or can afford to work without salary, he can, with a large pocket-book, undertake the study of medicine with a light heart, but otherwise he would best make sure that the call to such work is not issued by those who really know little of the field and have no sympathy with the struggles of men who may try to fill places which are not vacant.

COMPLICATIONS FOLLOWING REMOVAL OF TONSILS AND ADENOIDS.

Too much attention has not been given to the infectious complications which may follow removal of the tonsils or adenoids, but it is nevertheless true that these complications are extremely serious and we believe that they are more frequent than is generally supposed. These complications are of three orders, viz.: local complications, complications from extension, and complications of a general type, coming from the blood or lymphatic system. In practically all operations for adenoids and tonsils a local reaction will be observed at the field of operation. It is not uncommon to find the temperature elevated. This pyrexia is evidently attributable to the absorption of infectious bacteria at the site of the operative wound. In some instances a veritable posterior pharyngitis, a peritonsillar abscess or edema of the soft palate have been known to occur.

These are the local complications, but those resulting from extensions of the infection are usually otitides. In some cases there is no suppurative

from the ear, the infection taking place by way of the Eustachean tubes; but the phagocytic reaction is more severe and therefore a purulent otitis is avoided. In other cases the operation seems to light up an otorrhea which had been quiescent for a long time. In the majority of cases the infection extends from the pharynx to the tube and from the tube to the cavum tympani and there sets up a suppurating otitis media, especially if the patient has been weakened by loss of blood during operation. Some cases of suppurating otitis media have been further complicated by mastoiditis or even a phlebitis of the jugular vein (Bar, Moure, Citelli). Mention should also be made of a case of abscess of the soft palate following removal of adenoids. This is a complication by extension, as was Koenig's case of retropharyngeal abscess following the removal of adenoids and tonsils. The general complications may take place by way of the lymphatics. Therefore, these consist of adenitides and adenopathies, such as have been encountered by Castex, Chavasse, Tollens, and others.

The complications arising from the circulation are the bronchopulmonary manifestations, and although this subject requires fuller development such as cannot be given here, it may be said that the origin of these bronchopulmonary lesions is in the circulation and not a simple extension of the infection from the throat or postnasal cavity. Among the general infections should be mentioned retrobulbar abscess, vertebral caries, sinusitis of the face, acute rheumatism, pseudoleucemia, meningitis, and thrombus of the cavernous sinus. In other instances the throat operation has been followed by a papular, roseolic, or erythematous eruption with more or less intense fever; in a word, by a train of symptoms indicating a profound infection

KINEMATIC SURGERY IN MILITARY HOSPITALS.

Remarkable results have been achieved in Italian military hospitals recently by the use of what is known as kinematic surgery, the invention of Professor Putti of Bologna University. Professor Putti's methods have aroused intense interest on the part of American doctors attached to the Balkan Commission of the American Red Cross who are supervising the artificial leg factories already established and being established in Athens, Salonica, Belgrade, and Bucharest for the war's mutilated.

At the present moment Allied soldiers in the Balkans who have lost their limbs are being fitted with artificial legs and arms of a type similar to that employed by Sarah Bernhardt. Professor Putti's methods, however, are a distinct advance over all other artificial appliances. His treatment of amputated limbs consists of a unique preparation of the stump to develop a motor end to the cords which, after being bound together over a smooth bearing of bone, get as much as a three inch travel of the leg by means of a reeducation and coordination of the muscles of the stump. After the stump heals, Professor Putti cuts out a flap of flesh which he folds back into an incision to take the flap. This is allowed to heal and then, through the loose flap of flesh, a metal bar with attachments to operate the artificial limb below is suspended.

The muscles of the calf and thigh readily respond after some weeks to the movement of the artificial leg and soon the pressure of the swinging of the artificial leg reeducates the muscles through the flap of flesh. It may be said that the muscles of the stump actually operate by themselves the mechanical features of the artificial limb.

In case of a severed hand the muscle groups surrounding the bone are trained to operate catgut cords, which in turn, operate artificial fingers. Not since the introduction of débridement in American army medical work in France has any medical innovation created so much comment.

THE FRIENDLY POISON GAS.

Just before the armistice America was ready to deliver 200 tons of poison gas daily to the forces on the western front. The laity would have some difficulty in seeing any connection between the terrific gas and a clear water supply, but the magic wand of the electrochemist reveals chlorine as the basis of the gas and chlorine as the safeguard of the water supplies. A few pounds of hyperchlorite will ensure safety to troops in tropical places or alien cities: Chlorine aids in healing ghastly wounds, in sterilizing sewerage. 120 pounds of hyperchlorite will sterilize 1,000,000 gallons of screened sewerage. It will flush our streets and cars, sterilize our dairies and so ensure pure clean milk for the babies. So the strongest factor in an enemy is turned into an ally by science. An outlet for the excess chlorine in metallurgy and organic chemicals is found, but who ever thinks of the debt due to the underpaid, overworked chemist and physicist?

THE TRAVELING DENTIST.

The title suggests Sequah in his caravan painfully (?) extracting teeth for villagers, but the new caravan is a large motor with a real dentist, a real dental chair and accessories inside it, and rural England will be toured. The plan is that the dentist works under the county medical officer and card indexes the school children. He sends the head teacher notice of his visit, when he inspects only, makes out his list and returns in three weeks for treatment. Free advice is given to the parents concerning the state of the teeth and a fee of twelve cents is made for each child, for free treatment often causes the benefit to be underestimated. Parents are seen without appointment on fair days. The dentist sells toothbrushes at four cents each and gives an occasional illustrated lecture. During 1918 seventy-two schools were visited and 1,398 children treated. The old man's toothless nutcracker jaw will soon be extinct.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

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In the preceding paper a brief discussion of acute tuberculous arthritis was presented, attention being called to the care which is necessary to obviate confusing it with rheumatic fever. The measures appropriate in its treatment were also summarized.

In this connection the group of cases of multiple joint involvement described by Still may likewise be referred to. In a case closely answering the description of Still's disease, Edsall is stated to have recovered tubercle bacilli from an involved joint. According to Poynton, however, it is certain that these cases are not all tuberculous, and no definite explanation of their nature can as yet be given. Pisek, 1909, looks upon the disease as one resulting from a chronic sepsis sufficiently potent to undermine resistance by enfeebling phagocytic and lymphatic activities. The disease generally sets in before the second dentition and is more frequent in girls than in boys. In some instances its onset is sudden, with high fever, though more typically it is gradual. The joint enlargement seems mainly periarticular, and effusion into the joint is not pronounced. The knees, wrists, and cervical spine constitute the joints first involved; later the fingers and toes may become affected. There is no tendency to suppuration or to ankylosis. A special feature of the condition is simultaneous enlargement of the lymph nodes, especially those in the vicinity of the involved joints, and also enlargement of the spleen to an extent proportionate to the degree of joint and lymph gland involvement. Anemia coexists, fever and sweating may be present, and in exceptional instances cardiac complications have occurred. Tenderness of the affected joints is, as a rule, relatively slight. The temperature may be subfebrile in the intervals between exacerbations, though often there is fever only when the latter occur.

The cause of Still's disease being uncertain, while some facts suggest that it may be somewhat similar to that of rheumatic fever, the mistaking of an acute Still's disease for the latter affection would not appear to be as important an error as confusion of acute rheumatism with acute tuberculous arthritis, gonococcal arthritis, and similar disorders. Indeed, the treatment of the disease, where acute manifestations exist, is in general like that of rheumatic fever, rest in bed, cooling lotions over affected joints, salicylates and sodium bicarbonate internally, an easily digested diet, and care as to proper bowel evacuations. After the acute symptoms subside the treatment of the two

conditions is different, and early recognition of the condition present is therefore advantageous. Whereas in the aftermath of rheumatic fever Kerley, 1914, has the patient take sodium salicylate and sodium bicarbonate for five days in every fortnight, and later in every month for an indefinite period in order to obviate a second rheumatic attack, in chronic Still's disease the condition is rather one of muscular atrophy with a tendency to contracture which may eventually leave the patient helpless. Under these circumstances iodides are, as Abt, 1908, has pointed out, particularly indicated. The hygienic conditions under which the child lives should be improved and, if possible, removal to a warmer climate undertaken. According to Gibney, Abrams, and others, administration of dried thymus gland will often yield remarkable results in this condition. Thyroid medication might also be tried.

Another condition the differentiation of which from rheumatic fever or from true rheumatism in its other manifestations is of considerable importance, from the standpoint of treatment, is the senile rheumatism described by Nascher, 1911, and Thewlis, 1918. Rheumatic fever is rare in the aged, but acute exacerbations of chronic rheumatism may occur in these subjects and simulate rheumatic fever. Many of the various causes of joint inflammation occurring in other periods of life are likewise operative in old age, but, according to Thewlis, nephritis is the chief factor. Salicylates are to be considered irritating to the kidneys and therefore inappropriate in the treatment of such patients. The kidneys being at fault, Thewlis orders seidlitz powders or magnesium citrate solution every morning before breakfast in the more robust patients, or a compound cathartic pill at bedtime in the frail. The diet is, in general, that for nephritis. Meat or fish is not allowed more than once a day. Three or four glasses of milk are to be taken daily. In the acute cases diacetylmorphine is used to relieve pain, while in robust chronic cases cabinet baths are given once or twice a week, with gratifying results. For cases with a tendency to deformity, superheated air at 130° to 200° C. seems to yield great benefit. Sodium succinate, ten grains every three hours, is stated to be of often of value. A peculiarity of the senile joint condition, according to Thewlis, is that it improves on exercise. He maintains that the results of eliminative treatment in nephrogenic senile rheumatism are frequently marked, and that much suffering is saved when this treatment is instituted early enough.

Nascher describes senile rheumatism somewhat differently, regarding it as an actual manifestation of aging which is incurable. Like Thewlis, however, he finds it feasible to relieve the attending pain. This is accomplished by the application of moist heat, followed by inunction of a two per cent. cocaine liniment or ointment with an animal fat as

base, e. g., butter to which two grains of sodium benzoate to the ounce has been added to prevent rancidity. Internally, red phosphorus and arsenic iodide are taken. General hygienic measures are also insisted upon.

(To be continued.)

Diet in Disease.—Just as the July number of the *Practitioner* was devoted to Diet in Health, so is the August number to Diet in Disease. The contents form a symposium; Diet in Acute Disease, by Sir John F. H. Broadbent; Diabetes and Glycosuria, by W. Langdon Brown; Obesity, by Leonard Williams; Chronic Arthritis, by F. G. Thomson; Renal and Circulatory Disease, by P. Bergouignan; The Connection Between Food and Disease in Infants, by Eric Pritchard; Diet in Tuberculosis and Pulmonary Disease, by Marcus Paterson, and Diet in Dermatology, by George Pernet.

Milk, Broadbent says, is generally recognized as the most suitable and readily assimilated food, and with the addition of a pint of beef tea or chicken broth, it constitutes, as a rule, the standard diet in acute disease. Usually from two to three pints of milk are given in the twenty-four hours, in small quantities every two hours. If plain milk is not well borne it may be diluted with water or barley water, or, better, citrate of soda, two grains to each ounce of milk, may be added. This lessens coagulability and renders the clot finer, less firm, and more digestible. When milk is refused or proves irritating alternatives must be considered. The nutritive value of beef tea, chicken broth, or mutton broth is not very great but such broths form a pleasant change, stimulate the appetite, and are appreciated. They should not be given in scarlet fever and diphtheria as they irritate the throat, in rheumatic fever on account of the extractives they contain, or in typhoid when there is diarrhea. To supplement their nutritive value in protein some of the beef or chicken fibre may be pounded up or passed through a fine sieve and added to the broth, or the yolk of an egg may be beaten up with half a pint of broth twice a day. Eggs may also be given beaten up in milk or with a little brandy, sugar, and cinnamon water. Gelatine, though not a substitute for albumen, is a protein sparer and may be utilized in calves' foot or other jellies, but it is not of great value as a food substitute. To supplement the carbohydrate value of the milk diet, dextrose or milk sugar may be given with lemonade or in milk. Thin oatmeal or barley gruel or one of the malted foods may be given with the milk. Albumen water, made by shaking up the white of an egg with half a pint or a pint of water, is a useful preparation though not itself of much nutritive value. An agreeable and nourishing beverage may be made by dissolving an ounce of milk sugar or half an ounce of dextrose in a pint of water with the juice of a lemon, then adding the white of an egg and shaking thoroughly. Even when milk cannot be taken or is imperfectly digested, one of the dried milk or malted foods is often well assimilated. Such preparations should be suitably flavored and made as palatable as possible. Much

water is needed by the patient, so he should be encouraged to drink freely of water, lemonade, orangeade, etc. In acute diseases of short duration alcohol is not required as a food but is often of great service as a stimulant when there are indications of collapse or failing circulation, especially in pneumonia about the time of the crisis. In typhoid it is useful as a food and may be given with great benefit in severe cases in the second or third week when there is low muttering delirium, insomnia, and profound toxemia. Good brandy is the best form, given at regular intervals, from two to six ounces in the twenty-four hours. Its effects should be carefully noted.

Brown says that the modern dietetics of diabetes were arrived at independently, almost simultaneously, and by different routes by Allen in America and Graham in England, but the war prevented any full publication by the latter. Graham's method varies in some details from Allen's and is thus given: Two hunger days. Tea and coffee as desired, and 500 cc. of bovril and broth, made without vegetables, divided into two equal portions. Water or lemonade, sweetened with saccharine, can be taken *ad libitum*. This is followed by two vegetable and egg days. Breakfast: Two scrambled eggs with tea or coffee; two ounces of lettuce, watercress, or tomato. Lunch: Eight ounces bovril or broth; one poached egg on spinach; any green vegetables with one and one half ounces butter; the total amount of the vegetables for the meal to be six or eight ounces. Tea: Tea or coffee, lettuce, watercress, or tomato, fifty grams or two ounces. Dinner: Eight ounces bovril or broth, two eggs cooked as desired; six to eight ounces green vegetables with one and one half ounces butter; water or lemonade as desired. This diet has a caloric value of 1,170 and a carbohydrate intake of about ten grams. Then follows the "ladder" diet. After two vegetable and egg days add fifty grams of meat or 100 grams of fish. This raises the caloric value to about thirteen hundred. Two days later add fifty grams of hacon at breakfast and omit one egg; add another ten grams of butter to the vegetables. The caloric value is now 1,595. Two days later add fifty grams of sardines at lunch and omit one egg, or if fish has previously been given omit this and add 100 grams of meat. The caloric value is now 1,635. Two days later add fifty grams of ham and omit another egg. The caloric value is now 1,795. The quantities of sardines and ham may be doubled if the patient is hungry and the degree of acetoneuria is slight; this brings the caloric value to 2,145. If the patient is free from sugar when at the top of the ladder add either 100 c. c. of milk or ten grams of bread, and increase by the same quantity every other day until the limit of carbohydrate tolerance is reached. If the patient is not sugar free when at the top of the ladder, repeat the whole process. Rest in bed is advisable, at least till the caloric value of the food reaches 2,000.

Williams thinks the cause of obesity is the absence of vitamins in cooked foods and that the remedy lies in eating uncooked foods.

Thomson says that the diet in rheumatoid

arthritis and in fibrositis should consist of light, simple, easily digested food, strictly limited to such quantities as the patient can digest. In some cases the total exclusion of meat may be advisable, in others a diet consisting chiefly of eggs, milk, milk puddings, custard, and the like may be tried. The inclusion of vitamins is essential, and a certain amount of raw fruit, salad, eggs, milk and other vitamine containing food should never be omitted. In cases in which it assists digestion a reasonable amount of stimulant may be allowed. In osteo-arthritis the diet should consist chiefly of fish, poultry, game, and the lighter kinds of meat; eggs, fruit, salads, green vegetables, junket, and cheese. Bread must be replaced by dry toast, rusks, or dry, unsweetened biscuits. Puddings and pastry should be eliminated together with alcoholic stimulants. Tea and coffee may be taken in moderation; water to be given as freely as possible. The common forms of chronic arthritis being intimately connected with digestive disorders, a suitable diet is important in the treatment. Uncooked food is an essential element owing to the action of vitamins in promoting normal digestive and assimilative processes and maintaining the balance of endocrine activity.

According to Bergouignan the whole treatment of renal disease in general, of the various kinds of nephritis in particular, and of the lithiasis may be said to be comprised in the dietetic management of the individual case. In acute nephritis a strict milk diet is necessary. In chronic nephritis with albuminuria but no disturbance of the circulation, free diuresis, and no retention of chlorides or of nitrogenous matter, an ordinary mixed diet with meat rather restricted is all that is required. In nephritis with albuminuria, edema, and retention of chlorides, a strict chloride free diet should be chosen. In chronic hypertensive nephritis proteins and chlorides should be excluded, and in the later stages it may be necessary to order a complete fast or a strictly fruitarian régime for several days in succession. This is the diet for arteriosclerosis. The forbidden foods in lithiasis are: meat that contains abundant nucleins and gelatines or that is too young, preserved meat, crustaceans, tea, cocoa, spinach, asparagus, and green beans. The technic of these dietaries is dealt with in a way we would like to reproduce, but space does not allow.

Pritchard says that resistance to infective disease is a function of metabolism, mainly nitrogenous. Consequently carbohydrate or sugar fed infants are peculiarly susceptible to infective disease and show feeble resistance. The great majority of the diet diseases of infants are due to excess in the total quantity of food, irrespective of the precise qualitative makeup. The injuries are mainly due either to intestinal toxemias or incomplete combustion by the processes of internal metabolism. Deficiency in any of the food elements tends to bad results. Pritchard makes it a rule to supply all artificially fed infants and some breast fed ones with a daily ration of vegetable soup, in addition to a full supply of fresh fruit juice.

Paterson says that in tuberculosis the diet should be that to which the patient is accustomed, provided

it has not obvious flaws, plus extra meat as long as the patient has resistance. When resistance is gone he is dying, nothing can be done to cure him, and he may be allowed to eat what he likes. Tables are given showing standard sanatorium diets. There is no specific diet for the chronic pulmonary diseases.

Pernet says that, in a general way, as far as skin diseases are concerned it is advisable for the patient to avoid shell fish, mackerel, rhubarb, and anything that has been found by experience to disagree. Whatever leads to intestinal fermentation and flatulence should be avoided. The instincts of patients as to what suits them and what does not should be taken into account, as they may be right. The question of anaphylaxis is to be considered. Urticaria is usually the result of food poisoning, but it is not always easy to locate the peccant body. A number of foods are mentioned as occasionally guilty. The diet in eczema depends much on the type and on whether or not the patient is being treated in bed: no rule can be laid down. The same is true of psoriasis. In acne vulgaris sugary foods should be avoided. In acne rosacea hot, thick, strong soups, pickles, salads, vinegar, curry, strong tea, and hot fluids generally—all articles that lead to flushing—must be avoided. In tuberculous skin diseases the indication is to supply fat in the shape of fat of butcher's meat, ham, bacon, dripping, butter, margarine, and codliver oil. Thyroid feeding is useful. A diet with fats is indicated in the nodular form of leprosy.

Pharmacological Action of the Local Anesthetics.—Cary Eggleston and R. A. Hatcher (*Journal of Pharmacology and Experimental Therapeutics*, August, 1919) found, in experiments on cats, that the different local anesthetics are quantitatively synergistic in their lethal actions. Their toxicity, upon subcutaneous injection, was found to depend upon the ratio of the rate of absorption to that of elimination. Five or more than five times the minimal fatal intravenous dose of alypin, apothesine, betaucaine, nirvanin, procaine, stovaine, or tropacocaine can be injected subcutaneously in the cat without causing death, while only four or less than four times the fatal intravenous dose of cocaine or holocaine similarly injected proved fatal. Simultaneous subcutaneous injection of epinephrine with the local anesthetics materially reduces their toxicity by delaying absorption, but this is much less marked with cocaine and holocaine than with the rest, owing to their slower elimination. All the local anesthetics proved synergistic with epinephrine on the blood pressure in a manner analogous to cocaine. Artificial respiration, combined with epinephrine intravenously, saved cats from death after intravenous injection of as much as twice the average fatal dose of the local anesthetics. Stimulation of the heart of the previous injection of ouabain permitted recovery from nearly twice the fatal dose of the anesthetics, provided the temporary paralysis of the respiratory centre was combated meanwhile through artificial respiration. The success of these measures was dependent upon rapid destruction of the local anesthetic drugs in the liver.

Inguinal Route for Radical Cure of Obturator Hernia.—E. T. C. Milligan (*British Medical Journal*, August 2, 1919) recommends the inguinal route as a specially suitable method of approach in the radical treatment of hernia into the obturator foramen. In a patient recently operated upon for this form of hernia, Milligan made an oblique incision parallel to and just above the inner end of Poupert's ligament, exposing the external abdominal ring and the attachment of the aponeurosis of the external oblique to the ligament. The aponeurosis was incised in the line of the skin incision and the upper part retracted. The spermatic cord was drawn upward, and the external iliac vein and femoral ring were defined. The peritoneum was pushed upward from the pubic bone by means of deep retractors, exposing the obturator foramen. The hernial sac was drawn from the foramen and its obliteration was assured. This method, while ideal in cases without strangulation, is unsuited to strangulated cases because such a strangulation cannot be diagnosed clinically, laparotomy being required to discover the nature of the illness.

Natural Carbon Dioxide Baths of Royat in the Treatment of Arterial Hypertension.—Carron de la Carrière (*Presse médicale*, June 26, 1919) emphasizes the following therapeutic indications in high pressure cases: Detoxication of the system; activation of urinary depuration; toning up of the nervous system; support of the heart in its constant struggle against high peripheral resistance; removal of spastic arteriocalillary constriction; reduction of the blood pressure, both systolic and diastolic. The natural carbogaseous bath available at Royat, at a temperature of 34° C., answers these requirements by acting as a diuretic, peripheral vasodilator, and tonic both to nervous system and heart. The diuretic action is manifest in an increased output of urine and of the urea, uric acid, and chlorides, reduction of albuminuria, and more rapid elimination of methylene blue. The general systemic action includes an increase of hemoglobin, red cells, leucocytes. At each bath the peripheral capillaries are widely opened up, the spasmodic factor which kept them contracted done away with, and the blood pressure lowered. After repeated baths this reduction of pressure becomes permanent. In five to eight days the systolic pressure is reduced by forty millimetres and the diastolic by twenty to thirty millimetres. The heart tonic effect is both direct, the rhythm being slowed and regularized through pneumogastric stimulation, and indirect, the reduction of peripheral vascular resistance relieving and tonifying the heart. The treatment is indicated both in functional and organic hypertension. There are, however, certain contraindications, viz., diastolic pressure above 140 millimetres; pulsus alternans; angina pectoris of coronary origin, with intense paroxysms and normal or lowered blood pressure; attacks of cardiac asthma or acute pulmonary edema; blood urea retention reaching one gram per litre; habitual albuminuria exceeding .4 or .5 gram, with numerous granular casts, and refractory chloride retention, with edema persisting in spite of prolonged salt free diet or recurring whenever a normal diet is resumed.

General Anesthesia by the Arachnoid Route.—G. Le Fillière (*Bulletin de l'Académie de médecine*, July 22, 1919) reports 194 operations under general anesthesia by the arachnoid route, using cocaine and the barbotage procedure, conducted from October, 1918 to January, 1919, in the military hospital at the Grand Palais, Paris. The series included seven operations on the head, four on the neck, nineteen on the upper extremities, fifteen on the thorax, sixty-one on the abdomen, seven on the dorsolumbar or pelvic regions, seven on the anus, and fifty-eight on the lower extremities. In the case of the lower limbs, he does not insist upon the use of the cocaine barbotage method, as novocaine, scurocaine, or syncline by the usual spinal procedure give sufficiently satisfactory results. The former method, however, proved definitely advantageous in all the other regions, absolute anesthesia being invariably obtained and lasting three quarters to one hour in the head and neck, and an hour and a half or more in the abdomen. There was never any secondary paralysis, retention of urine, or headache, nor any vomiting during or after the operation. Return of normal sensation occurred only after about eight hours, thus rendering morphine for postoperative pain unnecessary. In about two per cent. of cases there was slight respiratory difficulty with a slightly weakened pulse and facial pallor, lasting at most five or ten minutes and in nowise alarming. Inflammation or ulceration of the skin or tumor of the lumbosacral region are the only contraindications to the method, which the author deems definitely indicated in cases with cachexia, heart disease, albuminuria, dyspnea, or severe hemorrhage. In 1917, with Lemoine, he used the method with success in over eight hundred severe wound cases, including operative work on the head, neck, and thorax. In 1918, during the Chemin des Dames engagement, operations were carried out in 1,700 cases with a mortality of but one half per cent.

Effect of Iodine on Fibrous Nodules.—Torald Sollmann (*Journal of Pharmacology and Experimental Therapeutics*, August, 1919) used as a test object the fibrous nodules that follow intracutaneous injections in the wheal method of testing local anesthetics. These nodules persist in the human skin unchanged for three to four weeks, then fade slowly, being practically gone in six to ten weeks. Rows of wheals were made on the forearms and the effects of iodine, used in various ways, studied. Beginning six days after the local anesthetic injections, a seven per cent. alcoholic solution of iodine was applied daily for a varying number of days. Series of five applications, though causing smarting at the last and peeling of the skin, had no effect on the nodules. Where eight applications were made, however, the later ones being distinctly painful, distinct effects were shown, and some of the nodules entirely disappeared. To determine whether a single very energetic iodine treatment would be as effective, one row of nodules was given ten heavy applications of iodine on the twenty-seventh day. Although rather severe pain and considerable swelling resulted, the nodules were not materially affected.

Bacteriology and Treatment of Chronic Nasal Catarrh.—Leonard Mackey (*British Medical Journal*, August 9, 1919) includes only those patients suffering from recurrent acute nasal catarrh, chronic nasal catarrh, and chronic postnasal catarrh under his classification, and excludes all acute cases and all cases of nasal infection associated with polypi, antrum or sinus disease, or any discoverable surgical lesion. As a result of painstaking bacteriological examination of a large number of such cases he finds that the causative organisms are the pneumococcus, influenza bacillus, *Micrococcus catarrhalis*, *staphylococcus aureus*, streptococci other than the *streptococcus mucosus*, diphtheroid organisms, and several others in a very small proportion of cases only. The proper technic must be observed in taking cultures from these cases or the physician will be misled. The swab for the nose is like that for the throat but is made on a fine and flexible wire; the culture must be made on plates of blood agar and must be made at once or some of the important pathogenic organisms will die and unimportant ones will overgrow the remainder. The most successful treatment of these cases has been by means of vaccines prepared from the patient's own organisms containing all which in his case are evidently responsible for the disease. The vaccines are begun in small doses, repeated weekly and gradually raised so that the highest doses reach 150,000,000 pneumococci or streptococci and three to four hundred million of other organisms. The course of injections is continued for at least twelve weeks. In children, even in the absence of mouth breathing, the infection is closely associated with the presence of adenoid tissue, and the removal of that tissue results in prompt cure. In general the results of the use of autogenous vaccine treatment in adults have been highly satisfactory.

Nourishment of the Pregnant Woman.—E. P. Davis (*American Journal of Obstetrics*, July, 1919) states that in prescribing the diet for the pregnant woman the individual patient must be thoroughly studied and her habits before pregnancy and her powers of digestion ascertained. Patients accustomed to take proteid material abundantly and able to digest it well should have it; the heavier red meats should, however, be given but once or twice weekly. Fish, cold white meat of fowl, well cooked oatmeal, barley, peas, and beans are useful sources of protein. Where there is a history of bad digestion of proteins, they should be largely eliminated. The crucial test as to proteid food lies in the patient's condition as shown by the blood pressure, uranalysis, and general physical examination. A patient who has been digesting proteid badly will often do much better as pregnancy approaches its termination. Vegetable fat is better than animal, and olive oil used in salad dressing is usually well digested. The amount of sugar or its derivatives to be ingested depends upon the climate and the exercise taken. Of the cereals, barley, rice, and wheat are often better borne than oatmeal. Corn preparations are especially valuable for milk secretion. The earthy salts and fruit acids in vegetables and fruits are useful for development

of the fetal skeleton and, with a free supply of water, to maintain the action of the bowels. For annoying and persistent indigestion, fresh lime or pine apple juice is especially valuable. At least one quart of water should be taken daily; where metabolism is deficient a mildly saline water is useful. Use of tea or coffee depends upon the practical test of improved or impaired digestion when it is taken. The craving for fresh air shown by many pregnant women should be gratified to the fullest extent possible. Whatever stimulates the circulation and promotes insensible perspiration, e. g., a cool sponge following a warm tub bath, is a valuable aid in nourishing the patient. In later pregnancy not only should a good night's sleep be obtained, but once or twice during the day the patient should have a reasonable period of absolute rest.

Primary Toxic Effect of Neosalvarsan.—K. Petráň (*Lancet*, August 9, 1919) points out that it is almost impossible to come to any very definite conclusion as to the causes of the toxic effects of salvarsan and neosalvarsan from a study of the effects of their administration to syphilitic patients because the possibility of a toxic storm arising from the sudden destruction of large numbers of the parasites is always to be considered and cannot be excluded. In the course of the recent influenza epidemic he administered neosalvarsan to a large number of patients who were not syphilitic and observed in a small proportion that a very definite toxic symptom followed at a definite interval after the injection. The symptom consisted in vomiting which might occur once, twice, or even oftener, and it invariably appeared within twenty-four hours after the injection of the drug. Other than this not the least toxic manifestation was ever seen, although the doses of neosalvarsan used were generally .6 gram. He contends that this manifestation is evidence of a direct toxic action of the drug in the form of a central stimulation of the vomiting mechanism, and since it was observed exclusively in women or in men of small stature it seemed to be due to an overdose of the drug, the same dose having been borne well by heavier persons.

Use of Bismuth and Iodoform in Suppurative Otitis Media.—Frederick Stoker (*Lancet*, August 2, 1919) makes sure that thorough drainage is established and maintained in all cases of chronic suppurative otitis media; then he removes the crusts, dead epithelium, and other debris with hydrogen peroxide, and cleanses the meatus and remains of the tympanum with alcohol and allows the parts to dry; and finally he covers the whole infected and discharging area with a mixture of one part of bismuth and two of iodoform which is applied by means of a blower with a fine pointed bent tip. One application weekly is all that is required in mild cases and not more than three in the cases with profuse suppuration. This treatment has given far better results than the usual application of drops or the practice of syringing, neither of which is generally properly carried out by the attendants to whom it is left.

Colectomy.—James Taylor (*Lancet*, August 2, 1919) is a strong advocate of colectomy for the relief of intestinal stasis when medical measures prove inadequate, and notes that the most striking results follow in those cases showing more or less marked toxemia. He has performed six complete colectomies with the most favorable results. In all there was the most rapid improvement in general health, and in all except one, who had an ulcerative condition in the rectum, there has been no trouble with diarrhea, the bowels moving only about twice daily. Wherever a colectomy is required the operation should be a complete one, since attempts at partial colectomies have not given the same degree of satisfactory results as the complete ones. The author specifically denies the correctness of the common beliefs that many patients fail to recover from the operation of colectomy and that those who do recover are no longer capable of leading a normal life.

Surgical Treatment of Cancer of the Colon.—E. Desmarest (*Presse médicale*, July 3, 1919) considers a supraumbilical transverse incision the incision of choice in dealing with cancer of the left colonic flexure. It permits of carrying out readily and safely the various steps in the operation, viz., liberation of the flexure and descending colon, excision of the flexure with the adjacent portions of the transverse and descending colon, and end to end anastomosis of the two extremities of the bowel, with posterior drainage. In all cases of complete occlusion of the intestine due to colonic cancer, a cecal anus should be instituted. Fistulization of the cecum is but a makeshift, and a large anus should be established from the start, with suture of the mucosa to the margins of the skin incision throughout its extent. A patient thus dealt with is not only safeguarded from the dangers of complete occlusion, but is in the best condition for excision of the cancer in a second stage of the operation.

Indications in the Surgical Treatment of Acute Appendicitis.—Jalaguier (*Bulletin de l'Académie de médecine*, July 22, 1919) is opposed to systematic immediate operation as soon as the diagnosis of acute appendicitis is made, and from thirty years' observation believes that in a case of appendicitis seen promptly and treated by an experienced and attentive surgeon, the patient may without disadvantage or danger be placed under observation. In a case of perforation with severe symptoms, early operation is necessary, but even here it may be advantageous, if the patient is in partial collapse, to apply external heat and measures to restore the circulation for a few hours before intervening. In cases where localizing signs of appendiceal involvement are scanty and vomiting absent, expectation is likewise permissible. In the average case of acute appendicitis, the patient should be placed under a test treatment comprising absolute rest, starvation, water, the icebag, and saline and camphorated oil injections. Within six to twelve or at most twenty-four hours definite indications for treatment will have been obtained. Any one of the following conditions indicates operation: Failure of the icebag to bring any relief; the facies remaining unfavorable and the general impression of the patient being un-

satisfactory; persistence or reappearance of vomiting; rise in temperature; lack of correspondence of the temperature and pulse rate; reappearance of exacerbation of local pain, which recurs in paroxysms; failure of the abdominal wall to soften, the abdomen continuing board like or tending toward meteorism. In some aged, obese, diabetic, or albuminuric patients, however, immediate operation is not indicated unless conditions are actually desperate; otherwise strict medical measures alone are in order. In hypertoxic appendicitis with sudden complete disappearance of the local signs but increasing toxic manifestations, prompt operation is necessary. To carry out with success the author's relatively conservative plan of appendicitis treatment, the patient must be cared for in a hospital, be seen by the surgeon at least twice daily, and be under constant intelligent supervision. Where these conditions are impracticable prompt operation as a routine is a safer course to pursue.

Importance of Immediate Specific Treatment in Influenzal Pneumonia.—W. H. Wynn (*The Practitioner*, June, 1919) reports a series of 107 consecutive cases treated with polyvalent vaccine with only ten deaths or a mortality rate of 9.1 per cent. The vaccine used was a triple vaccine of equal numbers of pneumococci, streptococci, and influenza bacilli, and the dose was eighty to one hundred millions of each of these three organisms. The importance of early treatment is emphasized by the analysis of the mortality rate, according to the day of the disease on which injections were begun. Seventy-one per cent. of the patients injected on the first day had a normal temperature within twenty-four hours; of those injected on the second day the percentage was forty-seven; of those injected on the third day fifty; on the fourth day thirty, and on the fifth day thirty-five per cent.

Treatment of Ringworm by X Ray.—Haldin Davis (*British Journal of Children's Diseases*, April-June, 1919) gives the results of six years in a clinic with x ray for ringworm. He finds that in the majority of cases complete epilation of the head is necessary. The treatment was uniformly successful, and of 441 cases treated only forty-four had to be x rayed twice. His apparatus consisted of a twelve inch working coil from a main giving a direct current of 240 volts through a series resistance, and the current was broken by a mercury jet-break with a device for cutting out the reverse current. The tubes used were at first Siemens target tubes and afterwards Pilon tubes. The minimal dose required to produce epilation was used and the margin between this and the dose required to produce permanent alopecia is ample.

Treatment of Purpura Hemorrhagica.—E. Gimenéz de Azcarate (*Revista de Medicina y Cirugía Prácticas*, July 28, 1919) advises rest in bed, cold milk diet, abundant fluids, and tamponade of the nostrils with hydrogen peroxide, together with the local application of antipyrine ten per cent. in gelatin. In the case reported in this article there was no effect seen from the internal administration of drugs, gelatin, or physiological serum, as well as subcutaneous administration of serum and transfusion of blood.

The Unidentified Pandemic Disease (Influenza?).—Dudley Roberts (*American Journal of the Medical Sciences*, September, 1919) says that because of the appalling mortality under an expectant plan of treatment he started on October 3, 1918, to use intravenous injections of a mixed influenza vaccine and soon concluded that good results were secured only when the injection caused a definite reaction. He regards the exact composition of the vaccine as a minor matter, but believes that to secure the reaction the initial dose should be approximately 1,000,000,000 heat killed organisms injected intravenously, and probably several times this dose if administered subcutaneously or intramuscularly. The typical reaction consists of a chill or chilly sensation half an hour after the injection, accompanied by a rise in pulse rate and sometimes by a slight fall in temperature. The temperature then rises and reaches a maximum in from a half to one hour, when it falls sharply, as a rule, but usually rises again. The rise following the chill is always transitory and is overlooked unless temperatures are taken every half hour. The subsequent fall may be to normal after the first, second, or third injection, the disease terminating by crisis. After the chill the patient almost invariably feels greatly improved and the change in appearance and lung signs is often striking. The injections have been given every twenty-four hours, but a shorter interval may be found to be an improvement. No ill effects were observed. In a consecutive series of 200 cases of definite influenza pneumonias treated by this plan the mortality was 9.6 per cent. In a series of 86 consecutive cases treated by an expectant plan the mortality was 31.3 per cent. No case was excluded from either series because of the hopelessness of the condition of the patient on admission. The betterment of results cannot be attributed to a difference in the period of the epidemic.

Surgical Treatment in Severe Hematemesis.—Maurice Cazin (*Bulletin de l'Académie de médecine*, July 8, 1919) reports three cases in which he performed an operation for repeated hematemesis so severe as to threaten exsanguination. In the first case several small ecchymotic spots were found within the stomach at the lesser curvature and a punched out erosion of the size of a small lentil near the cardiac orifice. Catgut sutures through the mucosa were introduced at these points and the patient promptly recovered. In the second case five small bleeding ulcers were found close together on the posterior aspect of the mucous membrane in the prepyloric region. In the third case a nodule was felt in the anterior wall of the stomach five or six centimetres from the pylorus. A portion of gastric tissue with this nodule in its centre was excised and an ulcer four or five millimetres in diameter found on the mucous surface. The condition was a Brunner adenoma with destruction of the underlying mucous membrane. The first patient recovered—as did the second—and was in the national service throughout the war. Dieulafoy in 1898 was already recommending operative intervention for severe hematemesis recurring at short intervals in spite of medical treatment, and Cazin thinks his cases demonstrate the harmlessness as well as the efficacy of such a procedure.

Surgical Treatment of Jacksonian Epilepsy.—Robert Earl (*Minnesota Medicine*, September, 1919) considers that because all lesions lying over the motor area do not cause Jacksonian epilepsy, there must be a susceptibility of soil in some patients and not in others. All head injuries, whether received at birth or otherwise, should receive prompt and adequate surgical treatment. Before undertaking operation the so-called medical, dietetic, and hygienic treatments should be given a thorough trial, although without surgical measures the outlook is unpromising. In cases where a definite lesion is found and removed a complete cure may be looked for; where no lesion is found the epileptogenic area should be located by electrification and removed. When surgery does not effect a complete cure, the attacks are usually lessened in frequency and severity; further, the operation should be undertaken as soon as the diagnosis is made, otherwise time may establish the so-called epileptic habit.

Action of Adrenalin on the Spleen.—F. A. Hartman and R. S. Lang (*Journal of Pharmacology and Experimental Therapeutics*, August, 1919) report experiments leading to the conclusion that adrenalin is capable of causing an active dilatation of the spleen. This effect could be obtained either by injection of adrenalin into the jugular vein or by its application to the semilunar ganglion or the dorsal root ganglia. In some instances the dilator effect did not occur. The ganglionic mechanism seemed to give the dilator effect more easily than the peripheral—spleen—mechanism. That both these mechanisms may lead to dilatation indicates a similarity in the dilator mechanism of the spleen to that of skeletal muscle. Constriction from adrenalin was also shown to result sometimes from a mechanism in the dorsal root ganglia or from a structure in the spleen.

Compensatory Hypertrophy of the Thyroid Gland.—Leo Loeb (*Journal of Medical Research*, July, 1919) has investigated the rather unsettled question of compensatory hypertrophy of the thyroid, using the guinea pig as the experimental animal. He found that if an almost complete extirpation of the thyroid is carried out the great majority of the animals will show definite hypertrophy. It appears from his experiments that a certain quantitative relation exists between the degree of hypertrophy and the amount of thyroid tissue which has been removed. Pregnancy does not promote, and possibly may retard, compensatory hypertrophy of the thyroid in the mother.

Tuberculin Treatment of Asthma Due to Tuberculous Glands.—L. V. Blanco (*La Semana Medica*, June 12, 1919) sums up as follows: Asthma from hilum and perihilum tuberculosis is common in childhood; asthma of this type is probably a form of anaphylaxis or allergy toward the toxin of the tubercle bacillus. In a good per cent. of cases tuberculin treatment rapidly improves the morbid process or even produces a radical cure. This improvement is much more rapid than in cases treated without tuberculin; of course tuberculin is used in conjunction with other therapeutic measures.

Miscellany from Home and Foreign Journals

Cancer of the Stomach.—Henri Hartman (*American Journal of Surgery*, September, 1919) gives an account of the development of the operative history for cancer of the stomach. The first growth was removed by Péau in Paris in 1879. He was followed by Leopold and then Billroth of Vienna popularized the operation. The unfortunate part of the situation is that in spite of the improved technic relapses are frequent. Cunéo, Bormann MacCarthy, Blackford, and the Mayo brothers have made a study of the mode of extension. This has made possible more complete extirpation and more definite cures. Cancer should be suspected when an individual over forty-five complains of serious dyspepsia without any cause. The beginning of cancer degeneration may be recognized by the patient's loss of appetite, disgust for meats and fats, loss of weight and strength. The patient may vomit undigested food which has a coffee ground appearance. There is a diminution of acid especially free hydrochloric acid, and in the presence of acid fermentation occult blood may be found.

The symptom complex, the pyloric syndrome, consists of the appearance of pains two hours or more after meals, which cease after vomiting. It is important to know of the existence of gastric stasis. When it is present medicinal treatment can be of no avail. For the test carrots are added to the evening meal of the patient, who should not take anything to drink or eat after the meal is finished. The next morning the stomach contents are examined for carrots. After the stomach is washed and emptied air is injected and the contour of the distended stomach is sketched on the abdominal wall. When a tumor is present it should be sketched before insufflation. During insufflation the tumor is displaced to the right and upwards but when the stomach is insufflated it is situated at the junction between the two curves. The patient is then given a test meal which is removed and analyzed at the end of an hour. The x ray may be useful in aiding in the diagnosis. Six hours prior to the examination 100 grams of sulphate of barium in flour paste are administered. At the examination the stomach, duodenum, and jejunum should be empty. Sagging stomachs may contain a goody portion of the opaque meal without the existence of a stenosis. At the examination another opaque meal of 100 grams of sulphate of barium and 300 grams of tragacanth mucilage is given. In the presence of liquid the mixture spreads in large detached masses which go to the bottom of the stomach more quickly than when it is empty. In the absence of gastric dilatation the opaque meal fills three quarters of the stomach, while if it is dilated it occupies less space and the shape is changed while it enlarges transversely. In the case of cancer lacunar images will be seen. These must be examined from the front and from the side. This allows for the recognition of the contractions which are not contained in these spaces and a differential diagnosis can be made. The methods of propagation and the

mode of extension of gastric carcinoma are as follows:

1. Lymphatic: Aside from the region of the fundus where the lymphatics run towards the spleen of the cardia, other regions of the stomach, particularly the pyloric region, have lymphatics which converge toward the lesser curvature; those of the great curvature ascend behind the pylorus. The glands most frequently removed in cancer of the pylorus or the antrum are those of the lesser curvature. The subpyloric glands are invaded in 62.5 per cent. of the cases. 2. Propagation with the gastric walls takes place at the expense of the mucous membrane, rapidly reaching the submucous membrane which may contain white rounded nodules. This necessitates excision of the stomach wall for several centimetres from the apparent limit of the cancer.

If the weakness of the patient is due to a state of inanition from want of nourishment due to a stenosis of the pylorus, a two stage operation is indicated. The first stage is a gastroenterostomy which should be done under local anesthesia and in ten or fifteen days a resection is made. The presence of ascetic fluid, an abnormal largeness of the liver, enlarged supraclavicular or inguinal glands, neoplastic induration of the umbilicus and the existence of solid tumors of the ovary may be considered contraindications. Life may be prolonged by gastroenterostomy even when the condition of the patient is hopeless. Following the technic the smaller omentum is cut through and the greater omentum opened near the stomach so as not to injure the mesocolon; the liver is lifted up, the stomach drawn down, the falx of the coronary is ligated and severed, and the lymphatic ganglia found at this level are drawn down. The rubber covered clamps are placed on the stomach near the cardia and the viscus is cut between these two clamps, throwing it to the right and removing almost the whole of the lesser curvature. A thrust made with a sound into the duodenopancreatic furrow bares the gastroduodenal artery which can be ligated. The pylorus is separated from the great omentum and the duodenum is divided; the retropyloric ganglia are removed and the operation is terminated by a gastroenterostomy.

Pulmonary Suppuration.—C. A. Hedblom (*Medical Record*, September 13, 1919) from a review of the literature, with fifty-four cases from the Mayo Clinic and seventeen personal cases, summarizes as follows: 1. Pulmonary suppuration is relatively more frequent than is generally recognized. 2. Suppuration occurs on a preceding inflammatory basis or the infection is carried to the lung tissue through the bronchus, the blood stream, or by direct extension. 3. A persistent productive cough is the most characteristic symptom. The sputum is usually purulent and often foul. Other features of suppuration are present in varying frequency and degree. 4. Localized dullness to percussion and a circumscribed x ray shadow are the

most constant physical findings. 5. Pulmonary suppuration is probably frequently mistaken for phthisis. In thirty-three per cent. of cases reported in this article symptoms are suggestive of tuberculosis. 6. Suppuration and a tuberculous infection may coexist without etiological or anatomical relationship. 7. The differential diagnosis between localized bronchiectasis and abscess may be impossible; each predisposes to the other. 8. The treatment of localized suppuration is early free drainage; prolonged expectant treatment or inefficient drainage greatly increases postoperative morbidity and mortality. 9. Local and regional anesthesia is safe and in most cases satisfactory. 10. The abscess should be drained only through the adherent pleura or after the pleural cavity has been walled off by suture of the lung to the parietal pleura. 11. A two stage operation allowing a few days for adhesions to form around the suture line probably is the best safeguard against empyema, which is a frequent complication and the most dangerous one.

Etiology of Influenza.—G. E. Beaumont (*Lancet*, August 9, 1919) reviews the evidence which has been brought forth both for and against the *Bacillus influenzae* as a cause of influenza, and reaches the conclusion that there is considerable doubt as to its being the essential causative organism. He then presents the results of recent work by himself and by several other workers during the recent epidemics, undertaken to determine the true etiological organism. From this he concludes that the influenza bacillus does not even fulfill the first of Koch's postulates. During the recent outbreaks of influenza several different organisms have been suggested as the cause of the diseases but none of these has as yet been definitely established. The author himself has made extensive bacteriological investigations which have led to the frequent isolation of a mycotic organism from the sputum, the feces, the urine, and the blood, as well as from the pleural fluid in one case. This organism shows a wide range of forms in both the sputum and in cultures, including hyphae, large spores, coccal clusters, small spores, tetrads, mulberry masses, chains of cocci, and bacilli. He therefore suggests that it is possible that influenza is a mycosis, sometimes bronchial, at others intestinal. The author says that the originality of these findings belongs to Captain Fry, with whom he has performed the investigations.

Phases of Röntgenology.—William J. Young (*American Journal of Surgery*, September, 1919) states that in the beginning lesions of Pott's disease an x ray diagnosis cannot always be relied upon. In fractures and dislocations the diagnosis is more certain. In gastrointestinal abnormalities the radiologist must recheck his work to guard against error. Examination for calculi in the gallbladder or the urinary tract will only reveal thirty-three and one third per cent. of the existing concretions. The interpretation of chest pictures are a source of controversy, some workers asserting that a diagnosis can be made from peribronchial thickening, others giving a more reserved diagnosis. In taking stereoscopic pictures flat plates should be taken to check the results. The usefulness of the x ray for the

treatment of malignant disease has increased with the perfecting of x ray machines and tubes. In the treatment of deep lesions the *Alpha* and *Beta* rays are screened out, these softer rays being used for superficial lesions. In certain anatomical locations the x ray is extremely convenient. X rays and radium have found an added field of usefulness in the treatment of exophthalmic goitre. However, after several methods have been tried with no benefit the patient should be referred to the internist or surgeon. In the treatment of skin diseases the x ray and radium are important but these should be administered under the supervision of a dermatologist. Better results have been obtained in the treatment of keloids, lupus erythematosus, nevus vasculosis and nevus cavernosus with radium than with the x ray. When the lesion is too large to be covered by one application of radium the fear of overlapping is overcome by the use of the x ray. In regions like the buccal cavity where radium can be applied directly it is superior to the x ray. Where the involved areas are large and numerous fractional x ray doses are considered more beneficial. In psoriasis, eczema, and lichen planus where the lesions are generally distributed the x ray is preferable. In lichen planus almost immediate relief from the itching is obtained from the x ray. Care must be taken not to cause telangiectasis, x ray dermatitis or x ray burns, the latter two conditions being considered the more dangerous.

Observations on the Ileocecal Valve in Man.—

A. Rendle Short (*British Medical Journal*, August 9, 1919) was able to make observations on this valve in the case of a man who had a complete prolapse of the ileocecal region of both the large and small intestine. It was evident that the valve was a sphincter rather than a true valve. It was oval in shape and was surrounded by a distinct elevated ring of muscle which gripped the inserted finger. With the patient lying quiet in bed the sphincter remained closed and nothing came through for hours at a time. With the patient up and about there was rather more activity. The effectual stimulus to activity was the taking of food by mouth, fluids and solids having the same effect, but especially a proper meal of solids. The mechanism was evidently a reflex and was found to take place in from one and one half to four minutes. When activity began the sphincter relaxed, the orifice lay patent and measured an inch and a half across, and folds of the ileal mucosa were exposed to view. When it had relaxed it did not contract again until activity ceased. With relaxation a spit or two of gas and bubbles first came through, and then orange colored liquid fecal material gushed out and continued to come through in gushes of about half an ounce at intervals of half a minute. This continued while food was being taken and for a variable time afterward, usually about half an hour. Indigestible articles required about six hours to come through from the stomach. Neither acid nor alkali had any influence on the contraction of the ileocecal sphincter when applied directly to its mucosa. Stimulation of the mucous membrane of the cecum did not start and efflux through the sphincter.

Some Features of Neuralgia.—F. Wetterwald (*Presse médicale*, July 3, 1919) maintains that neuralgia is the sensory symptom of a general disorder of nutrition manifested simultaneously by other characteristic signs, viz., motor, vasomotor, secretory, and trophic disturbances. Spontaneous algia of a given nerve district is always accompanied by latent, but easily elicited, algia of other sensory nerves. Attacks of algia, in a single or in different areas, follow one another at more or less prolonged intervals in the same individual. Numerous observations show that the subcutaneous cellular tissue is the seat of predilection of algiæ, most of which occur in the cutaneous filaments of nerves and not in the nerve trunks. The terminal filaments are probably the seat of an interstitial neuritis or perineuritis. The pain may be diffuse or deep, but pressure reveals definite sensitive points, and pinching of the skin excludes myalgia. In cases in which all points in an area seem sensitive, palpation of folds of skin reveals a lardaceous, pasty infiltration with scattered nodosities of varying size—the so-called "cellulitis." This condition merges into or is allied to rheumatic nodosities, muscular rheumatism, evanescent nodosities, adiposis dolorosa, etc. The connective tissue of the bronchi, intestine, joints and glands may also be invaded, and the organs thus involved probably react by the production of special symptoms. Connective tissue is not solely a supporting tissue, but penetrates everywhere with the blood and lymph, and plays an essentially nutritive rôle in all more highly differentiated tissues. Its close relationship to the serous membranes explains the frequent confusion of its involvement with that of these membranes, in particular between cellulitis, lymphangitis, and localized peritonitis. Renault has shown that prolonged edema in a tissue results in subacute inflammation; the connective tissue then gradually assumes the form of mucous tissue and finally of cicatricial tissue. Along with the subcutaneous cellulitis perineuritis sets in, the sensory symptom of which is pain, manifest at certain special points previously described by Vallex.

Effects of Centrifugal Force on the System as Related to Aviation.—A. Broca and Garsaux (*Bulletin de l'Académie de médecine*, July 22, 1919) state that with the most recent types of airplanes capable of traveling at the rate of 320 kilometres an hour, the centrifugal force exerted in certain ordinary evolutions may attain nine times that of gravitation. Where unusually daring stunts are performed, the centrifugal force might even exceed this ratio. Experiments soon showed that there need be no apprehension of detachment of internal organs under the influence of this force but that circulatory disturbances and trauma of the brain centres against the skull demanded investigation. Dogs weighing ten to thirteen kilograms were placed in a centrifugal machine of sixty centimetres' diameter. When lying around the axis of the machine, with one temple exposed, the animals showed barrel movements after the centrifugation; these movements are due to pressure on the outer cerebellar peduncle. In addition, where the vertex was exposed,

the phenomena of cortical epilepsy—extensor spasm of the limbs, defecation, and clown movements—were noted when the dog regained his senses after being taken from the machine unconscious. Dogs were exposed to centrifugal forces equivalent to twenty, thirty, forty, and ninety-eight times that of gravitation for five minutes. None died except that in the last mentioned experiment. The autopsy showed marked but localized congestion of the portions of the lungs and liver under greatest stress, and in particular a very pronounced, general engorgement in the abdomen, nearly all the blood in the body having passed into this area. This effect is ascribed to the elasticity of the abdomen, owing to the intestinal gases. Death from centrifugation is thus due to anemia of the brain, lungs, and heart muscle, possibly in conjunction with compression of the solar plexus. Hence also the importance of examining the abdominal muscles in aviators and the probable utility of artificial abdominal support. Danger to life is slight in the healthy individual, but centrifugation is probably capable of impairing the precision of nervous reactions.

Normal Vital Capacity in Man.—Georges Dreyer (*Lancet*, August 9, 1919) has been able to establish the existence of definite relationships between vital capacity and body surface, body weight, stem length, and chest measurement, and to prove that vital capacity is not a simple function of height. He expresses his results in the following formulas:

1. As a function of weight the vital capacity can be expressed by the formula $\frac{W^{0.72}}{V.C.} = K_1$, K_1 being a constant. But as it is already established that $\frac{W^{0.72}}{S} = K_2$, where W equals the net weight, S equals the body surface, it follows that vital capacity is also a simple function of the body surface. The smaller and lighter the individual, with his relatively larger body surface, the larger will be his vital capacity per unit of body weight. In the preceding formulas the weight is expressed in grams and the vital capacity in cubic centimetres.
2. The relation of vital capacity to stem length is $\frac{L^2}{V.C.} = K_3$, where L is the stem length in centimetres and K_3 is a constant.
3. The relation to chest circumference— Ch —is $\frac{Ch^2}{V.C.} = K_4$, where the chest circumference is expressed in centimetres.
4. The relation between stem length and chest circumference to vital capacity can also be expressed by $\frac{L \times Ch}{V.C.} = K_5$. The mean values of the several constants are as follows: $K_1=0.69$; $K_2=1.9$; $K_3=1.84$; and $K_5=1.85$. From the facts noted above, the author suggests that a systematic measurement of the vital capacity and the various body measures indicated in adults and adolescents in different occupations and walks of life will afford most important information with reference to national health and will aid in the evaluation of such measures as may be contemplated for the improvement of the general health and well being of the people.

Renal Efficiency Tests and the Reaction of the Urine.—J. B. Leathes (*British Medical Journal*, August 9, 1919) finds that when a normal man is given nothing to eat or drink between supper and the following noon except 500 mls of water at eight a. m., the urine is acid during the night but shows a marked alkaline tide during the morning, continuing usually up to about eleven a. m. During the night also there is a reduced secretion of urine, while in the morning hours there is a diuresis. If the fluid taken be reduced to 100 mls there is no diuresis but the alkaline changes persist, showing that the phenomena of alkaline tide and diuresis are entirely separate. The study of nephritic patients in the same manner showed three abnormal types of response: 1, A type with normal alkaline tide but little or no diuresis; 2, a type with diuresis but no alkaline tide; 3, a type in which neither phenomenon appeared. Observations were made to determine the cause of the morning alkaline tide and it was found that a short period of voluntary forced breathing markedly increased the alkalinity of the urine or changed it from acid to alkaline. This was apparently due, as shown by analysis of the exhaled air, to a washing out of an excess of carbon dioxide. Studies made on the alveolar air taken at intervals during sleep at night also showed that there was then a higher proportion of carbon dioxide present than during the waking hours, suggesting that the alkaline tide is due to some variation in the activity of the respiratory centre during sleep. The significance of these findings remains to be determined by further investigations.

Diagnostic Study of the Residue of Gastric Digestion.—Léon Meunier (*Presse médicale*, July 3, 1919) states that he has long been convinced of the futility of the customary procedure of test meal study. The method fails because the acidity varies within wide limits even under normal conditions, and, secondly, because the stomach is mainly a motor and not a secretory organ and its disorders are therefore likely to depend largely upon insufficient evacuation. The author substitutes the following procedure: On the day before the test is to be made the patient takes his meals as usual but ingests a few cooked prunes after the evening meal. Next morning he is given a test meal consisting solely of 300 grams of mashed potatoes. Extraction of the residue is carried out four hours after the end of the meal. Before the tube is passed the patient takes ten grams of saccharose dissolved in 100 mls of distilled water. As soon as the tube has entered the stomach the patient is placed in recumbency in the prone posture; this greatly facilitates the extraction of the stomach contents. The patient is now slightly shaken in a transverse direction to mix the saccharose solution with the gastric contents. The latter being then extracted, the total amount of the gastric residue is calculated by titration with Fehling's solution after inversion of the sugar. To investigate the carbohydrate food residue in the stomach a qualitative test for starches with iodine is first made, and then the glucose estimated quantitatively without inversion, this substance constituting the end product of carbohydrate

digestion in the stomach. Normal subjects yield ten or fifteen mls of fluid consisting solely of residue of secretions—gastric juice, saliva, nasal or gastric mucus, etc. Under abnormal conditions the residue may amount to 100 or 200 mls. Yet even such a residue sometimes contains no trace of starch, showing that the view that gastric hypersecretion always implies pyloric retention is erroneous. Cases exhibiting no food residue comprise various disorders, but particularly digestive disturbances amenable to medical treatment. Cases with food residue are especially those requiring surgical treatment, e. g., cases with true stasis, showing residue of food taken on the day before or remnants of prunes and demanding immediate surgical measures, and cases running a more gradual course. Detection of the latter type of case by the author's method will permit of early surgical intervention on the pylorus under the best possible conditions.

Infection Due to a Bacillus of the Gaertner-Paratyphoid Group.—William MacAdam (*Lancet*, August 2, 1919) describes a series of nine cases of illness with symptoms not resembling those of the enteric group of infections and occurring among the men in Mesopotamia. Organisms were isolated in blood culture or in pure culture from the lungs, heart blood, or spleen which were indistinguishable morphologically and culturally from the paratyphoid B bacillus, but which were agglutinable by high titre typhoid and paratyphoid serums. The identity of the organism could not be definitely determined but it seemed evidently to be closely related to both the *Bacillus paratyphosus* B and the *Bacillus aertrycke*. It is probable that the same organism was described in epidemics occurring in Anatolia and Turkey.

Complete Urine Segregation with Olive Tipped Catheters.—Gudin (*Presse médicale*, June 26, 1919) calls attention to certain disadvantages of ureteral catheterization as ordinarily conducted which detract from the value of the procedure. When small catheters are used, a leak occurs between the ureteral walls and the catheter, so that segregation is imperfect. If larger catheters are employed, the cystoscope used must be of such large calibre that it is unavailable in adolescents or in adults with strictures. To overcome these difficulties the author now employs a ureteral catheter of a rather elongated olive shape with a single oval lateral opening. The olive is of such size that it fills the ureter completely and prevents leakage. The portion of the catheter to be passed through the cystoscope, however, need only be of such size as will permit the urine to come through—small, if the urine is clear, somewhat larger if it contains blood or pus. As the olive tip is too large to pass through the cystoscope, the catheter is simply passed first into the bladder alone, and the cystoscope then passed along it. The olive is then pushed up a few centimetres in the ureter and the urine collected without leakage. The author has had made three cystoscopes of different calibres. In each the electric bulb and catheter directors are placed on the lower aspect of the instrument while the beak is turned upward to facilitate manipulation.

The Whispered Voice Sound an Aid to the Early Diagnosis of Pneumonic Consolidation.—Henry H. Lissner (*Medical Record*, September 6, 1919) is enthusiastic over the value of whispering bronchophony in the early diagnosis of pneumonia, as proven in several hundred cases at Camp Pike, Arkansas. He believes that auscultation is more important than percussion for the early recognition of the disease, and with this sign it is possible to diagnose pneumonia even in the absence of bronchial breathing and dullness. The type of pneumonia may be determined by the extent of the whispered voice transmission, and the line of demarcation between bronchopneumonia and lobar pneumonia is easily made out. However, in cases of confluent bronchopneumonia it is not satisfactory. This physical sign is also of value because it makes for the early isolation of the patients in hospital wards.

The Autotoxic Factor in Sympathetic Ophthalmia.—Arnold Knapp (*Archives of Ophthalmology*, July, 1919) reports four cases of sympathetic ophthalmia. The autotoxic factor depended on the following: There was generally a history of improper diet and overeating, often associated with constipation. In two of the cases examination of the stools gave a highly toxic acid stool, large excess of skatol and indol and exclusively gram positive bacteria. The usual treatment for sympathetic ophthalmia, mercurial inunctions, sodium salicylate, pilocarpine sweats, did not seem to have much effect. The elimination of associated infections, abscessed teeth, and nasal sinus empyema did not exert any influence on the course of the disease. Regulation of the diet, thorough catharsis, and colon irrigation seemed to be the most effective agents.

Angina Pectoris and Syphilis.—O. Josué (*Paris médical*, July 5, 1919) concludes from a study of ten cases of angina pectoris that the Bordet-Wassermann reaction is positive in but one third of all instances of this disease. Nevertheless, antisyphilitic treatment proved efficacious in eight out of nine cases receiving it, even in the absence of all stigmata of acquired or congenital syphilis. Angina pectoris is thus in itself to some extent an indication of syphilis. In the eight cases reacting favorably to the treatment, the attacks were either completely eliminated or reappeared only after a more or less prolonged interval, usually with diminished intensity. In the ninth case no improvement followed eight mercurial injections, and the treatment was given up. The author advises energetic treatment by intravenous injections of mercury cyanide in all cases of angina pectoris, even where there is no indication of syphilis and the Bordet-Wassermann reaction is negative. The cyanide is injected on alternate days in the dose of 0.01 gram in courses of fifteen injections each. If stomatitis or intestinal disturbances begin to appear, the treatment is stopped. Due care of the mouth, including the use of a gargle of potassium chlorate, is advisable. If novarsenobenzol is used, it should be given only with great caution, beginning with 0.05 to 0.1 gram at three or four day intervals.

Hemostatic Forceps in the Small Intestine for Twelve Years.—Salva Mercadé (*Bulletin de l'Académie de médecine*, July 8, 1919) reports the case of a woman aged sixty-three who was admitted to the Beaujon Hospital with an acute inflammatory process in the left iliac fossa in one of a number of hernial pockets present. This patient had, in the previous twenty-one years, been subjected to four operations, the latest one twelve years before her last acute disturbance. During these twelve years she suffered frequently from indigestion and vomiting some hours after taking food, together with attacks of abdominal pain every month or even every week, accompanied by vomiting. At the operation carried out by Mercadé separation of the loops in the multilocular hernia proved a tedious task. A separate pocket containing pus was found in the left iliac fossa, and in it a sharp point was observed emerging from the small intestine. Enterotomy at a point twenty centimetres higher up exposed a hemostatic forceps minus one of its loops and with the other loop partly destroyed. After removal of the foreign body the bowel was closed and the parietes sutured with bronze wire, the loop of gut previously perforated by the sharp points being left outside the wound. Results were satisfactory for the first few days, but decubital ulcers subsequently formed in the septic and weakened patient and death occurred on the fourteenth day. The case is unique in that the foreign body remained for so long a period in the small bowel without inducing serious symptoms.

Signs and Symptoms of Early Ectopic Pregnancy.—N. Sproat Heaney (*American Journal of Obstetrics*, July, 1919) states that, in contrast with appendicitis, neglected cases are still the rule in extrauterine pregnancy, rather than the exception. In textbooks, more attention should be given to the early unruptured cases. Almost invariably the patient has backache or cramps, which she calls "gas pains," for days or even weeks preceding the rupture. Any patient who has gone by her regular period and complains of cramps in the side of the pelvis or of gas pains should be looked upon as possibly suffering from ectopic pregnancy. Amenorrhea is too prominently mentioned in the symptomatology. Most women coming to operation are not suspicious at the time that they are pregnant. Quizzing the patient usually brings out that she had what she considered a belated period, in which bleeding was scanty, lasted a few hours or a day or so, and later reappeared at irregular intervals. The irregular bleeding was so prominent that the patient forgot she had actually skipped a period. Any patient with suspicious symptoms of threatened, imminent, or incomplete abortion is a possible case of ectopic pregnancy. Another point overemphasized is the passage of a cast of the uterus or of portions of decidua. Any shreds expelled usually escape with blood clots, so that the patient is not cognizant of their passage. Chorionic villi prove uterine pregnancy, but their absence does not exclude it unless the complete decidual lining has been examined. Great care is taken to teach that the uterus enlarges in ectopic pregnancy, but in most cases the sac ruptures before much enlargement can occur.

for undeveloped uterus and tubes create a special liability to ectopic pregnancy. Similarly, rupture often takes place before nausea, breast symptoms, or enlargement of the appendages can occur. Too much stress is apt to be laid on the complete clinical picture of rupture. Usually the larger and dangerous hemorrhage is preceded by one or a number of smaller though typical attacks of partial rupture of the tube. Any woman of obstetrical age who is seized with abdominal pain, followed by shock or syncope, even if transient, is a possible case of ectopic pregnancy. Reliance upon the blood count may lead to error. In a case with severe abdominal pain followed by nausea and perhaps vomiting, a leucocytosis with normal or subnormal temperature should lead to a diagnosis of probable ruptured ectopic pregnancy. In doubtful cases, exploratory vaginal incision is advisable.

The Hematopneic Index.—Amar (*Presse médicale*, June 26, 1919) states that by estimation of the gaseous interchanges and respiratory ventilation under certain definite conditions, a diagnostically important coefficient, the hematopneic index, or K, is obtained. This index is an expression of the intensity of blood oxygenation or hematosi. Under the conditions specified, $K=1.20$. Deviations from this figure clearly demonstrate all abnormal states, such as affections of the respiratory system, in particular tuberculosis; overwork and breathing in a confined space, or sequelæ of gassing. The course of the abnormal state, as well as the results of respiratory training, can thus be regularly followed. The quantity, K, found in tuberculous subjects shows a lowered nutritive state—being reduced to one, or by twenty per cent.—an insufficient lung ventilation with dyspnea, and probably an increased permeability of the alveolar walls. Fatigue, even of moderate degree, is shown to be incompatible with lung tuberculosis.

The Microorganisms Found in Canned Foods on the Market.—E. W. Cheyney (*Journal of Medical Research*, July, 1919) reports the results of an extensive investigation which was carried out on canned foods bought in the open market. Some 725 cans of meat, fish, vegetables, and fruit, all purchased in first class condition, were examined for bacteria, molds, and yeasts. The methods and media employed are described in detail. Before examination each can was incubated at 37° C. for at least ten days. A study of the tabulated results shows that fifty-eight of the 725 cans, or eight per cent., contained viable organisms. None of the organisms isolated were pathogenic. They were found more frequently in the canned meats and fish examined than in the vegetables and fruits, and an interesting fact is that a uniform average was found throughout for each food. For instance, sixty-two cases of pineapples were tested, and all were sterile, and thirty-three cases of peas likewise showed no growth, while seven of thirty-nine cans of sausage, seven of forty cases of corned beef, and seven of thirty-four cans of salmon showed viable organisms. In regard to the organisms isolated, they belonged to a sharply limited group involving forms producing resistant spores in most

instances. All the bacteria found belonged to one group, the *Subtilis vulgatus* series and their cogeners in the thermophiles and anaerobes. The molds *Aspergillus* and *Penicillium* were also found. *Bacillus vulgatus* was present most often (ten times), appearing in practically every case of leakage. Two borderline yeasts are described. The molds were associated with the fruit cans and the bacteria chiefly with the meats, while cans of lobster and crab were the only ones which contained the thermophiles. Apparently the bacteria and molds are capable of persisting in some instances through the present methods of canning, so that the usual methods of processing must be increased to obtain sterility in these foods.

Types of Streptococci Found in the Sputum of Bronchial Asthmatics.—I. C. Walker and J. Adkinson (*Journal of Medical Research*, July, 1919) examined sixty-five specimens of sputum from fifty asthmatic individuals, and using Holman's classification, found that the hemolytic streptococci were included in four main types—that is, subacidus, anginosus, pyogenes, and infrequens, and the non-hemolytic streptococci fell into the following main groups: nonhemolyticus 1, ignavus, salivarius, and mitis. As the washed sputum contains so few types these authors found it practicable to use autogenous sputum vaccines in these cases, which, however, should be made at frequent intervals, as the predominating type of organism may vary in the sputum at different times. Therefore the vaccine may not contain the particular organism which is causing the trouble, which necessitates frequent examinations. Thirty-five cases of the series were treated with autogenous sputum vaccines consisting of the predominating type with the following results: ten patients were relieved of asthmatic attacks; thirteen were much improved, and twelve were unimproved.

Insusceptibility of Man to Inoculation with Blood from Measles Patients.—Andrew Watson Sellards (*Bulletin of the Johns Hopkins Hospital*, September, 1919) was unable to transmit measles to human subjects by the inoculation of blood from man to man. The investigation was carried on at Camp Devens, Mass., and Camp Meade, Md., where eight suitable susceptible volunteers were accepted for the experiment. Inoculations were made in the following ways: the serum from a case of measles free from red cells was injected subcutaneously; defibrinated blood and blood incubated in ascitic broth was used, freshly excised morbillous skin lesions were employed to smear the mucous membranes of eyes, nose, and throat, and blood from the pre-eruptive and eruptive stages was used. The negative results obtained in all the experiments are at variance with the successful experiments previously reported by other observers under essentially similar circumstances, notably the two cases of Hektoen. This work therefore reopens the question of the transfer of measles from man to man by the injection of a patient's blood, though the author points out that this does not exclude the possibility of the occurrence of the virus in the circulating blood.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

*Thirty-first Annual Meeting, Held in Atlantic City,
N. J., June 16, 17, and 18, 1919.*

The President, Dr. EDWIN E. GRAHAM, of Philadelphia,
in the Chair.

(Continued from page 571.)

Certain Aspects of Cutaneous Hypersensitiveness.—By Dr. E. C. FLEISCHNER and KARL F. MEYER, D. V. M., of San Francisco. Doctor Fleischner read this paper in which experimental proof was given to show that cutaneous hypersensitiveness was not present in sensitized uninfected guineapigs. The value of cutaneous hypersensitiveness was tested in the diagnosis of chronic diseases of guineapigs, including tuberculosis, abortion disease, rodent paratyphoid, and undulant or Malta fever, and it was found that cutaneous hypersensitiveness was always an indication of the presence of a focus of infection. There was no evidence of its being an indication of immunity. The *Bacillus melitensis* infections in guineapigs were found to be similar to those of the *Bacillus abortus*. There was further and more conclusive evidence than the positive serological relationship in the pathogenicity, and the apparently identical microscopical findings of gross changes involving the viscera of cutaneous hypersensitiveness.

Discussion.—Dr. D. M. COWIE, of Ann Arbor, inquired if Doctor Fleischner had carried out observations on the offspring of animals with this disease and if they were also hypersensitive.

Doctor Fleischner replied that they had made these experiments but had never been able to discover hypersensitiveness in the offspring. Theobald Smith had examined the microscopical specimens and gave it as his opinion that the lesions in the spleenolymph nodes and liver could not be distinguished from those of abortion disease.

Quarantine and Disinfection in Scarlet Fever.

—Dr. J. CLAXTON GITTINGS, of Philadelphia, lieutenant-colonel, Medical Corps, United States Army, read this paper in which he reported the methods pursued in this direction at the United States Army General Hospital No. 9 at Lakewood. The proper length of quarantine would always be an open question until the infecting organism of scarlet fever was demonstrated. The chronic carrier would seem to be the most likely agent in the spread of this disease, as was the case in meningitis and diphtheria. *A priori* the unhealthy nasopharynx and throat might be suspected of harboring the infection. Examination by throat specialists might enable the prevention of the discharge from treatment of the potential carrier. Thirty-five days or less might be considered the danger period in mild cases with healthy throats. It was much better, however, to increase this period than to run any risk. Thorough cleansing was necessary after infection. Disinfection with formaldehyde gas in proper concentration and with sufficient moisture probably would destroy the organism of scarlet fever. Disinfection of linen and woollens and disinfection and removal of the dust which accumulated on floors and furniture fol-

lowed by thorough sunning and airing appeared to be the actual requirements for safety.

The first consignment of patients in February, 1918, consisted of 139 cases of scarlet fever. At this hospital it was possible to secure absolute quarantine of two entire sections. The sleeping quarters and mess of the nurses on duty in the wards were isolated; and the ward attendants slept in a portion of the contagious wards but were allowed to mess together in the mess hall on the lower floor, after change of caps and gowns and careful disinfection of the hands. Every stage of scarlet fever was represented, twenty per cent. being within the first five days of the disease. Opportunities for contagion therefore were numerous, but only five additional cases developed from contact. Two of the five occurred in assistant and ward attendants after one or two weeks' service in the wards; one developed six days after preparing a large number of infected blankets for sterilization.

The patients were all quarantined for at least forty-two days from the date of diagnosis. A careful examination was made on the fortieth day and all those with throat, nose or ear symptoms were inspected by the nasopharyngeal specialist, who decided the question as to the possibility of their being carriers of contagion. Further treatment was found to be required by forty-one per cent., so the average period of quarantine was forty-seven days. This extension of time was partly due to the development of several cases of mumps. Each patient was given the regulation bath, a shampoo, and a change of clothing at the conclusion of quarantine and was then transferred to a clean ward. All soiled linen was soaked in two per cent. liquor cresolis solution for two hours or longer before being sent to the laundry. Shoes, hats, and leather belts were exposed to formaldehyde gas in sealed closets for twenty-four hours. Blankets and patients' woolen clothing were sterilized in the autoclave. After the evacuation of the ward, such hall carpets and paper wadding as were necessarily used to deaden sound were rolled and carefully dropped from a window and then spread out in an unfrequented space in the hospital grounds and left to air for forty-eight hours, afterward being carefully brushed and stored. The floors of the wards and halls were mopped with a copious supply of a two per cent. solution of cresolis and all flat surfaces, beds, furniture and woodwork were wiped off with the same solution. The mattresses were left to air on the beds, every window in the ward being left open for three days. These wards were again occupied within two weeks and no other case of scarlet fever developed in this hospital until February, 1919. The contagion was not conveyed to any one in Lakewood or elsewhere.

Regarding complications, eleven patients developed such serious ones as pleurisy, otitis media, mastoid infection with subsequent cerebellar abscess, nephritis, and myocarditis. Thirty-seven patients developed mild complications, such as transient albuminuria, bronchitis, functional cardiac disorder, pharyngitis, and peritonsillar abscess.

Discussion.—Dr. D. J. MILTON MILLER, of Atlantic City, believed that desquamation should be the ordinary test by which to determine the period of quarantine, and that quarantine should be continued until desquamation was complete.

Dr. J. P. CROZER GRIFFITH, of Philadelphia, personally thought that desquamation was not a criterion as to the period of time during which scarlet fever was contagious since it was communicated by contact. There were other skin diseases besides scarlet fever in which desquamation might occur, and such diseases might exist coincidentally with scarlet fever.

Dr. HENRY HEIMAN, of New York, expressed his belief that to acquire scarlet fever one must come into contact with another who had the disease or with a carrier, the former being the more dangerous. It was a relief to get away from the exploded superstition that scarlet fever was carried in clothing. Formerly the scarlet fever period of quarantine in New York was forty days, while at the present time it was only thirty days. The susceptibility of children to scarlet fever was very much less than to measles, being only thirty to thirty-five per cent., while ninety or ninety-five per cent. of those exposed to measles succumbed.

Dr. J. H. MASON KNOX, of Baltimore, thought that where there was any suspicion as to the possibility of scarlet fever it was more important to isolate the patient early in the course of the disease than later. The sore throat appeared before the eruption and he had seen epidemics started by early cases before the eruption appeared.

Doctor Gittings, in closing, expressed his belief in the sufficiency of thirty days' quarantine. Nevertheless if a child or susceptible person came in contact with a person with scarlet fever it was far better to err on the safe side and continue the quarantine for at least six weeks.

(To be continued.)

Letters to the Editors.

REPORTING CASES OF PNEUMONIA.

Dr. Hermann M. Biggs, State commissioner of health, sends the following open letter to the physicians of this State:

ALBANY, N. Y., September 24, 1910.

Dear Doctor:

The sanitary code requires that all cases of pneumonia shall be reported to the local health authorities as soon as diagnosis can be made. In the reports lobar and bronchial pneumonia should be differentiated. Recent reports of deaths indicate that this disease has not been well reported during the last few months. The reports indicate that deaths are recorded where no cases have been reported. Physicians are entitled to compensation for reporting each case of pneumonia even though it has been previously reported as a case of influenza.

Hoping for your continued assistance and co-operation in this matter, I remain,

Very truly yours,

HERMANN M. BIGGS,
State Commissioner of Health.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

War Surgery of the Face. By JOHN B. ROBERTS, A.M., M.D., F.A.C.S., Professor of Surgery in the University of Pennsylvania Graduate School of Medicine; Lecturer in the Civilian School of Plastic and Oral Surgery Established in Philadelphia by the Surgeon General, U. S. A. Illustrated. New York: William Wood & Co., 1910. Pp. viii-442.

This is indeed a carefully thought out book. As industrial surgery is today based on the findings of war surgery furnished during the last war so it is shown in this book that the basis of war surgery was taken at the beginning of the war from the latest developments in industrial surgery. The illustrations are taken at random; at times the industrial burn or accident will better illustrate the type of lesion discussed and again a war lesion may be used to illustrate the point under discussion. All this is important, for it demonstrates that the value of study of a book of this type is not limited to the physician who is intending to follow the field of war surgery, but is of use to any physician in active practice who may be confronted by the problem of facial restoration.

The anatomy of the face is given and presented from the viewpoint of the surgeon rather than the anatomist. This is of practical value. In the chapter on associated injuries a goodly portion of the cranium is covered as well as the larynx, trachea, and esophagus. The injuries to the eye, nose, and ear are also taken up in some detail. Shock is taken up and the various theoretical and practical points brought out. The proper use of the x ray is also emphasized. The general topics of hemorrhage and anesthesia are covered. A chapter is devoted to combustion wounds, frost bites and electric currents. These are of special importance due to these incidence in civil practice. Various plastic and restoration operations are then described. These are given in anatomical order and rather completely presented.

Doctor Roberts modestly asserts that the book is the result of an afterdinner chat with some colleagues. In spite of its unostentatious origin it has turned out to be an excellent piece of work which should serve as an extremely valuable guide in oral and cranial surgery.

An Outline of Genitourinary Surgery. By GEORGE GILBERT SMITH, M.D., F.A.C.S., Genitourinary Surgeon to Outpatients, Massachusetts General Hospital; Assistant Visiting Surgeon, Collis P. Huntington Memorial Hospital; Captain, Medical Corps, U. S. Army; Fellow, American College of Surgeons, etc. Illustrations by H. F. AITKEN. Philadelphia and London: W. B. Saunders Company, 1910. Pp. 300.

The author has produced within the compass of several hundred small pages a practical and serviceable guide to the practice of the genitourinary diseases. Wisdom has been exercised in passing briefly over conditions involving major surgery and devoting more detailed attention to those which deal with medicine or minor surgery. The result is a work that appeals to the practitioner who treats

these diseases without, at the same time, practising major surgery.

The general tone of the work is one of moderation and clear thinking; there are no fads or fancies to be exploited. It appears to the reviewer, however, that some of the more recent advances in the diagnosis and treatment of urinary diseases are not sufficiently emphasized, as illustrated, for instance, by the statement that "the application of silver nitrate to the posterior urethra is more successful when made with the Keyes's instillator than when applied by a swab through the endoscope." Surely this statement will be read with surprise by urologists who have been using the posterior urethroscope so successfully in the treatment of posterior urethral conditions.

Urologists of large experience will likewise read with more or less surprise and disappointment at their own shortcomings that "the case of gonorrhea that cannot be cured by the simple measures of dilatation, lavage, and massage is a rarity." We regard this statement as quite overdrawn and at variance with the experience of most workers in this field. The author must be commended, however, for the bit of truth expressed in the remark, which follows the one just quoted, that "the chances of doing harm by more complicated treatment are many." The reviewer is of the opinion that the truth lies exactly midway between these quoted expressions, in so far as moderation, simplicity, and gentleness in treatment are absolutely essential to a cure in gonorrhea. It is an error, however, to feel that the newer methods are to be discarded just because they are sometimes abused by incompetent hands.

This little volume is full of meat, so to speak, and even though one may disagree with some of the views expressed, he must feel that it is a fair presentation of the important points in the symptomatology, pathology and treatment of genito-urinary diseases. From this standpoint, it has distinct merit.

Surgery in War. By ALFRED J. HULL, F.R.C.S., Lieutenant Colonel, Royal Army Medical Corps; Surgeon, British Expeditionary Force, France; Late Lecturer on Surgical Pathology, Royal Army Medical College, Millbank, and Surgeon, Queen Alexandra Military Hospital. With a Preface by Lieutenant General T. H. J. C. GOODWIN, C.B., C.M.G., D.S.O., Director General, Army Medical Service. Second Edition, with Two Hundred and Ten Illustrations. Philadelphia: P. Blakiston's Son & Co., 1919. Pp. xv-624. (Price, \$6.)

Practically every phase of war surgery has been thoroughly covered in this extensive book. Most of the material used is the result of the findings during the past war. The evolution of the various stages and developments of surgery during the war is carefully traced. All this is of importance for it shows how new methods were evolved and the factors which caused their development. There is no attempt made at teaching general surgery. It is presupposed that the reader has a working knowledge of surgery and that he is able to go on with the special work demanded in war surgery and only the technic and discussions are furnished. In this the second edition some of the chapters have been rewritten, while others have been added. The subject of shock is discussed in some detail. Per-

haps the most important section of the book is the one given to wound infection. This, the most frequent complication encountered in war surgery, and at present the simplest to treat according to the logical methods devised during the last weeks of the war, is perhaps less clearly understood in civil practice than many more involved subjects. This well written section could be carefully studied by any one not thoroughly familiar with the various surgical methods for combating infection. Most of the subjects taken up in this book have their application in civil surgery.

Bacteriological Technic. A Practical Manual for Workers in Pathological Histology and Bacteriology, Including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By FRANK BURR MALLORY, A.M., M.D., Associate Professor of Pathology, Harvard Medical School; Pathologist to the Boston City Hospital, and JAMES HOMER WRIGHT, A.M., M.D., S.D., Pathologist to the Massachusetts General Hospital; Assistant Professor of Pathology, Harvard Medical School. Seventh Edition, Revised and Enlarged, with One Hundred and Eighty-one Illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Pp. 555. (Price, \$3.75.)

In a number of medical schools this book has for many years been the standard textbook. This is the seventh edition and should prove to be as popular as ever. Little need be said of this well known and excellent manual. It is at all times clear and definite without losing any scientific value. The aim at all times is practicability. In the new addition postmortem technic has been placed at the end of the book. Attention is called to the additions as Goodpasture's acid polychrome methylene blue stain; Graham's oxidase stain; Benians's Congo red method for the demonstration of spirochetes; Claudins's stain for flagella; and the serum treatment classification for pneumococci. The use of the safety razor blade for section cutting, the employment of benzene in paraffin embedding and Rubashkin's method of fixing collodion and frozen sections to the slide for staining are described.

Births, Marriages, and Deaths.

Died.

- ALLEN.—In Holyoke, Mass., on Thursday, September 11th, Dr. Carl Addison Allen, aged seventy-two years.
BICHELE.—In Wooster, Ohio, on Wednesday, September 3d, Dr. Robert Aloysius Bichele, aged fifty-two years.
BRUCE.—In Chicago, Ill., on Monday, September 8th, Dr. Edward Malcolm Bruce, aged fifty-eight years.
BURFORD.—In Indianapolis, Ind., on Friday, September 12, Dr. John T. Burford, aged seventy-one years.
CURRAN.—In Mankato, Minn., on Monday, September 1st, Dr. George Robert Curran, aged fifty-six years.
DEACON.—In Cambridge, Mass., on Saturday, September 20th, Dr. Thomas J. Deacon, aged forty years.
HOCH.—In San Francisco, Cal., on Tuesday, September 23d, Dr. August Hoch, aged fifty-one years.
KURR.—In Lebanon, Pa., on Sunday, September 21st, Dr. T. A. Kurr, aged forty-two years.
MCMURDO.—In San Francisco, Cal., on Thursday, September 11th, Dr. John McMurdo, aged sixty years.
PETTY.—In Oklahoma City, Okla., on Wednesday, September 10th, Dr. W. G. Petty, aged sixty-five years.
THOMAS.—In New Tazewell, Tenn., on Saturday, September 13th, Dr. D. Thomas, aged fifty years.

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Original Communications

POTENTIAL AND ACQUIRED STATIC FLAT FOOT.*

BY EDWARD H. OCHSNER, B. S., M. D., F. A. C. S.,
Chicago,
Attending Surgeon, Augustana Hospital.

The subject for consideration was chosen for a number of reasons; first, because of its prevalence; secondly, because of what I consider an increasing prevalence; and finally, because we have at our disposal a very simple method of not only relieving the symptoms of flat foot, but of anatomically curing the condition. These may sound like strong statements, but I believe that by the time you reach the end of this paper you will agree that they are substantially correct.

Some twenty years ago I became interested in the subject of flat foot. I made a rather long and painstaking study of it. Among the statistics on flat foot, I found, for instance, in Munson's (1) work, the statement that out of 9,001 members of the Illinois National Guard, who offered themselves for the United States service in 1898, thirty-three, or 3.3 to the thousand, were rejected because of excessive or painful flat foot. All of these had previously passed the physical examination required to enter the State militia. A few years later I wrote a letter to the Surgeon General's Office and obtained the following statistics: During the years 1903, 1904, and 1905, 132,145 men were examined for the United States Army. Of this number 457, or 3.4 to the thousand, were rejected because of excessive flat foot. Any one who has been engaged in examining men for the National Army in the recent draft knows that either one of two things has happened, either the figures given above were too low as an average even twenty years ago, or flat foot has increased alarmingly since then. I think both are true. I believe that the figures were too low even for that period because only reasonably able bodied men offered themselves for the army, and I believe that flat foot has increased tremendously in the last twenty years and is still on the increase. Later I will try to explain what produces not only the prevalence but the ever increasing prevalence.

In support of the fact that the number of cases of flat foot are enormously greater than the figures I have given you we have certain evidence. I

served on the medical advisory board for Chicago and vicinity and it seemed to me that every second or third man that came to me for examination had flat feet. We received the borderline cases, but other examiners have told me exactly the same thing, namely, that they were astonished at the prevalence of flat foot among registrants. We also have some definite statistics in regard to this matter. These were taken from what I consider an absolutely reliable source (2). Examination of the records of 72,410 men for the service of the United States Navy for 1914 showed that seventy-six per cent. were rejected. Of the total number rejected, 10.77 per cent. were rejected for flat foot; or, in other words, 8.22 per cent. of the total number examined were rejected for this condition. This is thirty-one times as large a rejection as in 1898 and 1903-1905. It must not be forgotten, however, that previous to our entrance into the war, the navy was exceedingly rigid in its physical examinations. When the complete statistics of the present war are available we shall, I believe, find further statistical evidence of not only the great prevalence of this affection but also of the statement that flat foot has increased astonishingly during the past two decades, even though we must admit that a part of the apparent increase is due to better diagnosis.

One reason why so many mistakes have been made in the diagnosis of this condition in the past is to be found in the faulty nomenclature which has been employed. None of the terms, such as flat foot, weak foot, splay foot, pes valgus, or pes flexus pronatus reflexus of Henke, adequately express the condition. I, therefore, some twelve years ago, in a published article, introduced the word potential, calling the whole symptom complex potential and acquired static flat foot. The former, the transition stage from the normal to the latter, while the most often overlooked, is many times the more painful and incapacitating, and the stage in which treatment is most effective and a cure most rapidly accomplished.

DEFINITION.

Potential flat foot is a weakened condition of the arch due to a disproportion existing between the strength of the foot and the strain to which it is exposed, in which the strain has not been severe enough to break the arch. Acquired static flat foot is an acquired compound deformity in which the foot assumes an abnormal relation to the leg and the bones of the foot abnormal relations to each

*Presented before the fifty-third annual convention of the Kansas Medical Society at Ottawa, Kansas, May 7, 1919.

other. This results in improper distribution of weight and strain, abnormal function and loss of arch. In order that treatment may be uniformly successful in both types of cases it is absolutely essential that the physician in charge of the case keep constantly in mind certain fundamental facts



FIG. 1.—Illustrates common disproportion in foot and shoe. Dotted line, outline of foot; solid line, outline of shoe.

in reference to the anatomy, pathology, etiology, and symptomatology of this condition.

ANATOMY AND PATHOLOGY.

The normal shape of the foot is maintained by three distinct factors: First, the shape of the bones; second, the ligaments and fascia, and finally the muscles. If a disproportion exists between the weight which is borne and the strength of all of these three factors, the longitudinal arch must give and flat foot result. The first to suffer in the development of flat foot are usually the muscles. The ligaments and fascia come next and deformity of the bones last. General muscular weakness predisposes to flat foot, but the *tibialis anticus* and the *tibialis posticus* are the two muscles most involved in this condition. If they become weakened or overstretched, the foot is abducted and everted, the weight of the body is then borne not on the centre of the arch but internally to it and the arch is put to a very great mechanical disadvantage, with the result that in extreme cases the relation of the tarsal bones to each other is markedly changed and ultimately even their shape becomes altered.

ETIOLOGY.

The etiology of this condition may be divided into three main classes: First, relative weakness of the muscles; second, excessive weight bearing; third, anything which has a tendency to disturb the proper relation of the bones to each other, such as faulty attitudes and faulty footwear. Anything which causes relative weakness of the muscles, particularly of the *tibialis anticus* and *posticus* predisposes to flat foot. Among the most common causes which produce weakness of the muscles may be mentioned acute and chronic diseases and puberty. It is interesting to note that if the flat foot histories are carefully taken, a large majority of these patients refer their flat foot pains to about the age of puberty. Thus, Royal Whitman (3) stated that 57.3 per cent. first come to the physician between ten and twenty-five years of age. Hoffa (4) says,

61.6 per cent. between eleven and twenty-five years, while the same author gives 50.7 per cent. between sixteen and twenty-five years of age. In what proportion of those who come for treatment later did the symptoms develop shortly after puberty I have been unable to glean from the literature, but in my experience at least, the great majority state that their first symptoms occurred about or shortly after puberty. F. Peterson (5) explains this fact by the observation that the body constantly gets heavier at this time, the muscles stretch out but do not get correspondingly thicker. Stanley Hall (6) says virtually the same thing, when he makes the statement that during puberty the different structures grow with different degrees of rapidity causing a temporary increase in weight without corresponding muscle strength. Unfortunately, at just about this period in life many of our young people leave school, begin their life work which often entails excessive weight bearing and excessive fatigue and it is no wonder that they at this time lay the foundation for a condition, which, if not vigorously combated, may impair their usefulness for life. Beginning of the breaking of the arch usually causes a great deal of pain. The patient in order to get away from his pain assumes the attitude of rest so well described by Annandale. This throws excessive strain on the fascia and ligaments, which is followed by their stretching causing a subluxation of the bones with a change of their axis and weight bearing surfaces, which must sooner or later result in the change of their shape. Another factor which aids in producing this result is faulty footwear. More particularly the shoes, though even the stockings often play an important role in the production of flat



FIG. 2.—Illustrates Heiberg's sign, showing lateral deflection of left tendo Achilles, one of the first signs of flat foot.

foot. This was very well brought out by John A. Sampson (7). Since his excellent paper was written many orthopedists have devoted considerable thought and attention to securing proper footwear, but unfortunately their work has not borne much fruit in so far as preventing the mass of the

people from being compelled to wear ill fitting shoes. The shoemakers, as a general rule, both custom and factory, are much more concerned about bringing out a new style of shoe which will result in large sales than in making a shoe which actually fits the foot and which will give the wearer



FIG. 3.—Illustrates reproduction of Volkmann's flat foot imprints, showing: A, Imprint of normal foot. B, Beginning of flat foot. C and D, Terminal conditions.

the greatest comfort and efficiency. The shoemakers seem to forget that space has three dimensions and in the manufacture of shoes they actually consider only two, namely, length and breadth. Thus, if a lady buys a 5-B shoe, she gets a size which represents a definite length and a definite width, but which pays no attention to the third dimension, height. As a result, many people who start out with excellent insteps soon suffer from foot trouble because constant pressure is made on the instep from a shoe that is too small at this point. This pressure abducts and everts the foot and if the pressure is allowed to continue long enough breaking of the arch must follow. This fault is illustrated in Fig. 1 which is a schematic drawing of the relative size and shape of an actual shoe and the cast of a foot upon which the shoe has been worn for many months. This shows a needless strain that this foot had been placed in for a long time.

Physicists tell us that action and reaction are equal and in opposite directions. Feet, which year after year have to break in shoes which are too low over the instep, will sooner or later be themselves broken at this point. Then, to make the bad condition worse, along comes the shoemaker with his cureall arch supports. While arch supporters sometimes relieve flat foot pains, they never cure flat foot, simply because they relieve the tibialis anticus and posticus muscles from all function, thus causing still further atrophy of those muscles, and in addition they have a tendency to accentuate the faulty position by favoring abduction and eversion. If arch supporters are worn before flat foot has developed they have a tendency to actually produce flat foot and the common wearing of arch supporters is, I believe, the principal reason why flat foot is so on the increase. There is a commercial reason why arch supporters are so commonly worn. Some months ago I had occasion to step into one of our large shoe stores to see the manager on some business. While waiting for this gentleman fifteen minutes I spent the

time critically watching the shoe salesmen. Practically every time when the salesman had sold a pair of shoes, he suggested to the customer that he ought to wear arch supports. In a very considerable proportion of the cases the customer was actually persuaded to purchase them. When the manager finally arrived and my business with him was finished, I casually remarked that I observed that his salesmen were selling a large number of arch supports and asked him why they were doing it. He looked at me rather sheepishly and answered that as a matter of fact their profit on arch supports was nearly as large as on shoes, and that the capital invested was much less and as a rule it took much less time to sell a pair of arch supports than a pair of shoes. The whole matter was evidently on a purely commercial basis, caring little or nothing for the welfare of the customer. I understand that this is a prevailing custom in most of our large shoe stores. If so, it will be absolutely necessary to educate our people and teach them the baneful effect of arch supports, otherwise our American public is going to suffer more and more from flat foot. The first thing that will be necessary, however, is to educate our orthopedic surgeons not to prescribe arch supports, for as long as they continue to do this the practice will have a standing in court and shoe salesmen a legitimate excuse.

SYMPTOMATOLOGY.

Some of the first symptoms that the patient complains of in the development of flat foot are cyanosis, coldness, numbness, sweating of the feet, fatigue on the slightest exertion and general ill defined discomfort. These symptoms are not only the first to occur, but often the first to disappear when the proper treatment is instituted. The first and never failing sign is an outward deflection of the tendon Achillis, a sign first described by Helbing (8). If the patient is directed to stand on an elevated platform with his back toward the examiner, this sign will be found in every case of flat foot, even in its earliest incipency, as is illustrated in Fig. 2. Another early sign is the tendency these patients have to assume the attitude of rest, so well described by the great English surgeon Annandale. This attitude is assumed unconsciously in the hope of relieving the tired muscles and throwing the strain upon the bones and ligaments. The more often it is assumed, the more pronounced the

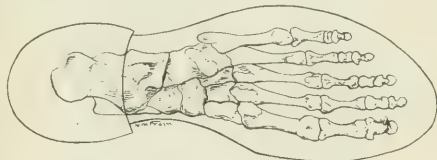


FIG. 4.—Illustrates proper shape of shoe.

peculiar abduction will become and eversion of the foot with the ultimate breaking of the arch, as illustrated by the flat foot imprints. Well made imprints of the sole of the foot are sometimes of help in making a diagnosis and always of interest in watching the progress of the condition, but we

must not forget that there is no direct relation between the sinking in of the arch and the severity of the symptoms or the degree of disability. A beginning flat foot may be so painful as to utterly incapacitate the patient from all work and yet show no loss of arch. We must ever remember that "flat



FIG. 5.—Illustrates the method of marking the adhesive plaster preparatory to strapping.

foot is a compound deformity in which the abnormal relation in foot and leg, causing the improper distribution of weight and strain and disuse of normal function, is of vastly greater importance than the depression of the arch which has given the name to the disability" (9). A copy of the now classic Volkmann flat foot imprints is introduced here (Fig. 3), not so much for the purpose of urging its use in making a diagnosis of the condition as to emphasize what has just been said, namely, that a beginning flat foot such as would make imprint B may be much more painful than a fully developed flat foot such as would make imprint D, of even a potential flat foot, the imprint of which may not differ in the least from the normal imprint A, may cause much more discomfort than a fully developed flat foot, imprint D. The making of flat foot imprints is especially urged because it will demonstrate as nothing else can, the progressive improvement in the condition as the treatment continues.

If the factors producing the tendency to flat foot are not relieved the fatigue and discomfort above alluded to will become actual pain. The pain can usually be analyzed as occurring in one or more of the following seven places, namely:

1. Where the tuberosity of the scaphoid and the head of the astragalus make pressure on the calcaneoscaphoid ligament. In severe cases, a bursa may even form here, which may become inflamed and even suppurate and the pain at this point may become excruciating.
2. Middorsum of the foot where scaphoid impinges on the neck of the astragalus.
3. On the outer surface of the foot where, because of the rotation, the external malleolus rubs against the astragalus.
4. Plantar surface of heel. This point of pain has often been mistaken for a gonorrheal periostitis. While gonorrheal periostitis has occurred here occasionally, the pain at this point is much more frequently due to flat foot than to gonorrhea.
5. At metatarsophalangeal junction or Morton's pain, because we sometimes have the breaking of the longitudinal arch complicated by a breaking of the transverse arch.
6. Pain in thighs, hips, and back. Not infrequently these flat foot lumbar pains are wrongly diagnosed and unsuccessfully treated as lumbago.
7. Calf pains due to spasm of calf muscles.

I have repeatedly had patients come into my office with crutches and canes, who have been unable to follow their vocations in life for months and even years, who on careful examination were found to be suffering from nothing more serious than flat foot.

These pains, as well as the changed relations of the bones of the lower extremity, result in a peculiar gait of the flat foot patient. In the early potential cases, the patient usually walks gingerly as though his shoes hurt him. Later, when the feet are markedly everted and abducted and the muscles spastic, the patient acquires a very peculiar gait utterly lacking in elasticity, with his feet held rigid and all of the motion taking place in the knees and hips.

TREATMENT.

The treatment can be taken up under two main headings, prophylactic and curative, with this proviso that the prophylactic measures practically all come under the curative remedies also. As in many other medical problems, prophylaxis is the most important and if people were better informed about prophylaxis, the treatment of flat foot would rarely become necessary.

In order to prevent the development of flat foot, the general hygiene must, of course, be looked after. Alternate periods of exercises and rest must be provided. Excessive strain, such as excessive weight bearing or long continued standing in a faulty attitude must be avoided, especially at the age of puberty or after an acute or debilitating illness. Obesity, if existing, should be corrected. All persons should be taught how to stand and walk properly, proper shoes should be provided and arch supporters should be absolutely tabooed. As stated, improper standing and walking have much to do with the development of flat foot. Hence, every school child should be taught how to stand and walk and every flat foot patient must learn how to walk and stand properly if he is to recover. There is a false idea prevalent that toeing out is graceful. This common belief has its origin to a large extent, I believe, in the old infantry drill regulations of the United States Army, which read,



FIG. 6.—Illustrates method of holding foot during strapping.

"the recruit at attention must stand with his feet turned out equally and forming with each other an angle of about sixty degrees." I am informed that recent infantry drill regulations conform to a suggestion which I made twelve years ago in a published paper on this subject, namely, "that the

recruit at attention stand with his feet turned out equally and forming with each other an angle not to exceed sixty degrees." This gives the soldier a chance to use his feet to the best mechanical advantage. The old drill regulations unquestionably favored abduction, eversion and faulty weight

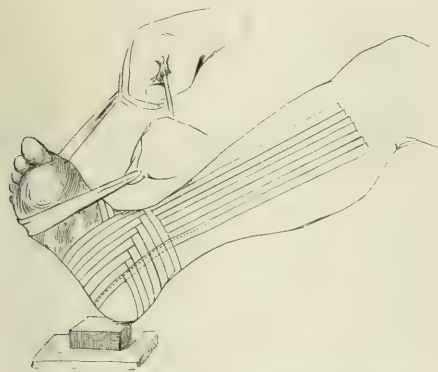


FIG. 7.—Illustrates method of applying long and short one half inch straps.

bearing, which, if persisted in are almost sure to produce flat foot. In addition, people should be advised to walk with their feet parallel. I have watched very carefully and so far have never come across a patient suffering from flat foot who habitually stood and walked with his feet nearly parallel. Recently, I asked a very intelligent, observing, highly educated layman, who had spent many years as a buffalo hunter among the Indians, whether he had ever seen an Indian with flat feet and he very promptly answered, "no." I followed the first question by the word, "why," and he promptly answered, "because they do not wear shoes and because they walk with their feet parallel."

This brings me naturally to the question of footwear. Stockings that are either too short or too tight over the instep should be scrupulously avoided. Shoes should fulfill the following requirements. They must have the proper length, the proper width and the proper height over the instep, and the treading surface must be ample in order that the circulation of all of the structures of the foot may not be impaired and that the foot muscles may have sufficient room for exercise. The internal border should be a straight line, the widest part of the shoe should correspond with the widest part of the foot, namely, the ball. The heel should be placed slightly forward and inward as illustrated (Fig. 4). Finally, the shoe should be as comfortable the first day it is worn as the day it is discarded. About the only way to get such a shoe is to have one made from one's own private special last, made after a plaster of paris model of the foot with the foot held in slight adduction and supination. The extra original expense is slight and the money expended for this purpose well invested, because such shoes will wear nearly twice as long as shoes which do not fit. If a new

shoe has to be broken in, it not only wears out much quicker, but at the same time breaks the foot. I hope the time will come when a well dressed man will no more think of buying custom made shoes than of going to a department store and buying a suit of ready made clothes. Well fitting shoes mean much more to his health and efficiency than well fitting clothes.

When a flat foot has actually developed, the treatment just outlined must be supplemented by still further remedies, one of the most important of which is, suitable physical exercises which will improve the general muscular development and especially the development of the tibialis anticus and posticus muscles. This can best be accomplished by prescribing properly selected definite physical exercises. Simply telling the patient to take more exercise is about as useless as telling him to take medicine. Unless the direction is definite as to the kind and amount, the patient makes a few unsuccessful attempts and then gives up in despair. If the directions are exact, I have found the patient very willing and glad to follow them to the letter, more especially as they soon experience great benefit from them. For this purpose I published a little book (10), which I have found very helpful in my work with these patients. In addition, I direct them to take the following exercises, first recommended by Hoffa, I believe, five times in the morning and five times in the evening. With bare or stocking feet, sitting in a chair, the knee half flexed, have them go through the following motion with each foot, in, up, out, down, with the emphasis on the in and the up.

I now wish to call special attention to the method of strapping, which I have used in all my cases during the past twenty-one years. I go into considerable detail as I am thoroughly convinced that

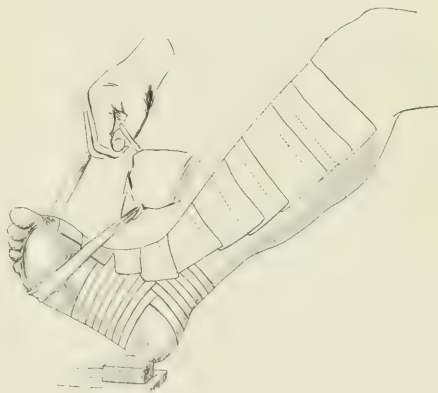


FIG. 8.—Illustrates method of applying transfer straps.

the success of the method depends very largely upon the accuracy with which these directions are followed. The directions have but one object and that is to use the adhesive plaster to the greatest advantage. A system of strapping which utilizes, say ninety-five per cent. of the adhesive quality of

the plaster is many times more effective than a method which utilizes only seventy-five per cent.

First, I select a good make of zinc oxide adhesive plaster in twelve inch rolls. I then measure the patient's leg and mark off the adhesive straps according to the length of the extremity. For the purpose of strapping an adult male patient's foot of ordinary size, I mark off seven strips half an inch wide by thirty-two inches long with a cross line at the middle, fourteen strips half an inch wide by eight inches long, one strip half an inch wide by sixteen inches long, as illustrated in Fig. 5. I do this as a matter of convenience and also to prevent unnecessary handling of the plaster after the facing is once removed. Plaster can easily be robbed of half its adhesive strength by handling it a few times with perspiring, oily hands or by sticking it onto a dusty wall or by allowing it to come in contact with particles of cotton. Having the strips only half an inch wide is of great importance. Many men fail because they use the adhesive strips too wide.

The heel of the patient's disrobed foot is now placed on a chair, the knee flexed and with a short hard roller bandage looped around the foot I direct the patient to draw the toes upward, thus placing the foot at a little less than a right angle to the leg, at the same time having it moderately inverted and adducted, as illustrated in Fig. 6. I find that, as a rule, the patient himself can do this much better than any assistant. Sometimes it is desirable to have an assistant grasp the foot and help the patient invert and adduct it.

I now place the middle of a thirty-two by a half inch strap over the bottom of the heel about an inch from its posterior border, place half of it up the outer surface of the leg without tension and the other half up the inner surface of the leg applying this as taut as I can. I then place one of the short, narrow straps on the inner surface of the foot parallel with the sole and one on the outer surface. The remaining long and short straps are now applied alternately in the same manner, each one slightly overlapping its predecessor, as illustrated in Fig. 7. When these are all in place, I cover them with transverse straps three and one quarter inches wide beginning at the top and overlapping about a quarter, as illustrated in Fig. 8. I am very careful, however, not to permit these transverse straps to meet posteriorly. On a number of occasions I have seen surgeons strap flat feet ostensibly according to my plan but completely defeating their object by putting the transverse straps circularly around the limb, thus, frustrating the purpose of the whole procedure, namely, a regeneration of the tibialis anticus and posticus muscles. These straps will remain in place and be effective for from four to eight weeks when they may be removed in the evening either with benzine or with cold cream, the foot washed with soap and warm water, carefully dried, and restrapped the next morning. This can be repeated until a cure is obtained, which may require from two to ten strappings. The relief is almost immediate, and many a patient has returned for a second strapping already relieved of many of his symptoms.

PROGNOSIS.

Though never fatal, flat foot causes much discomfort, frequently considerable pain and often incapacity varying in degree from slight temporary functional impairment to more or less permanent disability; however, by following the treatment outlined above, a symptomatic cure may be expected in every case and even an anatomical cure in a very large proportion of cases. In over twenty-one years of experience with this method of treatment I can say that I have never failed to relieve a patient if the treatment has been persisted in for a reasonable length of time and because the patients get such great relief from the treatment from the very first they are practically all willing to adhere to the treatment until they are cured. In many of these patients there actually develops a normal instep. Just exactly how the adhesive straps accomplish this is a little difficult to say. They undoubtedly support the arch, as can be easily demonstrated by applying them in a case of marked flat foot. If properly applied, they tend to supinate and adduct the foot. They relax the peronei muscles, thus, overcoming spasm, securing rest, and relieving pain. They furnish massage to the extremity with every step and consequently favor the regeneration of the muscles and ligaments. They furnish this massage continuously without expense to the patient, and we know that properly given massage is one of the most valuable remedies in restoring tone to overtired, over-stretched, atrophied muscles.

This, in brief, is the argument and evidence in favor of the treatment outlined, a method of treatment which has given excellent results in my hands, which I consider simpler and more effective than any other method heretofore employed.

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2155 CLEVELAND AVENUE.

Lewis-Benedict Method of Blood Sugar Determination.—Sergius Morgulis and H. M. Jahr (*Journal of Biological Chemistry*, August, 1919) found that creatinine behaves with the Lewis-Benedict reagent in a way similar to that of sugar, and therefore interferes with the quantitative determination of sugar in the blood. Apparently the Lewis-Benedict method is a satisfactory quantitative procedure only when the creatinine concentration in the blood is normal, but when it rises from ten to forty mg. in 100 c. c. the method is of questionable value.

THE PRIMARY CAUSES AND HYGIENIC TREATMENT OF CONSTIPATION.

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Perhaps I should apologize for presenting this paper. Many of the ideas set forth have been picked up while dealing with every day life as seen in my office. It is written in the hope that we, as scientific investigators, will be brought to know that the early violations of Nature's laws are a considerable factor in ill health later in life. It is well to get away from scientific theories occasionally, and look about us to see how much can be done by following Nature's laws. I hope you will not find this paper too academic to be of interest.

I am dealing here with the habits that lead to constipation and follow through to what I consider a logical method of relief in a goodly number of cases from its consequences. If I am able to suggest a natural way of looking upon the primary etiology, prophylaxis, and treatment that will be of greater benefit to our patients, I shall have accomplished all I hoped for. I shall not attempt to differentiate between the various forms of constipation, as they are scientifically classified.

It seems remarkable to me that in many cases of chronic systemic constipation the patients are very greatly improved after following directions given them along the lines expressed in this paper, therefore while I know full well that it deals with primitive conditions that may seem far too simple to bother with, yet I find that many times the little things seemingly too trivial for consideration play a most important rôle in final results.

We shall be well repaid by observing Nature in her methods among the lower animals and apply the knowledge there gained to the human animal when it relates to food, the drinking of water, and elimination. That constipation and its results are the cause of more human ills and suffering than any of the other disease causes to which man is subject, is reason enough for us to dig deeply to find why this is so. The human animal prides himself on his superiority over the lower animals because of his power of reason. I hope to be able to give proof that this boasted reasoning power and civilization are potent factors in our physical downfall, therefore it is my purpose to first present what I consider to be the primary etiology of intestinal and systemic constipation, namely—carelessness, ignorance and laziness—these to my mind best answer the question of primary etiology.

The child begins its life in ignorance of all physiological laws, which should have been taught the mother by the family physician, then she would have known their importance for health, and would have seen to it that the child was supplied with plenty of liquid, had a regular stool the first thing every morning, as happens with all the lower animals, and the habit thus early established and understood would not be easily broken.

It is increasingly difficult to establish these regular habits as the child grows older, before he has sufficient knowledge to understand the reasons for himself; he prefers to play, rather than to spend

the time in attending to his toilet obligations. It is far too easy for him to postpone or even repress a passage until it may come of itself, or failing in this, is retained two, three or more days until he becomes ill. Then the physic habit is easily started, later autointoxication sets in, gradually establishing ill health and if the primary habit is not corrected, many unfortunate sequelæ may befall. After a time we find ourselves treating these sequelæ instead of trying to correct the original causes.

One of the greatest necessities of the body is sufficient liquid to supply the system in order that normal elimination may take place by way of the skin, kidneys, respiration, and bowels. We know that the average normal amount of urine daily excreted by a healthy person is forty-eight ounces; and that the normal solids daily excreted through the urine is sixty grams; the normal amount of moisture excreted through the skin is from twelve to sixteen ounces and with the respiration amounts to twelve or sixteen ounces more; thus the total amount of liquids eliminated each day is from seventy to eighty ounces. If the fluids taken are deficient in quantity, normal elimination suffers in proportion, with a relative concentration, more difficult elimination of the excreta and retention of some of the effete material in the system. Thus we have what might be termed constipation of elimination of the worn out products from the whole system.

It is noteworthy that in a large proportion of cases of rectal and colonic diseases the patients give a history of drinking only twenty-four to forty ounces of liquids daily. When the necessity of drinking more is explained to them, they recognize its importance, and wonder why it was never explained to them before. I believe that the necessary amount of water for the running of our human machine is just as important as for the engines of steel, and while we do not blow up so quickly as a result, yet we do establish the foundation for ill health and must surely pay the penalty for violation of physiological laws.

Almost everyone knows of people who have lived most exemplary lives and died prematurely from some kidney, heart, or liver disease. I believe that if the true history of many of these cases regarding the amount of fluids taken could be compiled, it would show that most of the patients drank too little fluid, were always autointoxicated, and the diseases causing their deaths were the inevitable result. Is this not just as much to be deplored from a physical and social viewpoint as death from using too much liquors? Is not a campaign of education along these lines of as much importance as prohibition propaganda? I believe that if an educational propaganda were to be continuously and conscientiously carried on by physicians in their daily routine we should have far less necessity for so much excitement about the prohibition question.

When one sees the foliage of a favorite plant beginning to look sickly the first thing done is to supply water liberally. If this does no good, the root is looked after, but the experienced horticulturist waters his plants with regularity and they

look healthy and hardy. A proper quantity of water furnished our system has the same effect, as well as an important effect upon the contents of the large intestine.

The majority of people pay no attention to their toilet obligations until they feel the call of nature, others make no attempt to have a movement until after breakfast, and still others until arriving at their place of business. All their best intentions go for naught if some one comes for business or to gossip just at this time, resulting in continued postponement, a final loss of desire, acute autointoxication with the belief that a hard cold has been taken; then a physician is seen who may prescribe physic and other remedies to break up the so-called cold.

One day of this neglect will not make constipation and semiinvalidism, but many repetitions will do it. Later the normal sensation becomes blunted and these people do not notice the call. Finally a second reservoir in the ampulla of the rectum is established and actual rectal diseases may follow: e. g., hemorrhoids with bleeding, fissures, ulcers, proctitis, sigmoiditis, colitis, reflexes through the abdominal organs with their attendant nervousness, and a long train of other troubles.

I am continually taking histories of patients who drink almost no water and far too little of other liquids, scarcely one of them can account for the drinking of more than thirty or forty ounces of liquids daily, unless some one may have recently told them to drink large quantities of water, but did not explain why it was necessary for which reason they were not strongly impressed and drank water indifferently.

These patients are often constipated and have been so for many years, taking physic all the time; when one kind is worn out another is substituted, and they are always looking out for a favorite cathartic of some other person that is said to be a sure cure but which never makes good. Perhaps they have been advised to have their stool at a regular time each day, but the directions have not been definite, they do not make a profound impression on the patient, and failure results.

In treating patients who are constipated and in whom there has not yet developed actual rectal disease, I discontinue all cathartics unless an emergency arises. I advise the taking of from eight to ten glasses of water daily, two of which shall be taken at once or during the first half hour after arising, either direct from the tap or at room temperature, then to sit on the toilet for at least ten to fifteen minutes in an honest effort to have a stool, without regard to whether the desire is present or not. If failure results they should take an enema of plain water at once, this will prevent illness and help the bowel to acquire the habit of emptying itself at a regular time. If rectal disease is present it must first be corrected, by operation if necessary.

Many people believe that it makes no difference what time of day they select for the stool or the enema, but seem to think they have fulfilled the order in making the effort at any time so long as they get near to it every day, and then to take the enema at some more convenient time later. This

will not do, and if persisted in will only result in failure.

The crux of this whole matter is, sufficient liquids for the system; a regular time for the movement at or near arising; without regard to whether the call is present or not; and to follow this effort with the plain water enema at once. Patients must not expect immediate results, if it takes a year to recover it is well worth it; cathartics will not do it, and this in my opinion is the only safe, and the nearest to the natural way out of the trouble.

I look on this method as doing the least possible harm to a patient, allowing nature to do her work without cathartics, which if taken interfere with nature and prevent normal movements. Almost all physics are irritants and finally make the patient worse. I have rarely seen patients cured of bowel constipation by cathartics. Even if they were cured by them, and sufficient liquids have not been taken, there is difficult elimination of the wornout and effete products through the kidneys, skin and lungs which means systemic constipation.

In constipated people who drink too little liquids, the skin becomes sallow, baggy and wrinkled long before their time, and they become cross, crabbed, unattractive semiinvalids, with a bad breath and many times become general nuisances.

I am constrained to offer a new definition or an addition to the old definition for constipation on account of my experiences with these patients. It seems to me that the definition should be more general than relating only to the bowel, therefore I would propose that constipation is the complaint of the whole system against malelimination of the worn out and effete products through all of the natural channels of elimination.

CONCLUSIONS.

1. Constipation is preventable and not hereditary.
2. Primary causes are carelessness, ignorance or laziness or all three combined.
3. True constipation has to do with malelimination from all parts of the body, thus clogging the system with wornout or poisonous material.
4. Plenty of water should be drunk to supply the necessities of the body in all its parts.
5. There should be absolute regularity as to time of stools, which should be the first thing on arising, without regard to whether there is a call or not.
6. If one fails to get a stool at the early morning trial a plain water enema should be taken at once, one should not wait until later in the day.
7. A plain water enema taken at this time is the least harmful of anything, far less than physic.
8. Special diet has less to do with bowel constipation than many people believe.
9. Cathartics will not cure constipation, but are more likely to aggravate the condition.

Radium in Dermatology.—L. R. F. Sierra (*La Medicina Ibero*, July 12, 1919) reports a cure in 119 out of 122 cases of skin lesions treated with radium in ten years. The conditions treated were lupus vulgaris, keloids, nevi, soriasis, varicose ulcer, senile warts, leucoplasia, and lichen planus of the tongue.

ELASTIC CLOSURE AND SYSTEMATIC PARAFFINE GRAVITY DRAINAGE FOR CLEAN AND INFECTED WOUNDS.

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The ideal method of closing wounds whether the wounds are aseptic or infected is, first, to approximate the tissues closely but without undue tension; second, to obliterate any dead space; third, to insure the immediate exit of any liquid that might occur in the wound. The close approximation of the tissues is obviously indispensable for their union, but as an abundant blood supply is also necessary for the formation of new elements required for healing, it is evident that any undue tension used to effect the union that would hamper the supply of blood to the tissues, will also decrease the probabilities of repair. The avoidance of any dead space is obviously indispensable for the closure of wounds, because where there is a dead space,

the tissues are not in close contact and therefore cannot unite; dead spaces are also dangerous because all the tissues to be united have a more or less abundant secretion, the dead space becomes the seat of an ever increasing collection of liquid, disturbing the tissues and keeping them apart; this collection of liquid is most likely to become infected and so cause complications. As all tissues that have been severed have more or less abundant secretion, and some blood vessels might bleed after the wound has been closed, the importance of securing an immediate exit of any liquid that might form in the wound is imperative in infected wounds or in wounds that might become infected secondarily. Obviously the means used to favor the exit of the liquid that might form in a wound is not to hamper the reunion of the tissue by its presence in the wound.

No method used in closing wounds answers the desiderata we have mentioned, because the rigid materials used for sutures, such as silk, catgut and wires, more or less strangle the tissues and hamper their blood supply, or the dead spaces are left in the wound on account of the rigidity of the suturing material; or dead spaces are closed either with absorbable material, which is a good pabulum for microorganism, or unabsorbable material which acts as a foreign body; and finally the materials used for the exit of any liquid that might form in

the wound do not act as drains and hamper reunion.

More or less success in immediate closure of clean wounds and early closure of infected wounds depends on the following elements: Thorough surgery; good resistance on the part of the patient;

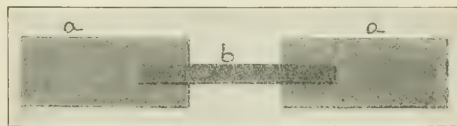


FIG. 2.—Elastic adhesive strips. a, Adhesive plaster. b, Rubber band.

elastic closure of the wound; and rational systematic drainage of the wound.

Thorough surgery in each case.—This is the first and most important element of success; without good surgery early closure of wounds is not possible. Thorough surgery means removal of all foreign bodies, dead material, and tissues that will probably die. However, we do not approve of large débridements up to absolutely healthy tissues and the systematic removal of all bone fragments, as now advocated in infected wounds, because, if early reunion is obtained in this manner, it is obtained too often with impairment or at times even total abolition of functions that could have been preserved by a more conservative plan of débridement. We should aim to obtain the reconstruction of the affected structures as near to natural physiological conditions as possible and not to demolish tissues and structures that cannot be replaced.

Good resistance on the part of the patient.—It is evident that the better the condition of the patient, the better the results, especially in infected wounds. We should not expect the same brilliant results in civil practice that were obtained in war surgery, when we had to deal only with healthy young men.

Elastic closure of wounds.—The wound is closed exclusively by elastic material which, according to the depth and the location of the wound, is applied only to the surface or deeply in the tissues, or both. Deep sutures are made with elastic threads of pure rubber of the size of a lead pencil, which

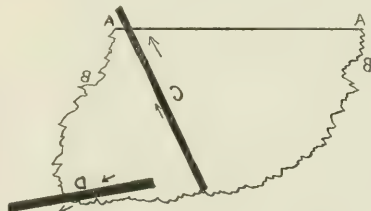


FIG. 3.—AA, Skin line. BB, Zigzag line representing depth of wound. CD (C), Drainage as commonly applied; (D) gravity paraffin drainage. C, Usual drainage, one end of which reaches bottom of wound, other end coming out at one corner on the skin line. D, Paraffin gravity drainage, one end of which is placed on bottom of wound and the other end comes out at a point lower than the bottom of the wound. Arrows show direction that liquids must follow in order to be drained. In C they must go uphill and this demonstrates the error of such drainage, which is in contrast with the law of gravity; while in D the liquid goes downhill and this method of drainage is logical and rational because it follows the law of gravity.

can be purchased at any store selling rubber goods. These elastic threads are passed through the deepest portion of the wound (Fig. 1a) and tied on both ends on rolled gauze (Fig. 1b), the tension to be given to the elastic threads is easily gauged by gently pulling the elastic after it has been tied to the gauze on one side, until the tissues are approximated and then tying the other end. Superficial closure of the wound is obtained by applying over it special strips made of adhesive plaster and rubber bands (Fig. 1c). These strips are prepared in the following manner: Take rubber bands, cut them so as to have pieces from five to ten centimetres in length according to the tissues to be approximated, the longer band naturally being used for the more voluminous organs, and stick the ends of the rubber bands to two strips of adhesive plaster (Fig. 2ab). In order to close the wound apply one of the adhesive strips to one side of the wound, pull gently so as to give a little tension to the rubber band and apply the other strip of adhesive to the other side of the wound (Fig. 1c), so that the walls of the wound are approximated by the tension exerted by the rubber band; *the tension must be sufficient to hold the wound together without undue strain*. In order to make the adhesive plaster adhere better, the skin can be covered with a solution of the common rubber cement that is used in patching tires, diluted with about ten parts of ether. The adhesive plaster adheres much more firmly to the skin, if it is previously covered with this solution. Many deep wounds can be closed properly using only these elastic strips, by making them long enough to embrace all the tissues to be approximated.

Perfect systematic drainage.—Perfect drainage should favor the exit of any liquid while the liquid is forming and which will prevent union. The error in the methods of drainage now in use is illustrated in Fig. 3, the drainage being put in the lower corner of the wound. If any of the methods of drainage based on capillarity are used, they are irrational, because all the organic liquids are suspensions of cells that will occlude the capillarity of the drain and therefore stop drainage after a short period. If tubes are used, the liquid has to climb along the same, and as liquids never go uphill, unless under pressure, the liquid must be quite abundant and under pressure in order to drain, and this will cause inflammation and reaction of the tissues.

Other objections to common drains.—Drains located in a corner of the wound facilitate infection of the line of suture, and consequent delay in closure of the wound; ordinary drains act as foreign bodies irritating the tissues and are often very dangerous; they are the cause of secondary infection because they must be changed from time to time and in introducing the new drain microorganisms that are on the margin of the wound are introduced into the depths of the wound inducing reinfection and serious phenomena due to symbiosis and repeated irritation of the tissues caused by the introduction of each new drain: organic liquids, blood, pus, and other materials adhere to the drain and the skin, closing

the opening through which the liquid should be drained and preventing drainage. Our method of drainage is based on the fact that neither tissues, nor blood, nor pus, nor any other organic liquid can adhere to the substance used, which is paraffin, and on gravity. For those desiring more details on our method of paraffin drainage, we refer to our papers published in Italian medical journals during the war (1, 2, 3). Paraffin drains are prepared by dipping strips of gauze, silk, or linen threads into melted paraffin allowing them to harden, or melted paraffin is introduced directly into the wound. Prior to closing the wound, the paraffin drain is placed in the most dependent part of the wound (Figs. 1 and 3) and brought out through a small incision made at a point lower than the lowest point of the wound. Paraffin drainage, if applied according to the law of gravity, will always drain perfectly, as no other drain can, because between the paraffin covered material and the walls of the wound, there is always a space that cannot become occluded and through which any secretion can leak immediately into the outside dressing by gravity as soon as it is produced. This absolutely prevents the formation of any collection of liquid in the wound. Paraffinated drains can be made very small, in many cases, few threads are sufficient to drain a large cavity, with cosmetic results, especially on the face and neck, that will agreeably surprise the surgeon and the patient; the small incision required for the exit of the drain heals rapidly and completely with a small almost invisible scar. Paraffin drains used according to the law of gravity are ideal, because they actually drain; are well tolerated by the tissues; can remain in place for any length of time and can be withdrawn slowly day by day until the surgeon thinks they can be removed entirely and are never dangerous.

Conclusions.—In considering the immediate closure of clean wounds and the early closure of infected wounds, we must remember that good surgery is essential to success; that the individual resistance of the patient will play a great part in the final result; that we have to drain all wounds in the manner indicated by us, because we can never be positive that the wound will not show some secondary infection which might have even fatal consequences unless the drainage proposed by us is resorted to in all cases; that the elastic closure that we propose is the most rational manner of closing wounds, especially those which can be infected the moment they are closed, or might be subject to secondary infection; that with our plan a greater number of wounds can be closed without danger, because the closing does not interfere with the blood supply of the tissues involved and appropriate drainage is instituted, which will prevent any dangerous complication and will allow the closure of many wounds which could not be closed early and safely in any other manner.

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SPECTROSCOPIC ALTERATIONS IN HEMOGLOBIN FROM INHALATION OF POISON GAS.*

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The aim of this contribution to the study of the effects of poison gas upon the blood is to determine, by spectroscopic analysis, the change in the hemoglobin and its oxygen conveying properties to the tissues. Certain lung irritant gases have only a local effect upon the lungs and do not enter and change the composition of the blood. The more deadly asphyxiating gases, such as phosgene (CO Cl_2), which is the gas selected for this experiment, changes the hemoglobin and destroys its oxygen carrying properties. Death results from cell asphyxia; accumulation of carbon dioxide and other combustion materials which are retained in the blood as the result of diminished oxygen, necessary for cell respiration. From a very incomplete review of the literature secured from the department of chemical warfare of the army, at Tours, France, no index of spectroscopic blood analysis in poison gas was found.

J. Barcroft, F. R. C. (1) reports, "In no case have I found evidence of retention in the blood of

gas, rendered such a study of mixed gases unscientific.

On the way out of France the opportunity presented to study to a limited extent the effects of poison gas upon animals. At the United States Army Base Laboratory at Talence, Bordeaux, animals were available.

Professor Sigalas, dean of the faculty of medicine and pharmacy, University of Bordeaux, and M. Basset, instructor in the laboratories, placed the necessary instruments of precision at our disposal and verified the spectrum changes occurring in the blood of the rabbits that had been exposed to poison gas, and by chemical reactions we confirmed our spectroscopic analyses. The Ordnance Department of the United States Army have salvaged every conceivable variety of gas ordnance for disposal, and from this accumulation a phosgene combination was selected. An animal was placed in an animal basket and exposed to cloud dispersion, the operators, laboratory assistants and observers were protected by gas masks, gloves and by gas drift conditions. The gas concentration was in charge of a gas sergeant attached to the chemical warfare department and the exposure regulated by the observers.

An imperceptible cloud of gas was released which reached the animal and almost simultaneously the rabbit began to breathe rapidly. It was removed

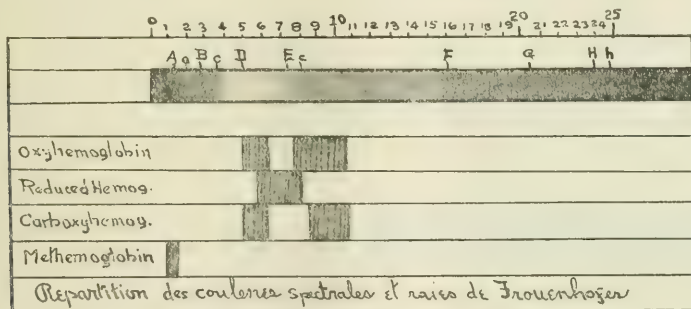


FIG. 1.—Distribution of spectral colors and Fraunhofer's lines.

inspired gases of an acid character. In practically all cases there is an accumulation of carbonic acid in the blood, due to the impairment of the lungs and their consequent failure to evacuate carbonic acid with their usual facility."

To abstract briefly from the American Chemical Warfare reports: The results of gassing with phosgene are compared to death by drowning; the result of injury to the minute air sacs of the lungs, which causes fluid to pass from the blood into these tiny air vesicles, and thus obstruct the oxygen supply to the blood. It would have a bewildering effect to attempt the identification of the blood spectra resulting from exposure to poison gas on soldiers gassed at the front. The efforts of the enemy to throw over gases that interfered with the efficiency of the gas mask and then to follow up with poison

after an exposure of two seconds to a normal atmosphere, and to the surprise of all, the animal expired. Blood taken immediately from the left ventricle of the heart with an aspirating syringe and diluted with water gave the spectrum of methemoglobin (Fig. 4). The spectrum was not changed when oxygen was run through the blood and water mixture, the methemoglobin spectrum persisted even when the blood was greatly diluted.

The second rabbit was exposed to only a third of the concentration of gas and was removed to a normal atmosphere when the rapid respiration began. Blood taken from the ear was mixed with water and examined spectroscopically. The animal died within a few seconds afterward. The spectrum was reduced hemoglobin (Fig. 2), and it was not changed by running oxygen through the blood and water mixture.

Prior to the exposure to gas the blood of all the

*Authority to publish granted by the Surgeon General, U. S. Army.

rabbits had been counted and examined spectroscopically. The blood approximating the following: Erythrocytes, 2,650,000; leucocytes, 9,000; hemoglobin, 55 per cent.

The leucocytes were chiefly myelocytes, eosinophiles and small lymphocytes. Rabbit blood is some-



FIG. 1.—Spectrum of oxyhemoglobin.

what turbid in blood and water mixtures and the Dare hemoglobinometer was used to estimate the hemoglobin, as no dilution is necessary and the refraction of leucocytes does not interfere in hemoglobin estimations. Spectroscopically, oxyhemoglobin (Fig. 1) was absolutely constant.

The third rabbit was exposed to a minimum concentration of gas, and only momentarily. The blood spectrum (Fig. 3) was carbon monoxide, and the color of the blood, cherry red; best observed



FIG. 2.—Spectrum of reduced hemoglobin.

when diluted. Oxygen run through the blood and water mixture did not change either the color or the spectrum. Chemical reactions confirmed the presence of carbon monoxide. The blood of this rabbit seven days later was cherry red and still presented the spectrum of carbon monoxide hemoglobin. The animal was seriously affected for several days, but gradually appeared to improve, but was far from normal when last observed seven days later.

No degree of pulmonary destruction or suffoca-



FIG. 3.—Spectrum of carbon monoxide hemoglobin.

tion will change the blood spectrum, which is normally, oxyhemoglobin (Fig. 1). An absorbable poison must enter the blood and change its composition, before such alterations of spectra occur. The rapidity of spectrum change and the characteristic absorption bands render the examination of the blood in gas cases of great diagnostic importance. Phosgene may enter the blood with but slight lung irritation, and yet the composition of



FIG. 4.—Spectrum of methemoglobin.

the blood be changed to a dangerous degree; many patients thought to be but slightly gassed, died along the line of evacuation.

The technic of examination is extremely simple. A drop of blood is drawn from the tip of the finger, or the ear lobe, and washed into a Wassermann test

tube with water, making a weak dilution, and examined spectroscopically. A small Browning spectroscope is held up to a light sufficient for illumination, and the test tube containing the laked blood placed in the cleft of the spectroscope made for the purpose; the spectrum is then visible. Where rapidity, convenience and uniformity are of consequence, the mixing pipet and spectroscope of the Dare hemoalkalimeter may be employed. It is equally important in the treatment of gassed patients to discover whether the gas has affected the respiratory tract alone or is combined with poison gas which has been absorbed by the blood and changed its composition.

The prognosis will be much more accurate when the presence or absence of blood change is known. While the blood in gas cases presents the characteristic spectrum of carbon monoxide hemoglobin, patients should be carefully treated.

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SOME PHASES OF AUTOEROTISM.*

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The Freudian concept of the development of sexual pleasure traces pleasurable sensations primarily to bodily functions, such as suckling, rocking and swaying and simpler tactile movements. Subsequently, there comes in the life of the child a period of active irritation of the genitals, especially the penis and the anal orifice (which is considered a part of the genital zone by Freud), together with increasing interest in the excretory acts, both defecation and urination. This elementary stage, which is probably independent of any definite sexual longings, is called autoerotism, i. e., the erotic or pleasurable impulse arises spontaneously and from within and actually finds its satisfaction in the individual's own person. It is only if we also include among sex activities these pleasurable acts which are normally relinquished in the course of adolescence for other and more distinctly recognized sexual acts, that we can concur with the assertion of White (1) that, "All pleasure founds in the last analysis in sex pleasure."

The erogenous zone upon which the child may happen to concentrate his attention in the autoerotic period may be not only the genitals proper, but the anus, mouth, foot, and other parts of the body. This selection, however, is not a negligible factor, for a child who, for instance, chooses a particular zone for autoerotic satisfaction, may later in life develop some pathological habit in connection with that part, for the sexual gratification which he unconsciously derives therefrom.

In the autoerotic stages Freud makes scant distinction between the sexes, for he assumes that in infancy each individual is originally polymorphously perverse in all directions—homosexual, masochistic, and sadistic. From this indeterminate state the

*Read before the Section in Neurology and Psychiatry, Academy of Medicine, New York, March, 1919.

individual normally progresses gradually to object love—that is, the love of another person. The intermediary stage between these two is called narcissism, a term first suggested by Havelock Ellis. It is really best to consider narcissism as a great subdivision of autoerotic activity. Narcissism is characterized by the fact that in the transition of the individual from the most primary autoerotic impulses which he collects in earliest infancy to heterosexual object love, he directs his impulses toward his own person or toward an image he has elaborated to represent himself.

Furthermore, in this narcissistic transition state each person is apt to pass through a period where his love is directed to an actual or fanciful object of something like himself, i. e., a homosexual image, before passing to heterosexual fancies or actualities. Under such a definition it is evident that the scope of narcissistic activities would necessarily be broad and varied, and that in this period of autoerotism, homoerotic as well as precise autoerotic impulses may be permitted unrestricted fanciful outlet.

It is impossible for me to agree with such assertions as, "Manifestations of the sexual impulse are not normally present in childhood" (Lowenfeld). They are present, but are simpler, essentially physical and approximate the more primitive forms of body muscle erotism. In normal children this phase of oncoming sexuality does not occupy their very intense attention and is regarded lightly, usually as a natural function.

Unquestionably, the most frequent unmistakable autoerotic sexual manifestation in the child is masturbation. In fact, it may safely be regarded as a normal phase of sexual development, and it is only when masturbation is prolonged to an age far beyond the normal, or accompanied by excessive narcissistic fancies, that it is to be considered pathological. Statistical figures of what constitutes the average frequency and duration of narcissistic masturbation—and here we must accept the average as the norm—are difficult to obtain. Many persons are reluctant to allow facts to be recorded which are so intimately personal but even when the statistics are contributed with a conscientious desire on the part of the individual to cooperate, his memory, in spite of his good intent, is not always entirely reliable. Furthermore, he may apply the term masturbation to only one particular form of autoerotic selfindulgence, e. g., among males, when the activity is accompanied by ejaculation, or among females, when there has been manual stimulation. The following figures, compiled in Germany, by Mierowsky, given in lieu of American statistics which do not seem to exist (2), reveal that among the students of Breslau University more than seventy per cent. recorded that they began masturbation between the thirteenth and seventeenth years. Sixty-three per cent. of these students who admitted masturbation made a transition to intercourse between the ages of seventeen and twenty-one.

My impression is that these figures would not vary greatly if collected from among American college students. Possibly statistics from factory

workers would reveal a somewhat greater total proportion of males indulging in intercourse before the age of twenty-one and also a greater proportion making the transition at an earlier age from masturbation to intercourse. Unfortunately, the material which comes to a neurologist in the course of his practice cannot be regarded as normal, but every patient whom I have treated analytically has passed through longer or shorter stages of narcissistic sex life during which he has masturbated or adopted some not greatly disguised substitute for masturbation. From statements of their own indulgences and of the indulgences of their companions, whose subsequent careers were known to them and who were considered normal, it is my impression that figures obtained through intimate personal questioning would show a higher proportion of children (possibly a hundred per cent.) indulging in unmistakable masturbation at an earlier age than the Breslau statistics reveal.

MASTURBATION.

It has not been my experience to have encountered alarming physical results from the simpler forms of masturbation when practised moderately, nor have I encountered many cases in which the physical masturbation as such, when not extraordinarily excessive nor long continued—beyond, let us arbitrarily state, the age of twenty—has caused permanent impairment of the sexual function.

Recently there has been under my care a policeman who in 1909 had been my patient at Manhattan State Hospital, where he was committed at the age of eighteen, suffering from a nervous depression due to misconceptions about masturbation. The depression cleared up partially through persuasive educational talks and the patient was discharged but he had never been entirely well since. However, in 1912, he successfully passed the physical examination for the police force and four years ago married and has three healthy children. In discussing the ideas which he held at the time that he was a patient in the State Hospital, he says that he realizes how greatly he magnified the actualities of the possible physical injuries of masturbation. He now somewhat paradoxically expresses a view that "if a man is so stupid that he does not realize the imaginary bad effects of masturbation, it could not harm him."

The essence of this patient's continued mental malcontentment lay in an unadjusted conflict with Catholicism, which from early youth focussed itself in the sexual aspects of Catholic teachings. After marriage, the unadjusted views found a ready cause for their continuance in dogmas of the church relative to the prevention of conception, with a resulting mental unrest and periodical fits of depression.

The primitive forms of masturbation, however, do not as a rule continue long in their simple mold but are elaborated by ceremonials and fancies. Exceptionally, as in the case of a highly intelligent woman, the originally simple masturbation procedure, begun at twelve years, never varied in its form until after graduation from college at

twenty-four. Thereafter, however, the fancies in connection with masturbation became profuse. In another case, a country woman, aged forty-eight, single, referred by Dr. E. F. Briggs, of Bedford, who had masturbated from fifteen to forty-three, continued in her original simple physical action until forty-three, when the physical phenomena were completely checked and entirely supplanted by fancies.

Especially in neurotics, masturbation soon becomes associated with elaborate imaginations which precede physical response or may eventually displace the latter entirely. This form of mental masturbation is more pernicious as it removes the person indulging further and further from the realities and demands of actual love making and entangles him in a realm of unreal experience that is far removed from the possibility of actual application. Thus, the masturbator in his fancies achieves all the most desirable sexual goals without assuming any of the responsibilities, hazards, and struggles which he would normally incur in attaining them. Moreover, the fancies acquire a tangibility, a permanence, a hold on the life of the individual so that they become a nucleus of his sexual life and a standard of comparison for all subsequent erotism. Because of its ease, safety, convenience and pleasure he is likely to have recourse to masturbation as a relief in various times of stress. This facility of attaining sexual objects is in my opinion one of the greatest dangers to the individual from masturbation, because it tends to increasingly unfit him for the exigencies of sex actualities. Still, such an individual cannot ever quite dispel the unreality of his endeavors from his consciousness.

In this connection I may cite the remark of a woman, aged thirty-five, referred by Dr. I. Strauss for an anxiety neurosis of ten years' duration. Omitting the varied sexual incidents of her early childhood, it suffices for the present purposes to state that she passed through a very prolonged and active narcissistic state with colorful fancies of sex relationship, which continued up to the time of her marriage fifteen years ago. The marriage, which was contracted for economic reasons, has not been happy and apparently the infelicity depends upon sexual incompatibility which resulted entirely from the attitude of the patient. The personality of her husband differed totally from her previously fancied lovers and while she perfunctorily submitted to intercourse, continued masturbation. She found that "she could not get pleasure out of intercourse" that she did out of masturbation—"to some persons it may be a pleasure but to her it was a torture."

Closely associated with the inability of the masturbator to masquerade the unreality of his achievements in such practices, is the sense of guilt and dishonesty connected with them and the feeling that retribution in some form must be paid eventually for the lapses. One of my patients, referred by Dr. Eli Moschowitz for a suicidal depression, which she attributed to worry over frigidity, re-

marked that at seventeen or eighteen she thought that she would never have children because of prolonged masturbation which she had practised almost up to the time of her marriage. She had never considered that it might influence sexual relations with her husband, but that it would inevitably cause sterility. In this instance, the retribution, if it may be termed such, came in the form of frigidity. This, in turn, was principally dependent upon the fact that her adolescent sexual indulgence had originally been homosexual with her older sister. The relationship had consisted of an act corresponding to masturbatory pederasty, in which she had always assumed the active role.

Later she usually resorted to masturbation in the active fashion of young boys who gratify themselves through friction against the bed. The passive rôle of marriage did not fulfill the demands of her accustomed fantasies and activities. Moreover, coitus failed to approach either in impetuosity or sentimentality the masturbatory intercourse fancies in which she had indulged for some years after her sister had married and had been thereby eliminated as a companion and sex object. Inasmuch as she had failed to conceive for five years after her own marriage she concluded that her juvenile impression of the correlation of masturbation and sterility must have been correct. It seemed more rational to assume in the absence of any pelvic anomaly (and repeated examinations made by competent gynecologists were negative) that the sterility depended upon the psychic resistance to her normal sexual rôle, which resulted in vaginal tenseness. After analysis had alleviated her psychic aversion to intercourse and she had become passively heterosexual, she conceived twice by her husband.

Ideas of this type lead to a tendency to conceal and deny the act even in the simpler forms of early childhood masturbation. A well known professor of psychiatry told me that what characterized the masturbation of the boys with whom he was associated at school during his early boyhood days was its communal naturalness and the absence of any sense of guilt. Boys participating in masturbation of this character would experience little trouble in making the transition to normal heterosexual relationship. Where the sense of shame or guilt has become excessive, each repetition of the act may be accompanied by remorse and attempts at repression which result in the establishment of neurotic compromises or unconscious manifestations.

In environments where an excessive moral emphasis is imposed on all sexual activities, masturbation cannot be practised without a feeling of culpability with strong attempts at repression. At times this moralizing tendency is carried to ridiculous extremes and in many households an ethical valuation is placed upon most insignificant acts, e. g., a six year old niece informed one of my patients that it wasn't right for ladies to read the newspaper in the morning, though it was proper for gentlemen—evidently drawing her inference from some comment made to her mother.

The following letter from a very intelligent

¹As a result of analysis this patient has become completely repressed to her sexuality with her husband.

mother shows in exaggerated form what is by no means unlikely to result from continued attempts to repress early masturbation:

"My ten year old daughter has for the past seven years been a selfstimulator. To my knowledge she has not used her hands for four years. Since then, even when sleeping with her I have never seen any outward sign of stimulation. But the effect has been there in sleep—quick breathing and jerking of the hips followed by sleeplessness, pallor, and incoordination the next day; also, a slight vaginal discharge and local irritation. She says that she does nothing to bring this about—that it 'just comes.' She has had only three lapses in the last six months. Recently there has been only the hip jerk without the quick breathing. Each time, the trouble has been possibly traceable to outside causes, such as sudden heat or a new set of braces on the teeth.

"I had promised her that she might go to a camp if she was good. Her last lapse occurred after the final decision to send her had been made. This would indicate that it is possible for her to exercise selfcontrol. However, she denies this. She was much improved by camp last summer and I do not wish her to forego these benefits. However, I doubt the advisability of breaking our promise to keep her home, if she was bad. I feel that our problem is to decide as far as possible how much of her trouble is voluntary."

Through her zealous interest to alter what she considers so baneful a practise, this watchful parent has succeeded by her censure merely in banishing from the consciousness of her daughter the sexual activity and reducing its manifestations to rudimentary traces. She has not in any way altered the impulse or the child's attitude toward it. From the mother's description it is quite evident that most of the masturbation has assumed the form of mental equivalents and is doubtless very largely involuntary. While the physical effects have been modified, it is quite probable that the psychic results of the process in their effect on the waking life of the child are quite as potent and persistent as they were when the evidences were more apparent. Moreover, the case has already drifted from the domain of pedagogy for a tangible practise known to the child to that of abnormal psychology where it is necessary to delve into the intricate mazes of the unconscious.

The unwarranted advice which is at times so positively yet so lightly given even by physicians that intercourse outside of wedlock will solve the dilemma of a patient deeply involved in autoerotism often (I might even say usually), adds to the difficulties. In marriage sexual shortcomings necessarily involve the happiness of another individual and in extraconjugal relations, failures in coitus emphasize the maladjustment and cause great alarm. Patients of this type should have their inhibitions to heterosexuality removed—and there is, to my knowledge, no other effectual way of removing them than through analysis—before entering into relationship with the other sex either in marriage or outside of it.

That the normal outlet does not usually appease

an individual who has become thoroughly inculcated with psychosexual ideals of a narcissistic level, is revealed by the following case: Some three years ago a healthy looking, intelligent woman, aged twenty-four, an acrobat by profession, was referred by Dr. Heinrich Wolf, on account of masturbation. Her parents had separated when she was about five years old and she was thrust into the gloomy New England household of an old and childless couple, her paternal uncle and aunt. Her father returned home after an adventurous military career which kept him away until the patient was thirteen, and incest occurred between father and daughter with great concomitant physical and mental anguish on the part of the patient. Following the departure of her father, which occurred shortly, the patient began masturbation, which she practised excessively up to the time she applied for treatment.

Although she had indulged in intercourse with two other older men (who in psychoanalytical terms were considered father counterparts) she had always been quite frigid. At the time she came under my treatment she had for some years been the mistress of a prosperous, middle aged business man with whom she was also frigid. This gentleman had long been desirous of marrying her. Finally, although she was not without admiration for him, it was largely as a solution of social and economic difficulties that she accepted him. At the time she entered matrimony I was of the opinion that while the marriage would be advantageous when regarded solely from the point of view of her material position, it would probably not be curative of her condition. For over two years I heard nothing from her as she had removed to a Southern city. Then I received the following report:

"I have now been married two and a half years and for quite some time I seldom resorted to my habit for relief. But the last several months I have been in misery, although I was never in such splendid physical condition before. I weigh more than ever and have so much to make for happiness. My husband has been wonderful to me and we have a splendid ten months' old daughter.

"But there are times when it is utterly repulsive to me to have intercourse with my husband. However, that is the exception, for I usually desire it and during intercourse become very much excited, but have never had an orgasm. I cannot describe the feeling, but have been miserable. In spite of becoming excited during intercourse there is not the pleasant sensation as in masturbation. After Mr. X. has had his orgasm, there has been no relief for me and I have come to the place where my nerves are in such a condition I cry or sob and suffer from nausea, and very often then I can't sleep for hours. After one sleepless night I remained in bed the next day and masturbated eight times. I have not done such a thing for years. As a consequence, I have been sick in bed ever since."

The salient points in this letter are undeniably that neither the legitimization of the patient's relations nor motherhood nor ideal treatment on the part of the husband sufficed to eradicate the

habit and ideals with which she had become so firmly imbued. Nor is this woman's experience in her inability to adjust herself to heterosexuality the exception, but I should be inclined to state, the rule in severe cases of this type. It is apparent that it would be even more futile to force abruptly into heterosexual relationship an individual whose sexual development had remained on an equivalent psychic plane to that described above but without similar actual sex experience.

The study of the cases cited, which might be supplemented by many similar histories, leads to the impression that 1, manifestations of strongly developed autoerotism are not alleviated by rigid repression but are best altered by educating the individual to a psychic tolerance of heterosexuality and 2, that the marriage of a person stagnating in autoerotism is rarely efficacious in relieving pathological symptoms caused by this condition.

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249 WEST SEVENTY-FOURTH STREET.

DRUG ADDICTION AND CRIME.*

By JAMES A. HAMILTON, Ph. D.,

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Commissioner of Correction.

A chart has been prepared showing the number of men and women received at the workhouse during the year 1918 for drug treatment under Sections 327 and 249A (selfcommitted) with the number of sentences each has served. They are committed in two ways: Under Section 249A, known as selfcommitted, the persons applying either to the commissioner of health or to one of the city magistrates to be placed in an institution for treatment. Either of these officials can commit addicts to the workhouse, Blackwell's Island, for treatment, and they are released only by direction of the medical authorities of the institution. Under Section 327 they can be committed by a judge, usually of the special sessions court. When they appear before the judge charged with some crime, he, finding them to be drug addicts, commits them to the workhouse for treatment, which terminates by direction of the medical authority. They are then returned to court and are dealt with on the original charge, as the court sees fit.

The following chart shows that 240 men and thirty-two women were received under Section 327, of whom 114 men and sixteen women had never been convicted of any crime, so far as our files go, or so far as we have knowledge. One hundred and twenty-six men and sixteen women had served previous sentences, as shown on the chart. Seventy-two men and five women were convicted the second time. Thirty-one men and four women were convicted the third time. Other convictions are shown on the chart. One had served nineteen

sentences. In other words, fifty-two per cent. of the men and fifty per cent. of the women are former offenders of the law. Of the 111 men and five women received under Section 249A, fifty-nine men and four women had no previous record, while fifty-two men and one woman had served previous sentence.

CHART SHOWING MEN AND WOMEN RECEIVED AT THE WORKHOUSE DURING THE YEAR 1918 FOR DRUG TREATMENT. (UNDER SECTIONS 327 AND 249A (SELF-COMMITTED), WITH THE NUMBER OF SENTENCES EACH HAS SERVED.)

	Under Section 327			Under Section 249A			Grand total.
	Men.	Women.	Total.	Men.	Women.	Total.	
Received	240	32	272	111	5	116	388
First time	114	16	130	59	4	63	193
Second time	72	5	77	27	1	28	105
Third time	31	4	35	16	0	16	51
Fourth time	17	2	19	8	0	8	27
Fifth time	1	1	2	0	0	0	2
Sixth time	1	0	1	1	0	1	2
Seventh time	1	1	2	0	0	0	2
Eighth time	1	0	1	0	0	0	1
Ninth time	1	1	2	0	0	0	2
Tenth time	0	1	1	0	0	0	1
Eleventh time	0	1	1	0	0	0	1
Twelfth time	1	0	1	0	0	0	1
Thirteenth time	0	1	1	0	0	0	1
Fourteenth time	0	1	1	0	0	0	1
Fifteenth time	0	1	1	0	0	0	1
Sixteenth time	0	1	1	0	0	0	1
Seventeenth time	0	1	1	0	0	0	1
Eighteenth time	0	1	1	0	0	0	1
Nineteenth time	0	1	1	0	0	0	1
Percentages	126	16	142	52	1	53	195
	52%	50%	52%	47%	20%	45%	50%

These records are tabulated and compiled from finger prints taken of all persons upon admission, in accordance with law. A very large proportion of those received have been committed two, three, four, and five times for drug treatment under both sections 327 and 249A.

Finger print records on file in my office show that over fifty per cent. of those addicted to the use of drugs have criminal histories. Some have had bad records prior to the use of drugs. Most have gone into criminal life as a result of the drugs, because those who have a craving for the drug are not sane or rational persons, and pleading with them to abandon the use of drugs is in vain. There are the rich or social addicts, and the poor or slum addicts, the only difference between them being a matter of dollars and cents. The former can afford the drug, while the latter cannot. Were the drug to be withheld from them you would find them pretty much alike.

One inmate was recently asked by Doctor Lichtenstein, the Tombs physician, what drug and how much of the drug he used a day. He answered: "It all depends on how much money I have, doctor. Some days I use fifteen grains of morphine and ten grains of cocaine, and then again, if I have the money, the doctor will prescribe forty or fifty grains of morphine for me." He was asked the name of the doctor, which he gave, and was then asked if it was the same doctor who prescribed the varying amounts. He said it was the same doctor. It is evident that that commercial physician had absolutely no intention of a reduction in dose.

A terrible example of the result of ambulatory treatment of drug addiction was seen in the Tombs Prison recently. The victim was a young man who for seven years had been addicted to morphine, heroine and cocaine. There was not a square inch on the thighs, abdomen and arms that was not covered with an abscess, or an angry looking ulceration. He had been receiving forty grains of heroine and ten grains of cocaine every day from one of

*Read at the stated meeting of the New York County Medical Society, May 26, 1919.

the commercial doctors. He was a member of a prominent family and his parents were so distracted that they were about to give up hope of rescuing him. If this victim were to receive ambulatory treatment, would he ever be free from the craving of the drug? Of course not. This case clearly shows the danger of ambulatory treatment and the awful menace of the commercial doctor.

Distraught parents come pleading for aid and advice. The complaint is always the same, i. e., "If we only had known the first signs of this dreadful curse, we could have saved the boy." If parents knew the signs of the beginning of drug addiction they could have the victim treated immediately and cured before the habit became fixed. Once drug addiction becomes firmly established a positive cure is difficult and the only way it can be accomplished is through institutional care and treatment. It is rare to come in contact with young men between sixteen and twenty-one years of age who are confirmed alcoholics. Compare this with narcotic addicts. The general rule is that the addiction is present mainly in youths from sixteen to twenty-one years of age. This is really the developmental age. Narcotics hinder development, and boys and girls are forever wrecked while still in a developmental period.

Let us consider the rapidity of organic changes due to the two forms of addiction. Alcohol is slow in producing deterioration. The will power and moral fibre are not so rapidly affected by alcohol as by opium and its derivatives. As a consequence, it is quite easy for a person who begins to drink to stop abruptly without any bad effects. Even whiskey drinkers may take two or three glasses a day for months and stop abruptly without any pronounced aftereffects. Contrast this with opium and its derivatives. If a person takes these drugs for three months steadily, taking three hypodermics a day, he will become a true addict, and were he to stop abruptly he would show decided withdrawal symptoms. As a rule, addicts must increase the dose as they go along in order to obtain the desired results. Beer drinking produces diuresis, i. e., an action upon the kidneys causing its rapid elimination from the body, while opium and its derivatives have a cumulative action and are stored up in the tissues.

One of the greatest points of contrast between the two addicts, however, is in the method of administration. Alcoholic stimulants are always taken through the mouth. Opium and its derivatives are usually taken by hypodermic, or by sniffing. Addicts seldom take the drug through the mouth. What is the result? In hypodermic administration we find, as a result, abscess formation, ulceration and disfigurement of the body, because the addict is not particular as to the sterilization of the needle, or site of injections. In fact, many addicts push the needle through clothes and all. In sniffers of the drug, nasal perforation occurs.

From investigations and studies by the Department of Correction, it is believed that the federal drug act should provide:

1. All drugs coming into the United States from whatever source, and all drugs manufactured in the

United States, should be placed under the supervision of the United States Public Health Service.

2. The United States Public Health Service should sell or dispense proper quantities of the narcotics to the State Health Department of each state.

Legislation enacted by the State should provide:

1. The State Health Department should sell, or dispense narcotics deemed necessary to the department of health of every city, or local community.

2. The department of health of every city should open stations in the city, at which place the physician, dentist or veterinarian may obtain what he requires, and to which place a drug addict may go and receive relief for his immediate condition, i. e., not to receive a certain amount of drug to take away with him, but to receive a hypodermic injection at the station.

3. After receiving the temporary treatment, the addict should be given a card addressed to a certain hospital set aside for drug cases, to which the addict must go to receive treatment.

4. After being relieved of his craving for the drug, the addict should be sent to a farm or sanitarium, where he is to remain from three to six months for upbuilding treatment.

5. At the end of three or six months, the addict should be released, and placed on probation for two years or more, and required to report at the hospital where he was taken off the drug, at least once every month, then and there to be detained under observation for twenty-four to forty-eight hours.

6. If the addict then shows that he is again taking the drug, he should be made to repeat the treatment.

Lieutenant Sherb, of the narcotic squad of the Police Department, has recommended that every addict have a card with his picture and fingerprints. It would, however, be advisable to provide four such cards: One to be kept by the addict; one by the institution treating the addict; one by the Health Department and one by the Police Department.

Drug addicts should be committed to correctional institutions instead of to hospitals for treatment, because in a correctional institution they cannot leave of their own free will. The supervision, also, is better, as they cannot come into such free contact with others. Visitors are restricted, and less chance exists for smuggling drugs to them. Again, in a correctional institution, they can be finger printed in accordance with law. This means of identification may indicate previous convictions which would show previous physical conditions, treatments, and other data. Conditions surrounding the addict are stricter, and the physician has more direct control than is possible in any other hospital.

Are we to remain powerless in the face of this great evil? Are we to stand by and see our young people ruined by drugs; to see them become criminals and sexual perverts; to see them disfigured by abscesses? Are we to throw up our hands and allow drug addiction to spread? Narcotics directly affect procreation. Surely now is the time for action.

IMPACTED LOWER THIRD MOLARS.

Causes, Symptoms, Diagnosis and Technic of Removal Under Conductive Anesthesia.

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Conductive anesthesia properly administered permits of the complete removal of an impacted molar or any other tooth, without shock to the patient, serious loss of blood, fracture of the jaw or alveolus, nausea, danger of inspiration of infected blood and secretions, and the treatment of the wound and socket to prevent postoperative hemorrhage and infection.

After the age of twenty the most serious and painful trouble of dental origin is not decayed teeth, but impacted teeth, which cause a greater variety of widespread and serious disturbances than any other single dental lesion. Complications arise in seventy-five per cent. of the cases of unerupted teeth. The lower third molar is the tooth most frequently impacted, but other teeth are not uncommonly impacted. An impacted tooth is one that is prevented from erupting by either a barrier of bone, another tooth, or a tooth root.

CAUSES.

There are many causes of impaction of lower third molars and these may be divided into predisposing and exciting causes.

Predisposing causes.—1. Defective embryonic development; 2, perverted development; 3, malnutrition; 4, syphilis; 5, rachitis; 6, neurotic tendency; 7, eruptive fevers; 8, anemia; 9, artificial feeding; 10, scurvy; 11, cretinism; 12, idiocy.

Exciting causes.—1, Arrested maxillary development; 2, undue thickening and resistance of the overlying tissue; 3, undue stimulation of the inferior dental nerve by pathological conditions producing nutritional changes that intensify the bone in the region of the impacted tooth; 4, malposition due to contracted dental arches; 5, severe traumatism to the jaws causing deposition of lime salts in the cancellous tissue; 6, too early loss or extraction of deciduous teeth; 7, failure to lance the gums in retarded eruption of deciduous teeth, producing abnormal density of the cancellous tissue of the mandible; 8, improper orthodontic treatment; 9, improper or excessive pressure in orthodontic cases. The application of force in the treatment of dental irregularities is often made without due regard being given to the laws and forces of development. This is particularly true in regard to the posterior movement of molars to promote pleasing alignment of anterior teeth. 10. It has been asserted that inflammations of the jaw bones are caused by decayed teeth; 11, local increase in the density of the bone brought about by inflammation of the peridental membrane extending into the alveolar process. The cancellous tissue instead of remaining spongy and elastic, becomes hard and solid. This condition following caries of the first permanent molar soon after its eruption is a frequent cause of impaction of the lower third molar.

SYMPTOMS.

Impacted teeth may be present without giving rise to any appreciable local or systemic symptoms. The local manifestations may be noted in the appearance of the cusps or the crowns of the teeth through the gum upon the surface of the alveolar ridge, or the gum may be swollen and tender from irritation caused by the bite of the antagonizing tooth in the opposite maxilla. Spasmodic contraction of the muscles of mastication may result from direct nerve irritation. This inflammation may extend until surrounding muscles and glands are involved and cause temporary ankylosis, the degree of which may be slight or sufficient to cause complete fixation of the mandible. The swelling may be confined to the tissues in the region of the angle of the mandible and may also extend to the parotid and submaxillary structures.

The pain may be continuous and severe, or it may be noticed only upon an attempt to open the mouth. The tissues of the floor of the mouth may become infected and cause symptoms identical with Ludwig's angina and thus endanger life through difficulty in respiration and swallowing. Pain may be neuralgic in character and distributed along the branches of the trifacial nerve. One characteristic local symptom is pain of greater or less severity when the patient is requested to keep the mouth open for two or three minutes. Frequently the pain is referred to the teeth in the upper jaw.

General symptoms.—In adults, malposed or supernumerary teeth are the frequent cause of reflex pain, facial spasm, chorea, epilepsy, dementia praecox, mania, paralysis, sensory alterations, neuralgia or trophic changes, paroxysmal pains simulating tic douloureux, insomnia, chills, thrills and flushes, muscular twitching, sweating, melancholy, fever, rapid or irregular pulse, pains across the frontal temporal occipital and parietal bones, pains in the ear, eye, temples, temporomaxillary articulation, shoulders and knees. When accompanied by suppuration and infection a toxemia of greater or less degree is established. Sometimes tonsillitis occurs.

Local effects.—1. There may be swelling and inflammation of the gums covering the impacted tooth, which is caused by the upper teeth coming in contact with the irritated gum. The irritation may progress through the several stages of inflammation and suppuration, producing cellulitis, tonic contraction of the muscles of mastication, tonsillitis, and infection of the lymphatic glands of the mandible and cheek. 2. The impacted tooth may, by impinging upon the roots of the tooth in front of it, cause absorption or caries and exposure of the pulp. This, unless relieved, will develop into an alveolar abscess. Caries of the impacted molar frequently occurs—due largely to the hood of gum which covers part or all of the crown of the tooth. This retains the debris of the mouth forced under it. Decomposition takes place with the formation of pus, toxins, and acids. 3. Disintegration of the enamel and dentine follows, then death of the pulp and infection of apical foramen. 4. This may progress further until an extensive osteomyelitis of the mandible is produced. 5. Not frequently impacted

molars become encysted, followed by degeneration of the cyst wall and extension of the area of destruction. 6. Necrosis of the alveolar process is not uncommonly caused by impacted molars. This may extend to and involve the ramus and body of the mandible. 7. Tumors both benign and malignant have been caused by the infection, the intense irritation, and the lowered tissue resistance produced by impacted teeth. Cancers have been found on the site of inflamed tissue over and around impacted teeth. Frequently these have progressed beyond the hope of cure. 8. The roots of the impacted teeth may be curved, twisted, and hypercementosed and press upon the pericementum, the inferior dental nerve or its branches. 9. Infection of the inferior dental canal may be established by the incomplete root development and pathological conditions that arise from impacted teeth. 10. The infection of the inferior dental canal may also be produced by the pressure of the impacted molar causing absorption of the root and death of the pulp of the second molar. The subsequent development of an alveolar abscess may extend to and involve the impacted tooth and infection of the inferior dental canal results.

General effects.—1. Impacted teeth may set up functional nervous and mental disorders without causing any local symptoms. 2. They may cause paralysis of the arm, spasm of the sternomastoid muscle (wry neck); tonic spasms of the upper extremities, otalgia, deafness, and nervous affections of the eye; nervousness, insomnia, neurasthenia, psychasthenia, melancholia, epilepsy, dementia præcox and mania. 3. The infection of the tissues surrounding impacted molars may produce toxic neuritis, arthritis, endocarditis, nephritis, septic gastritis, colitis, anemia, toxemia and septicemia.

DIAGNOSIS.

Impacted teeth may sometimes be diagnosed by the pain, swelling, redness and impaired function of the jaw. Probing may in some cases discover the impacted tooth.

The radiograph.—The x ray, that instrument of precision, renders the diagnosis of impacted lower third molars positive, certain, and exact. Its use saves time, trouble, confusion, doubt, possibly the patient's life. In every case in which impacted teeth are suspected or considered a possible cause of local or systemic disturbances, the patient should be advised to have a radiograph made as soon as possible. A radiograph is not only a positive, a certain, and an exact means of diagnosis, but it is of inestimable and unquestionable value as a guide for the operator in the removal of impacted teeth. The radiograph will not only show whether or not an impacted tooth is present, but will show the position of the tooth, the size and direction of the roots, the proximity to the inferior dental canal and with some degree of accuracy, the density and conformation of the jaw bone. It will disclose whether or not the tooth is vital or abscessed, the roots excementosed, or absorbed, or the bone necrosed or destroyed.

After the tooth has been extracted, the radiograph will render another service, it will satisfy both patient and surgeon whether or not the oper-

ation was thorough, complete and successful. Did the x ray serve no other useful purpose than that of locating impacted third molars, and diagnosing conditions associated with them, it would be a great boon to the dental profession and those to whom it ministers. My experience as an oral surgeon and radiologist teaches me, and this is confirmed and reinforced by oral surgeons of considerable skill and long practice, that an operator is unwise, incautious, and unprepared, who fails to procure a radiograph before attempting to remove an impacted lower third molar. The radiograph will enable the careful operator to do better surgical work and leaves no excuse for a careless operator who, by its means, may anticipate many of the dangers which the removal of such teeth sometimes involves. It matters little if the jaws are closed as tight as a safe, by the employment of a proper technic the impacted tooth may be located. The findings of the radiograph will largely determine the method and technic of removal.

TECHNIC OF REMOVAL OF LOWER THIRD MOLARS.

Frequently it is advisable to attempt the reduction of inflammation when severe before undertaking the surgical operation. This may be accomplished in many cases by first painting with tincture of iodine the flap of gum covering the tooth and then packing a small piece of iodoform gauze under the flap. A thorough cleansing of the teeth and the frequent spraying of the mouth with an antiseptic solution will also help. Cold compresses, applied intermittently, and a small dose of calomel, followed by a saline cathartic, will also have a beneficial effect. The application of the violet ray inside the mouth in the vicinity of the tooth for ten to fifteen minutes, after a thorough painting with iodine of the gums and mucous membrane, is also beneficial. This may be followed by the application of a larger electrode upon the face in the neighborhood of the angle of the mandible.

There are several methods for removing lower third molars—that from floss silk to turn keys, and each has had its advocates. But the technic, applicable to the larger number of cases and followed by the greatest success in the hands of the writer, except in those cases in which the tooth is located in the lower border of the mandible or in the angle or body of the ascending ramus, is as follows:

Prior to giving the anesthetic, whether general or local, the mouth and teeth should be placed in as aseptic a condition as possible. The teeth should be as thoroughly scaled and polished as circumstances permit. Just before giving the anesthetic, the mouth should be thoroughly sprayed with a warm antiseptic solution, then the surfaces of all the teeth, particularly the interproximal spaces, should be painted with iodine.

Then the mouth gag is inserted, before the general anesthetic is given. If done under conductive anesthesia, the mouth gag is inserted at the time of the operation. The site of the operation should again be painted with iodine. With the cheek held away by a cheek retractor in the hand of the assistant, an incision is made in the gum about one half inch below, if possible, the centre of the gum margin of the second molar tooth on the buccal

side. If it is not possible, because of the conformation of mandible in this region, to carry the incision below the second molar tooth, the incision is carried as far below as possible and then buccally. This incision is carried up and backward to the centre of the jaw about a quarter of an inch distal to the second molar and then carried distally about an inch, which will bring it up on the ramus.

With a sharp periosteal elevator, the periosteum, on both sides of the incision, is pushed away or elevated from the bone. With the two forked or rake shaped retractors, the two flaps are pulled aside to expose the bone. The object of the operation then becomes the removal of a triangle, more or less complete, three quarters of an inch long on the upper side descending half an inch and parallel to the long axis of the second molar and the ends connected by a diagonal line drawn from a point an inch distal to the second molar to the point half an inch below the centre of the gum margin of the second molar tooth.

This may be accomplished by the use of either a bone cutting burr or a bone chisel. With the radiograph for a guide, if a bone cutting burr is used, the burr is started at the point an inch distal to the second molar, carried forward to the second molar in a line dividing the body of the mandible. The bone is cut until the tooth is encountered and the burr is then withdrawn and is again started at the distal point on the ramus, carried obliquely forward and downward to a point opposite the end of the first bone cutting. These two points are then connected and the triangular piece of bone removed with a chisel. If the chisel is used, an opening distal to the second molar may be made with the bone cutting burr, and then the section of bone previously outlined may be chiseled out or the entire operation may be done with the chisel alone. Care must be exercised to avoid cutting through, fracturing or crushing the lingual plate of bone because of the proximity of the lingual and mylohyoid vessels and nerves.

This operation will uncover eighty per cent. of the impacted lower third molars. After the tooth is uncovered, it may be tilted out with a right angle or straight elevator. Sometimes it may be necessary to separate the roots from the crown with a right angle hand piece and the parts removed separately. If convenient, the tooth may be removed with a suitable pair of forceps. During the operation, the little gauze swabs are used to swab out the blood and saliva which may find their way into the wound.

After the tooth is removed, all rough edges of bone must be smoothed off with chisels or curettes, bone cutting forceps, or large bone cutting burrs, and all necrosed bone must be curetted out. Shredded or ragged gum tissue may be removed with curved gum scissors. The cavity is then irrigated with warm salt solution, then swabbed out with a dry swab. The cavity is then painted with iodine solution, either the tincture, or the aqueous solution of iodine and iodide of potassium. Into the cavity is then placed eufroform paste or orthoform and novocaine powder and tightly packed with iodoform gauze. The orthoform or novocaine will

relieve the postoperative pain. The posterior part of the wound may then be closed with two or three silk or horse hair stitches, and the anterior part left open for the removal and replacement of the iodoform gauze. The mouth gag is then removed and patient instructed to return in one, two, or three days. The cavity is irrigated with normal salt solution and the iodoform gauze renewed every two or three days until the wound is covered with granulation tissue.

A saline cathartic is also prescribed and intermittent applications of iced compresses to the jaw, and the patient is instructed to avoid attempting to eat solid food for at least twenty-four hours. In all stages of the operation, asepsis must be strictly carried out.

DANGERS.

The removal of these lower impacted third molars is a surgical operation and not a simple extraction. Because of the anatomical location of impacted lower third molars and the not infrequent unfavorable conditions under which their removal must be effected, certain definite dangers, in addition to those common to other surgical operations, must be anticipated, so far as possible, and guarded against.

The inspiration of blood.—In patients deeply under a general anesthetic, lying in the supine position, the blood may easily drain into the trachea in such quantities as to fill the bronchi, flood the lungs and cause instant death. This has been a frequent cause of fatalities during mouth operations.

Pneumonia.—The inspiration of bacteria laden blood or saliva may produce septic pneumonia which may lead to a fatal termination. Both of these dangers are greatly reduced if not completely overcome when conductive anesthesia is employed.

Hemorrhage.—The immediate loss of blood, if unchecked, may be a serious menace to the vitality of the patient. A secondary hemorrhage may be difficult to control and serious in its results. Careful packing will guard against this.

Hemophilia.—The danger and difficulty attendant upon the management of a bleeder with wounds of this character in the mouth are serious and perplexing. The most reliable agent under such conditions is horse serum.

Fracture of the jaw.—Unless the technic outlined or a similar one is carefully carried out, with particular emphasis on the "carefully," the danger of fracturing the jaw or causing temporary or permanent ankylosis or injury to the nerves must not be lost sight of.

General infection.—Every effort should be made to guard against this by carrying out a careful and aseptic technic.

Failure to secure the tooth.—A lower molar suddenly forced out of its socket may be swallowed or become lodged in the trachea or bronchi, causing suffocation or death.

The fatalities that have resulted from these causes may be traced in many instances to haste in operating, the failure to secure a good radiograph, the failure to look upon the removal of these teeth as a surgical operation, the neglect of aseptic precautions and the carrying out of a careful technic.

8 WEST FORTIETH STREET.

BRAIN TUMOR.

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Cases of brain tumor verified by autopsy deserve recording because of the contribution which they make towards definite diagnosis. I have recently had two cases under observation in which the clinical diagnosis was verified by postmortem examination.

CASE I.—Max Z., aged forty-one. Tailor. First seen January 22, 1917.

Family history.—Father died from cerebral disease at fifty-five. One brother died of tuberculosis.

Previous illness.—Measles and scarlatina in childhood. Venereal disease denied. Used alcohol and tobacco moderately.

Present illness.—Patient has been having headache for nine months. This is localized chiefly in the occipital region. Several weeks after the onset of the headache patient saw double. His headache has been more or less constant. There was no nausea. He has experienced some vertigo, some loss of power in the right hand and foot. For the last ten days there was disturbance in swallowing and in speech. Patient tends to fall toward the right side.

Physical examination.—Pupils both irregular but react to light and accommodation. Fundus showed choking of the disc on the left, distended veins on the right. There was paralysis of the left abducens, drooping of the right angle of the mouth. There was spasm in the left platysma. The tongue deviated slightly to the right. Right hemiparesis was present with diminution of the abdominal wall, cremasteric and foot sole reflexes, on the right; no pathological reflexes. There were no ataxia, no definite sensory changes, no bladder or rectal symptoms.

On January 25, 1917, the patient showed rapid nystagmus on looking to the right. Patient stood better on his left leg. Percussion tenderness of the skull was present on the right. Patient stated that the pain originally was over the left occiput. Heart and lungs negative. Blood pressure normal. Urine negative. Fundus showed outline of left disc indistinct with swelling of the head of the disc. Right disc showed similar changes. No hypesthesia of the cornea. A spinal tap was not done. The blood Wassermann was negative, on three different occasions.

In view of the paralysis of the left abducens and the right hemiparesis (crossed paralysis), the presence of nystagmus, and the choking of the discs, a diagnosis of tumor of the left half of the pons was made. The anomalous feature was the absence of definite sensory changes. The patient subsequently went to one of the New York hospitals where he died in April, 1917. The autopsy showed miliary tuberculosis and a large solitary tubercle in the pons.

CASE II.—William E. Married. Packer.

Family history.—Negative.

Previous history.—Smoked ten to twelve cigarettes daily. Drank alcohol in moderation. Ven-

ereal infection denied. Patient was first seen February 2, 1917.

Present illness.—Six weeks ago while at work patient felt queer, and vertigo developed without loss of consciousness. Fifteen days latter became aphasic and lost consciousness for an hour. Recovered and was able to go home. He was sufficiently well to go to work the next morning. Five days prior to the first examination patient had another dizzy spell and had had nausea and vomiting at intervals. No impairment of vision. No marked headache, weakness of the right half of the body.

Physical examination.—Pupils normal. Some loss of power on the right side. Complete sensory loss on the right side including the cornea. Distinct astereognosis was present. Deep reflexes were exaggerated on the right. Abdominal wall, cremasteric and foot sole reflexes diminished on the right. No pathological reflexes were present. Blood Wassermann was negative. Spinal fluid showed no cells, no increase in globulin and a negative Wassermann. Fundus showed nothing definitely abnormal. Heart and lungs negative. Blood pressure normal. X ray of the skull showed a large sella turcica.

Due to the suddenness of the onset and the periodical aggravation of the symptoms we first thought of a progressive cerebral thrombosis. Patient went on for several weeks without much change in the objective findings. About April 1, 1917, the patient began to suffer from headache and vomiting. Became markedly aphasic. Showed alexia and agraphia and the fundus showed a blurring of the disc outline especially on the left. Percussion of the left side of the skull showed tenderness and gave tympanic resonance. The pulse rate dropped to fifty a minute.

In view of the evidences of increasing brain pressure, the original diagnosis was changed to that of brain tumor probably subcortical in the parietal lobe. Patient was then transferred to the hospital where the diagnosis of brain tumor of the frontal lobe was made. An exploration was made in that area. No tumor was found. He died a few days later from meningitis and at the postmortem examination the tumor was found. The pathologist reported that the examination revealed "a primary subcortical neoplasm in the left parietal region. Microscopical examination showed that it was a perithelioma. The hypophysis was found enlarged to twice its normal size due to diffuse adenomatous hypertrophy." We based our localization on the persistent astereognosis, the sensory changes, the absence of cortical epilepsy, the transitory character of the aphasia, the mild motor phenomena. The association of alexia, agraphia and aphasia, we thought, was due to lesion of the subcortical association tracts.

74 EAST NINETY-FIRST STREET.

Whooping Cough.—Liebermeister (*Journal of Medical Society of New Jersey*, November, 1919) uses:

Potassium bromide,	7.5 grams
Ammonium bromide,	5 grams
Aque distillata,	ad 200 c. c.
Teaspoonful three to five times daily.	

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,

Geneva, Switzerland,

EARLY SYPHILITIC PHEBITIS.

The French have given particular study to early syphilitic phlebitis. I do not refer to either the late tertiary phlebitis or to nodular thrombophlebitis (the *erythème noueux syphilitique*) but to the early venous manifestations of the secondary period. As this condition gives rise to no marked symptoms it may well be overlooked both by the patient and physician, and undoubtedly in practice this is often the case. This form of syphilitic phlebitis occurs early in the infection; it has been met with a few days after the appearance of the chancre, before any secondary lesion is present. Usually, however, it appears during the full secondary eruption at the time when the infection appears to be the most generalized, in other words, during the first three months following the primary sore.

The age of the patient does not appear to have any bearing on the production of the lesion, but from published cases it is fair to assume that females are less prone to it than males. Men are more exposed to hard work and long hours in the erect position, which may be the causative factors for the localization of the luetic virus in the veins. There is reason, however, to accept this statement with some reserve because in quite a number of instances the patient did not indulge in hard work. The presence of varicose veins does not appear to favor the development of syphilitic phlebitis, but alcoholism—more common in the male—may perhaps play a secondary part in the production of this lesion. In the majority of recorded cases the syphilis ran a normal course, the specific manifestations offering nothing special, but in some instances there appeared to be a tendency to a multiplicity of visceral lesions.

The onset of early secondary syphilitic phlebitis is often quiet. A phlebitis develops but gives rise to no spontaneous pain, and for this very reason it is probable that the lesion escapes detection in many cases of early secondary syphilis. It is only by systematic exploration of the superficial veins that a painful sensation may be elicited along the tract of the venous trunks. Sometimes, however, the patient's attention may be drawn to the part by a feeling of stiffness or some pain in the limb involved, with nocturnal muscular cramps and tingling, often erroneously attributed to secondary peripheral algesia, so common in syphilis.

The phlebitis is usually seated in one of the superficial veins of the limbs—the internal saphenous for example—and I shall select this localization for clearness of description. By inspection, the limb will be found normal in attitude and size. Occasionally a slight rosy lymphatic streak of about one finger's breadth can be seen running along the course of the vein. This is a most inconstant phenomenon and simple inspection fails to reveal any evidence of trouble, the superficial collateral circulation being ordinarily absent. Gentle palpation will reveal a hard regular or moniliform

venous cord varying in size from an ordinary quill to a pencil and extending along the track of the vein or only a portion of it, without any adhesion to the integuments, muscles, or aponeurosis. Years since, Fournier pointed out that the lesion in the vein may be limited to a small portion of the vessel or may involve a long segment corresponding to a segment of the limb; more infrequently the entire venous trunk from start to finish is involved. Roussy has proposed calling the first variety partial syphilitic phlebitis, the second segmentary phlebitis and the third total phlebitis. Finally, cases where the involvement is moniliform, presenting areas of induration separated by normal vein, he calls fragmented phlebitis.

Occasionally a slight increase of the local surface temperature is noted; in some cases there is a slight transitory edema localized to the malleolæ and posterior aspect of the legs which can be detected by palpation.

The functional symptoms of early syphilitic phlebitis are usually discreet and the patient may experience nothing more than some stiffness in moving, which does not prevent walking. In other instances pressure over the area of the thrombosed vein will only elicit some localized pain and it is indeed infrequent to come across a case where the pain attains the degree encountered in ordinary phlebitic processes. In exceptional cases the pain may occur in nocturnal exacerbations. Objective nervous phenomena or trophic muscular or joint disturbance do not occur as in ordinary phlebitis.

The general symptoms of early syphilitic phlebitis are likewise discreet. A slight rise of temperature may occur for a few days, but never does one meet with the usual train of serious general symptoms common to infectious phlebitis. The evolution of early syphilitic phlebitis is probably the most characteristic point of this process. It begins suddenly with a low inflammation and then suddenly becomes a quiescent process confined to a plastic induration of the vessel walls. The evolution is slow and lasts for from four to six weeks, as is the case of infectious phlebitis in general. Complete and permanent recovery is the rule, and the process leaves no traces in its wake.

What causes the gravity of phlebitis in general are serious complications, such as emboli, which rarely disturb the quiet evolution of the luetic variety. Jullian has recorded a case of embolus in luetic phlebitis, but so far as I am aware it is the only instance on record to date. This is a truly noteworthy fact and is in itself enough to individualize the process under consideration. The prognosis is consequently excellent and the effect of antiluetic treatment certain.

Recurrences of syphilitic phlebitis have been observed a number of times and may be regarded as rather frequent. In these recurrences the lesion may involve other veins successively, but it does not appear to be in any way more severe in character and responds to treatment readily. This marked tendency to recurrence is still another peculiarity of early syphilitic phlebitis.

This morbid process assumes certain clinical modalities which differ with the location and the

number of veins involved. Usually the process is seated in the superficial veins of the limbs, and this form is the commonest and therefore the best known. Its site is the internal saphenous vein or the veins of the upper extremity and when occurring here the symptoms are probably more discreet, the cephalic vein being usually completely involved. Edema is often absent, pain is trifling and often there is none at all, and it is by mere chance that the presence of a thrombosed vein is discovered on the arm. In other cases, some slight functional impotence will draw attention to the lesion.

Phlebitis of the deep veins is much more infrequent, but cases offering the clinical picture of phlegmasia alba dolens do occur from time to time. The deep veins of both the lower and upper limbs may be affected.

It is uncommon for this early form to become localized to a single vein; usually several veins in a limb are involved and sometimes the veins of several limbs. This multiplicity of affected vessels is peculiar to the syphilitic type of venous trouble and is hardly, if ever, seen in diseases capable of provoking phlebitis. Usually the lesions are bilateral and occur at symmetrical points on the limbs. The different veins are simultaneously involved or at least at short intervals from each other, but cases of syphilitic phlebitis occurring in successive outbursts have been met with. The histologic pathology is at present known, as several examinations of biopsied thrombosed veins have been made which show that this form of phlebitis offers nothing characteristic.

In the specimen studied by Thibierge and Ravant, the lumen of the vein was occluded by a clot which at certain spots appeared to be distinctly separated from the endothelium by small clear spaces, and which over the greater extent of its base of insertion appeared to be solidly united to the internal tunic. The clot gave the impression of being already old. The endothelial layer was normal, no change being found anywhere; the subendothelial stratum had proliferated into the lumen of the vessels in the form of projecting conical cylindroid or irregular shaped buds. These buds were of different heights and could be grossly compared to villous outgrowths projecting into the lumen of the intestine. On cross section the lumen of the vessel had a stellate aspect.

The buds were covered on their surface by normal endothelium and had as a base the limiting elastic internal membrane, almost regularly circular and in no way dilacerated. It did not follow the sinuities of the buds. The latter were formed essentially by a dense fibroid connective tissue throughout which involuntary muscular fibres were scattered and united in tiny bundles running parallel with the axis of the vessel. There were no vessels or elastic fibres in the buds. The subendothelial stratum was, therefore, infiltrated with connective tissue and distinctly thickened.

The external tunic offered normal connective tissue, plated with fat cells and vascularized; the vasa vasorum were gapping and were not surrounded by perivascular lymphatic islands. The vessels penetrated the middle stratum but did not reach the muscular fibres of the subendothelial

stratum. It should be added that the muscular tunic did not present any appreciable change; there were a few mononuclears in the interstitial spaces.

From this examination, as well as the results recorded by other workers, it results that the venous lesions are characterized essentially by an infiltration of connective tissue in the subendothelial stratum of the vein, giving rise to buds projecting into the lumen, thus reducing its calibre and giving it a stellate aspect. The presence of a clot in the vessel is inconstant; when one does exist it is solidly planted on the internal tunic, which explains why embolus is almost unheard of in syphilitic phlebitis. Infiltration of the mucous stratum and external tunics is frequent.

All these histological researches are undoubtedly of great interest, but they do not demonstrate the syphilitic nature of the phlebitis. It had been supposed that syphilitic phlebitis was governed by the same pathogenesis as other forms of infectious phlebitis and that it had a microbic origin, as Widal and Vaquez had shown in the case of the latter. It was, however, only by detecting the presence of the treponema in the wall of the vein that the specific nature of the process could be proved, and this was done by Thibierge and Ravant. I can do no better than to quote this part of their paper.

On March 6th, they removed a piece of the right internal saphenous vein measuring five centimetres in length between two ligatures.

Examination of the excised vein, on section, showed the lumen to be almost completely occluded and hardly any trace of it could be seen. The vein was cut, with all due aseptic precautions, in the direction of its long axis and showed that it did not contain either clot or fluid blood but only a small quantity of serous liquid. Scrapings taken from the internal tunic of the vein were examined with the ultramicroscope and five spirochetæ were seen in the midst of the cell detritus. The organism had all the characters of the pallida but only two of them were endowed with movement. No other bacteria, spirillæ, or spiral filaments were encountered. Three other scrapings were collected with the same precautions and were stained with largin, but only two very distinct spirochetæ could be found in the microscopic fields.

As soon as the vein had been excised a *Macacus rhesus* was inoculated at two different spots with the serous fluid obtained from the lumen of the vessel.

On April 1st, a henna colored macula five by three millimetres in size appeared on the orbital point; the macula was slightly raised from infiltration of the integument. No lesion was visible on the eyelid. On the following day the orbital lesion became more distinct, while on the free border of the upper lid where the scarification had been made, a dark red edema appeared. On April 3d, 4th, and 5th, the lesions became more marked. On April 6th, the lesion on the orbital area diminished in intensity and became the seat of a slight desquamation. The lesion on the free border of the lid was also less distinct. On April 8th, the lesions were still quite distinct. These lesions were those of experimental syphilis in the monkey and could not be mistaken for anything else.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper:

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CXCVIII.—*What is the proper equipment for a rural physician?* (Closed.)

CXCIX.—*How would you make a diagnosis of pregnancy?* (Closed.)

CXCX.—*How do you treat insomnia?* (Answers due not later than December 15th.)

CXCXI.—*How do you treat surgical shock?* (Answers due not later than January 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication.

The prize of \$25 for the best answer to Question CXCVII was awarded to Dr. J. Balensweig, of New York, whose paper appeared November 1, 1919.

TREATMENT OF FRACTURE OF THE FEMUR.

(Concluded from page 723.)

By LEONARD B. FAUQUIER, M. D.,
Jersey City, N. J.

General treatment.—Symptomatic treatment is of the utmost importance in the aged. They should be made comfortable, given the proper diet, placed in cheerful surroundings, and given bodily massage. The parts of the body that are exposed to pressure should be protected with pads and cushions, kept clean, rubbed with alcohol, dried and powdered zinc stearate applied. Deep breathing should be encouraged. There are dangers from anesthesia, shock, asthenic hypostatic pneumonia, embolism, exhaustion from pain and confinement, gangrene, and septicemia.

Local treatment.—Wooden splints are usually employed for temporary dressings, but cardboard, leather, iron, zinc, tin, or even bundles of straw may be used. The patient can be moved about from place to place on a stretcher or a Bradford frame. The Blake splint, the double inclined plane or molded splints of plaster paris, cardboard, or gutta-percha may also be used. The patient can be moved about with safety if the ankle and pelvis are immobilized. Reduction may be obtained with or without the use of anesthesia by traction applied to the lower fragments with careful manipulation of the fractured limb. During these procedures counterextension is maintained by an assistant. Retention, fixation, or immobilization may be applied by suitable splints which insure steady traction, counterextension, abduction, flexion, suspension, elevation, or pressure to correct any forward, backward, lateral, angular displacement which may be present. Buck's extension is more efficiently applied when used with a Volkman's sliding rest and T splint. The pad placed over the trochanter will serve to direct lateral pressure. The Maxwell splint is also useful. A towel may be placed in front of the thigh just above the knee and brought down beside the leg with an attached weight. A rod, transfixing the condyles and a hinged instrument which causes traction, or a strip of muslin fastened to the skin by a solution of

Venetian turpentine and resin in alcohol is a convenient method of establishing extension.

The Hodgens, Flint, Cabot, and Blake extension splints may be used alone or in combination with Buck's extension apparatus. The Thomas splint is also useful. Traction, abduction, flexion, lifting the trochanter forward, rotation, and immobilization by the use of plaster of paris, Whitman's method, has many advocates. If the indications are present a bed cradle should be used.

In the treatment of fracture in the newborn the thigh and leg are flexed upon the abdomen in hyperextension and this position is maintained by a bandage. Talcum powder is sprinkled on the abdomen and then covered with a towel to protect the skin surface.

For fracture of the femur in children under ten years of age the Cabot posterior wire frame with coaptation splints and extension, or the Bradford frame with vertical extension is employed. For ambulatory treatment, crutches and a high shoe with the Cabot, Mitchell, or Taylor hip splint are applied in order to prevent coxa vara. For children over ten years of age Buck's extension, with a plaster of paris spica from the ankle to the axilla, is the treatment of choice. A new spica should be applied every ten days. In separation of the epiphysis, the leg should be flexed, after reduction, to an acute angle and immobilized with plaster of paris. In supracondylar fracture the leg should be flexed or the tendon Achilles separated by tenotomy and the limb placed upon an inclined plane.

When important blood vessels have been severed an amputation may be necessary. Noninfected wounds should be cleansed with Dakin's solution, or 1-1,000 bichloride of mercury, the fracture set in position, and the wound closed by primary suture.

If an infected wound is present the loose fragments must be removed and the deep layers of muscle and fascia sutured. The wound is then irrigated with an antiseptic solution. A rubber tube, drain, or gauze is inserted for drainage. When sufficient reduction cannot be maintained, direct fixation by suture, ligature, a central or external brace may be employed. The Hanley double wire loop, Lane's plates, or fixation by bone pins

inserted into the medullary canal will serve for this purpose. Albee's bone inlay is used in cases where a graft is required. The x ray should be used as a guide before, during, and after treatment to secure the best results.

Dr. Venezia Giacalla, of Brooklyn, says:

The methods brought out by the surgeons during the war have to a degree revolutionized the treatment for fracture of the femur. The methods which were found most satisfactory after a careful study of many thousand cases were not the result of the work of any one surgeon, nor did they follow the teachings of any particular school. They were the result of the findings of the surgeons of many countries and the principles which were finally recognized as basic are comparatively simple and aim to reestablish the continuity of the bone without shortening, or where there has been a considerable loss of substance with a minimum shortening. In addition to this it is vital that the function of the limb be restored. The object then is to secure immobilization and alignment of the fractured bone, but at the same time retain freedom of movement for the adjoining articulation. It was found during the early years of the war, when plaster of paris casts and spicas were in common use, that ankylosis of the hips and knee joints and even of the ankles and toes was a frequent result of the complete immobility to which the limb had been subjected.

The almost complete abolition of plaster casts, splints and spicas, except for purposes of transport, and the universal use of the adjustable Balkan frames remedied these conditions to a far reaching degree. In adopting the suspension and extension apparatus which was used in conjunction with the Balkan beds it was possible to do away with the cumbersome and wholly unnecessary plaster. This simplified the dressings, gave comfort to the patients, kept the fractured fragments of bone in alignment and prevented ankylosis by virtue of the mobility afforded to the patient. This freedom of movement was not limited to the adjoining articulation, but if the suspension was properly adjusted in the bed the patient could move about freely and frequently change the position of his body; he could sit up in comfort and not cause pain to the injured part. Pain was also avoided when the dressings were applied. This was important, for it prevented the involuntary contractions which had a tendency to displace the position of the fractured bones. In closed fractures, however, this advantage is not so marked, for the dressings are not an important part of the treatment. The free movement of the patient on the other hand is of primary importance in the aged, for it enables them to change their position frequently without discomfort and tends to prevent hypostatic pneumonia, which is to be thought of and is frequently more dangerous than the direct result of the fracture. This enables us to treat the patient in bed and is often useful when ambulatory treatment is not an ideal method. There are instances where ambulatory treatment is preferable even when the improvements which have been added to bed treatment are used. The

adjustments which are possible when the Balkan bed frames are used make it possible to place the limb of the patient in any position necessary. This is important when the fracture is at or above the upper third of the bone, for then it is necessary to secure extreme abduction for the alignment required to overcome the muscular pull. This prevents bowing and shortening.

The question of extension is important, for by means of proper extension the bones may be kept in place and the interposition of fragments or periosteum avoided. Usually extension can be best applied under the Balkan bed treatment. Zinc oxide adhesive bands are fastened to the lower portion of the thigh and a weight attached which is fastened on a cord which runs on a pulley placed at the end of the bed. The amount of extension required varies with the muscular tension exerted upon the fractured bone. Another method of extension which is useful at times is the application of a stockinette tube fastened to the skin by a solution of zinc oxide. This gives more surface application and allows for more traction, evenly distributed.

When the fracture occurs in the lower third of the femur the problem of extension is more difficult, for the skin surface is great enough to allow for sufficient traction to secure the necessary extension even though there is less muscular pull to overcome. It is never advisable to augment the degree of extension which can be secured from the skin surface of the thigh by placing the extension below the knee and on to the leg, for this implicates the knee joint, placing a certain amount of stress upon it in addition to the immobility to which it is subjected. Ankylosis will frequently follow this procedure due to the disuse of the joint, the drying up of the synovial fluid, the cessation of synovial secretion, and formation of fibrous bands. This ankylosis may progress beyond the formation of connective tissue fibres and true bone growth may occur with a permanent stiffening which cannot be overcome by any physiotherapeutic or surgical means.

For the recumbent treatment of fractured femur the portable x ray is extremely useful, for by the use of the fluoroscope and radiographic plates the bone may be examined laterally and anteroposteriorly and the exact desired position obtained and maintained in the suspension appliance; and the proper amount of traction exerted to overcome the muscular pull. From time to time the limb should be examined to see if the proper position is being kept and so enable the surgeon to correct any malposition or make changes in the amount of weight used. The amount of give in the skin and adjacent tissues should be considered in the application of the extension. At times this may be great enough to upset calculations and the weight used may be insufficient to overcome the muscular pull exerted. In the event of an insufficient traction being secured by the amount of available skin surface then it may be necessary to resort to Stiman pins which may be used with facility in conjunction with the Balkan suspension bed.

The aftertreatment of fractured femur is of

prime importance and should begin early before the fracture has united, for the treatment properly applied has a tendency to help in the processes of repair by aiding nutrition and stimulating the circulation and to prevent ankylosis and deformity by supplying exercise to the parts. In the application of this treatment the advantages of the suspension method of treatment are further demonstrated. The treatment at the beginning should consist of light massage, some distance away from the fracture, both above and below. This is gradually augmented and passive movements of the distal and proximal joints are added. In order to secure immediate active movements and to prevent drop foot while the leg is held in position a plank is held against the sole of the patient's foot by means of elastic bands. In this way he can exercise his ankle and toe joints freely. This not only tends to prevent any ankylosis which may have a tendency to occur, but also keeps the patient's joint in better condition so that when he is able to resume walking he may do so with less dependence upon crutches or a cane. And the reduction for walking is obviated to a certain degree, his muscular tonus is maintained, and the callus formation is of a healthier and more normal nature.

There are many other points in the treatment of fracture of the femur by means of the Balkan bed which are advantageous, among them the delicate adjustability possible by means of the series of bands arranged to hold up the member while it is in the Thomas splint. Various types of splints may be used, depending upon the angle of flexion desired at the hip and knee. No general set of rules can be laid down; each case must be handled and adjusted to the peculiarities it presents.

The use of the Balkan bed in fracture of the femur is one of the measures perfected during the war that can most readily be carried over to civil practise, as it is a marked improvement over any of the former methods in general use.

LONDON LETTER.

Report of British Red Cross Hospitals.—Increase in Tuberculosis and Insanity a Result of the War.—Pensions.—Postgraduate Teaching in London.—The Departmental Committee's "White Paper."—Vital Statistics of England.—Death of Mr. Skene Keith.

LONDON, October 13, 1919.

The report of the British Red Cross Hospital work for 1918 from the financial standpoint was published recently. The number of hospitals, the accounts of which are summarized, is 1,014, with a capacity of 63,737 beds, against 1,073 hospitals and 60,728 beds in 1917. Though there has been a decrease in the number of hospitals there has been an increase in the accommodation available, due to the closing of some of the smaller hospitals and the enlargement of the more important institutions, a policy which the report strongly supports. The number of inpatients admitted during the year was 402,231, almost the same as in 1917. The accounts comprise calculations of cost, which show that the average per capita cost of maintenance a day in 1918 was 4s. 0.32d., slightly under one dollar, compared with 3s. 7.70d. or 90 cents in 1917 and 88

cents in 1916. There are increases in the cost per capita a day under each of the six main heads into which the cost of maintenance is divided, but, as was to be expected, the chief increase is in the cost of provisions, which in view of the great advance in food prices last year seems moderate in amount.

Perhaps the most valuable and instructive part of the report is that which deals with the comparative costs of large and small hospitals. The conclusion definitely reached is that the larger hospitals can be conducted with the greater economy. As a matter of fact it is shown that the cost of provisions in the smaller hospitals exceeds that in the larger hospitals by about six cents a day for each patient, an excess, be it noted, which represents a considerable sum when many thousands of patients have to be fed. The cost, too, of medical attendance is smaller in the larger hospitals, owing, no doubt, to the more serious cases being usually dealt with by them. As exemplifying the wide scope of the operations of the British Red Cross Hospitals, auxiliary hospitals by the way, it may be stated that during the four years of war the patients admitted, excluding those received in private hospitals not in receipt of Government grants, numbered 1,260,523, or nearly one half of the total British casualties of the war. The total expenditure amounted to £10,488,650 (\$52,443,250) of which £7,760,727 (\$38,800,635) was met out of Government grants and £2,727,923 (\$13,639,615) from voluntary contributions.

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Tuberculosis and insanity have both been increased by war. Recent reports of health officers and others in Great Britain draw attention to the fact that tuberculosis is increasing and also that insanity and functional nervous disorders are on the increase. These results of the war are not to be wondered at but rather may be regarded as natural sequences. A very large number of persons, men and women, during the last few years have become infected by diseases which from their nature are difficult to root out. Such diseases, for instance, as malaria, dysentery, trench fever and venereal diseases, act as chronic poisons which probably exert a specific effect on the nervous system. Vital resistance is reduced to a low ebb and the system is laid open to the attacks of disease, especially to those of a disease like tuberculosis which tends to follow other infections which have rendered the resistance of the body low. In the same manner, traits of mental instability do not, as a rule, show themselves until some secondary factor has reduced the margin of safety represented by health. Thus, by reason of exhaustion or extreme weakness induced by infection the result of disease, a person apparently sound may uncover his predisposition, acquired or hereditary, and become insane. Therefore, and this is a very important point, the victim of war disease, and the number is legion, is more liable to attack than his uninfected fellow man. Tuberculosis or insanity is far more apt to assail him with a probability of success which did not exist in his uninfected state. He is, from the medical aspect, a fortress the outer fortifications of which have crumbled. The importance of this lies

from the point of view of pensions. In cases in which tuberculosis has begun since demobilization the victim is entitled to an inquiry into his history during the war. If it is found that he is infected with a disease of war in addition to tuberculosis, he can claim relief. The same procedure applies in the case of insanity. In America, on a smaller scale, a similar problem presents itself. If it can be shown that tuberculosis is due to the war, and it may be pointed out that all those demobilized suffering from that disease can insist that their condition is owing to the war, because their medical examination absolved them from infection, then they have a right to a pension. Concerning insanity, practically the same thing may be said. They were passed as mentally sound and if they had not been subjected to the shock and rigors of war they would in the vast majority of cases have died with no suspicion of mental instability attaching to them.

With regard to insanity, a report issued recently states that during the year 1918 and in fact during the last two and a half years of the war, the mortality among lunatics has been extremely high. The Fifth Report of the British Lunacy and Mental Deficiency Board of Control shows a yearly average of 208 deaths in 1,000 among lunatics, which is more than double that for the first year of the war. Among the general population of England and Wales, including infants, the death rate is only thirteen in 1,000.

* * *

It is satisfactory to learn that the Fellowship of Medicine has undertaken to carry on its work on behalf of postgraduate teaching in London. It may be reiterated, mention has been made of the fact in previous letters, that last winter a valuable series of demonstrations and lectures was carried out under the auspices of the Fellowship of Medicine and was so widely made use of by American, French, and other medical men that it was found possible to publish a regular weekly bulletin giving particulars of the hospital facilities available. The work has now been reorganized, mainly by the energetic secretary, Mr. Philip Franklin, and with the earnest cooperation of the medical profession for the coming winter. As a means for encouraging international friendships the possibilities of a postgraduate medical school in London are very great, and especially it is obvious that no method could be better calculated to keep up the sentiments of good fellowship between American and British medical men engendered, fostered, and cemented by the war. While this phase of the matter is, on the whole, the most important, the resources of London from the medical standpoint must not be overlooked. However, this has been already sufficiently emphasized. In brief, it may be recapitulated that London possesses an immense amount of medical and surgical material which only requires to be organized and unified to make of the British centre the best postgraduate medical school of Europe; that this organization seems to be in process of development along the right lines by the Fellowship of Medicine, and that it should be and

doubtless will be a most effectual mode of strengthening the bonds of friendship between the two great sections of the English speaking races. A series of special lectures will be given during the coming winter at the Royal Society of Medicine, 1 Wimpole Street, under the direction of the Fellowship of Medicine, beginning September 15th. Among those who will lecture are Dr. Eric Pritchard on the causation and treatment of rickets, and Doctor Hutchison on chronic diarrhoea, its varieties and treatment.

* * *

The Departmental Committee appointed to inquire into the organization of the medical service provided for the London police recently handed in its report, which has been issued by the Home Office as a White Paper. The feature of the report is the proposal that there should be a separate hospital for the police. The committee expresses the opinion that a hospital for the force of 20,000 men would require about 200 beds, but considers that one of 150 beds would suffice in the first instance. Assuming an average of 150 inmates daily and a weekly cost of £3 (\$15) an inmate, the total cost of the hospital proposed, including the payment of the visiting staff, would be roughly £25,000 (\$125,000) yearly. Allowing for sinking fund and other capital charges, it is estimated that the annual cost would be approximately £40,000 (\$200,000). In view of the large increase in pay which has been granted to the force, it is considered that officers will not expect to receive hospital treatment at the expense of the taxpayers of the whole country and the ratepayers of the metropolis, in addition to receiving free medical attendance.

* * *

According to the registrar general's quarterly return for the period ending in June, 1919, the births, marriages, and deaths in England and Wales have decreased. The number of persons married during the first quarter of 1919 was 11,040 less than that in the corresponding quarter of the previous year. The births in the second quarter of 1919 were 21,415 fewer than in the second quarter of 1918. Male births numbered 76,312 and female 72,512 which is in the proportion of 1,052 to 1,000, the average proportion in the ten preceding quarters being 1,039 to 1,000. The deaths last quarter were 83,462 fewer than in the preceding quarter, and 10,090 fewer than in the second quarter of 1918. Nearly 20 per cent. of the deaths in the first quarter are attributed to influenza.

* * *

Mr. Skene Keith, M. B., F. R. C. S., Edinburgh, died on August 19th from pneumonia. His brother, Dr. George Keith, died in December last from the same disease. Skene Keith was the talented son of a great diagnostician and a very skilful operator, Dr. Thomas Keith, a pioneer of ovariectomy. Mr. Keith in collaboration with his brother, Dr. George Keith, brought out a *Textbook of Abdominal Surgery* and he also published his *Gynecological Operations*.

Editorial Notes and Comments

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PREVENTION OF TOOTH DECAY.

The question of the prevention of tooth decay is extremely important in our time. There is a whole series of uncomfortable and often serious pathological conditions of synovial membranes whose etiology is sometimes considered to be due to either focal infection or the absorption of irritating toxic materials from the neighborhood of infected teeth. As a result more teeth have been pulled in the last few years than at any time during the last generation or more. Undoubtedly some of these teeth have been pulled without any good reason in flat foot cases and painful muscular conditions of various kinds, called rheumatic but really due to mechanical difficulties in the use of muscles. There are, however, many cases on record in which the removal of infected teeth has been followed by a prompt clearing up of serious symptoms which had proved intractable to many different forms of treatment.

The preservation of the teeth has thus become one of the important problems of modern medicine as well as of dentistry. This involves the recognition of the factors which in older times enabled so many people to carry all of their teeth with them throughout life without ever suffering from any serious disturbance. Most of the animals who live under natural conditions suffer very little from their teeth, and a number of savage peoples, now as well as in olden times, have preserved their teeth very well. An analysis of the elements in the

dietary of these people helps us to understand how this came about. The application of principles underlying their successful preservation of the teeth might well serve to keep the teeth of mankind in our civilized time at least in a better condition than they have been in the immediate past, even though we might not be able to preserve the teeth with that perfection which characterizes so many of the skulls from old graves that have come down to us.

The principal element in the dietary of these people which differed from ours and which evidently made for the benefit of the teeth was the presence in it of materials rather tough to chew and requiring vigorous mastication before they could be swallowed. Almost needless to say, we have eliminated practically all of these from the modern civilized diet. We hire cooks apparently with the main purpose of having them prepare the food so that as little chewing as possible will be required before swallowing it. We mash our potatoes, we purée our peas, we chop our spinach so fine that it needs only to be shoveled in with a fork, rolled on the tongue a couple of times, and then swallowed. Our meat is now refrigerated for at least a month, as a rule, before it is served on the table and this takes most of the toughness out of it. After three weeks of refrigeration practically all the *rigor mortis* has disappeared and the chewing of meat is comparatively easy. We must all have fresh bread. When bread requires chewing in our time it is because it is hard and brittle and not because it is firm and tough. Crispness in bread is gracious to the palate, but it is not nearly as good for the teeth as the tough, crusty bread of the older time, often eaten when it was five or six days old and when it required vigorous chewing. A crust of such bread, eaten with an old time, rather tough steak, would remove all deposits from the teeth much more effectually than a tooth brush.

We have found out some very interesting things with regard to the tougher elements in the old time dietary. It was common custom at one time for people to eat raw turnips and carrots. Most men of middle age who were brought up in the country will doubtless recall that raw fruit was much more commonly eaten then than it is now. Raw cabbage, and especially what the children called "cabbage stumps," that is, the raw centre of the cabbage, were very commonly eaten. All these were tough materials requiring vigorous chewing and at the same time supplying firm surfaces

against which the teeth had to rub in the process of mastication.

We have been taking out of life just as far as possible the necessity for vigorous use of the teeth, and inasmuch as we have done that we have been doing harm rather than good to the mouth. The gums and mucous membranes generally are less healthy when the necessity for vigorous exercise is taken away from them. Nothing will clean the surface of the tongue so well and give a good taste to the mouth in the early morning as chewing on a crust of tough bread or welldone toast. We have been beginning breakfast with mushy cereals which have very little effect on the mucous membranes, and if most of the breakfast is composed of soft materials, eggs, creamed potatoes, and soft rolls following the cereal, then we shall have nothing to renovate the surface of the mouth properly.

Manifestly, if we are to preserve the teeth, we must put back into the diet materials that require vigorous chewing and, by their mechanical friction while being chewed, help to cleanse the teeth and reinvigorate the mucous membranes.

THE TREATMENT OF INFLUENZA WITH NOVARSENOBNZOL.

During the pandemic of influenza, which is still smouldering, many cases of the serious types of the infection, which resisted all methods of treatment, have been encountered. In these circumstances, many new treatments have been tried with the almost exclusive object of discovering an energetic antiinfectious remedy, and among them should be mentioned novarsenobenzol. In reality, when Bruhl and Franck first resorted to this drug in the serious forms of the grippe, they did so because they regarded the arsenic compound as a powerful parasiticide when employed in the case of the spirochetes, and also upon the hypothesis—which will remain plausible so long as uncertainty exists as to the true pathogenic agent of influenza—that spirochetes are not, perhaps, foreign to the origin of this disease. Whatever may be thought of this supposition, the idea of employing novarsenobenzol exclusively in the severe types of influenza is not devoid of interest. Bruhl and Franck first used the drug by mouth in the form of compressed tablets, each containing ten centigrams of novarsenobenzol, at the daily dose of three to four tablets, in cases where the influenzal symptoms continued for a fortnight or more. Some patients thus took in all five grams, or even more, without any untoward results.

In the more severe forms of influenza the drug was given intravenously at the dose of thirty centigrams to the injection and this was repeated, according to the individual indications, on two or three days in succession or with an interval of two or three days. In the latter circumstance the drug was given by mouth in order to complete the intravenous treatment. Again, no untoward symptoms were noted and the writers found that in certain forms of grippe with albuminuria or diarrhea these symptoms were overcome by the treatment. If the results obtained from this medication are examined it will be noted that, in a general way, the evolution of the disease was quickly modified; there was a gradual—not sudden—defervescence lasting several days while the physical signs continued their evolution in apyrexia.

Bruhl and Franck treated a total of thirty-eight cases of the serious forms of influenza with novarsenobenzol with eight deaths, a mortality of twenty-one per cent. There were ten males, three of whom died; five of them presented severe infection and were given intravenous injections. Of these five, three recovered. On the other hand, twenty-eight females, thirteen of whom were severely infected, were treated only with tablets and all recovered. Fifteen others were desperately ill, six being treated by intravenous injections and nine by tablets. In the latter series there were five deaths, three occurring during the night of their arrival at the hospital, or on the following morning. These statistics were made during the last half of October, 1918, at a time when the epidemic was particularly serious and patients were brought to the hospital practically moribund. Bruhl and Franck believe that many of their patients recovered who would have died otherwise, and they point out the harmlessness of novarsenobenzol in the treatment of several acute diseases.

THE PSYCHOLOGY OF THE ISMS.

The psychology of the medical profession is similar to that of the beggar woman of Rome who had been the recipient of so many counterfeits that she would accept nothing but copper. When a new discovery has been made it must be reduced to the terms of the cheapest metal in circulation before it is accepted by the profession of medicine. The result of this transmutation of golden ideas into baser currency has been the repression and regulation of many enthusiasts. In its application, however, valuable facts have frequently been denied general acceptance for a long time and, unless their protagonists were very thoroughgoing, ideas were frequently consigned to obscurity until unearthed

by some more energetic searcher. Also, it has bred in the profession a spirit of cynicism regarding all things new which is extremely likely to lead to an aggravated form of standpatism. This is in effect a manifestation of the herd instinct. In this connection it might be well to bear in mind the psychology of the isms.

From time to time throughout the ages, strange cults have arisen. The remarkable fact is that most of these have had their grain of truth and really constituted a protest against the existing order of things. If these protests are to gain recognition they cannot be presented in the usual form; therefore they are set forth in some weird and bizarre envelope which by its very queerness will attract attention, comment, and investigation. None but enthusiasts will launch such an endeavor; therefore the movement has behind it the urge of sincerity.

That such protests are productive of good, usually along wholly different lines from those contemplated by their originators, cannot be gainsaid. The history of medicine is replete with examples of this fact. Did not Perkins's tractors awake the medical profession to the therapeutic value of the galvanic current? Did not the work of Hahnemann and Simon Jahr do much toward the standardization of drugs and the scientific investigation of their effects upon the human system? Perhaps it might even be said that osteopathy reacted to the benefit of the science of orthopedic surgery.

With these facts in mind might it not be broadminded to pay more attention to the cults, with a view to penetrating through the envelope of eccentricity to the kernel of truth which possibly lies beneath?

PYELOGRAPHY IN RENAL LITHIASIS

Regardless of the ever progressing improvements in radiography, diagnosis of renal calculus by this means is still unsatisfactory in that in some cases it fails to reveal the stone. When a calculus cannot be positively demonstrated, the result is a great divergence from the viewpoint of treatment, and when the exact location of the stone is doubtful, the operator is unable to conclude whether the case will be one for pyelotomy or nephrotomy. In doubtful cases of calculus pyelography is valuable in making a correct diagnosis both of the stone and its location. Radiography with intrarenal injection of a solution of collargol will frequently identify intrarenal and intraureteral shadows much more precisely, particularly in cases where there is no evident trace of urinary infection.

In practice every renal stone should give rise to signs of inflammatory changes in the outline of the renal pelvis, changes which can be demonstrated by pyelography. The absence of any recognizable irregularity or dilatation of the renal pelvis or individual calices would make it fairly sure that a doubtful shadow is not due to a renal calculus. If there is a considerable distance separating the injected pelvis from a doubtful shadow it is unquestionably an extrarenal shadow. Pyelography should be of considerable value in identifying a renal calculus, but it is also a great help in locating the exact site of the stone in the kidney or its pelvis. If the distance separating the internal border of the calculus from the median line is not more than five centimetres, one may conclude that the stone is in the renal pelvis, with the reserve that this shadow be comprised between the transverse apophyses of the first and second lumbar vertebrae.

As Leguen and Papin have shown, the calculus once placed in evidence indicates the situation of the kidney when the stones are not too large and offer characteristic shapes. Calculi with an under spur penetrating into the lumen of the ureter cause retention of urine, and as a natural consequence a certain degree of dilatation of the renal pelvis. The calculus acts like a ball valve; the parenchyma is reduced in thickness, the calculus progressively increases in size and fills the pelvis, then the calices, ureteral occlusion becomes total, the renal parenchyma becomes atrophied and retracts around the stone, which has become ramified. Thus a calculus partially obstructing the ureter in the form of a triangle usually signifies dilatation of the renal pelvis, while a calculus with ramifications means atrophy of the renal parenchyma. Occasionally the sclerosed parenchyma is shown on the plate and the absence of the shadow of the parenchyma signifies a lithiasic lipomatous kidney. But if the calculus is within the renal pelvis, it will be partially or entirely obscured, according to its anatomical weight and the density of the calculus in relation to that of the collargol solution injected.

Oxalate, phosphate, carbonate and urate of calcium calculi give a distinct shadow in ordinary radiography, but if the stone is composed of uric acid whose density is low it can only be demonstrated by radiography and injection of collargol. Collargol is a more opaque substance than the stone and shows up black while the calculus forms a clear spot. The slight ureteral dilatation that is often seen in pyelography just below the shadow of the stone should be explained by inflammatory changes resulting from chronic infection and has a confirmatory value in the identification of small calculi.

POSTOPERATIVE RESULTS IN CHRONIC APPENDICITIS.

The mortality of operations for chronic appendicitis should be low, and while Lanz says that he has not had a single death in a total of seven hundred operations, other writers report a mortality of about 0.5 per cent. Walther, of Paris, made a conscientious analysis of 1,435 personal operations and found ten deaths, one on the eighth day from uremia, one on the tenth day from scarlatina, two on the eighth day from embolus, and the remaining six from pulmonary complications.

Postoperative phlebitis is of two kinds: first, apparent phlebitis, almost always localized in the superficial veins of the lower limb; usually it is mild, of short duration, and without much edema. More frequent are the latent phlebitides, which are detected only when pulmonary embolus occurs. This occurrence is fortunately rarely fatal. Usually the emboli are small or so attenuated as to pass unnoticed were it not for the characteristic sputum offered by the patient. Sonnenburg made considerable unnecessary fuss over these thrombi and emboli from the viewpoint of prognosis in operations for chronic appendicitis. They are noted because after operation the patient is carefully followed, but they probably occur quite as frequently in unoperated cases of chronic appendicitis.

Parotiditis is a rare postoperative complication of chronic appendicitis, running a mild course and never requiring incision.

Adhesions need not be given a special place in the postoperative prognosis of the affection under consideration because they rarely arise after a properly performed appendicectomy. They of course do form in anatomically serious appendicitis requiring drainage, although these chronic cases have a clinically attenuated symptomatology and the severity of the lesions is not suspected before operation. Such instances are, however, the exception and it is fortunate that operation should have been performed. Adhesions found after an operation for chronic appendicitis often existed prior to the operation but were not attended to at the time operation was performed.

Postoperative pain has many causal factors. The most frequent of these is an untreated colitis which continues after the patient is up and about. An acute attack of colitis occurring during convalescence from the operation causes painful phenomena and, although not serious, is not pleasant for either surgeon or patient. A chronic epiploitis not treated at the time of operation and rarely an inflamed appendix stump may give rise to postoperative pain. Postoperative adhesions are uncommon following a proper operative technic, but when

they do arise they cause much discomfort and pain. Finally, another cause of pain is the inclusion of a small nerve ramification bound up in the cicatrix of the abdominal incision. Although of rare occurrence, this complication has happened more frequently in the incisions for appendicitis than in any others made in the abdominal parietes.

SACROILIAC SYNCHONDROSIS.

There is always some hesitancy felt in giving a real diagnosis to the patient or his friends in a venereal clinic, and some evade the difficulty by substitution, after the manner of the late Professor John Chiene, of Edinburgh, who, if pressed for a name, told the patient he had "sacroiliac synchondrosis" which he said was true yet did not commit one. The imagination of the patients works disastrously when no name is given. They often then imagine theirs to be a unique case baffling medical knowledge. We recall an office boy who proudly said he was being treated for "insomnia," and there are many artless ladies who do get a correct title and blandly and innocently use it at the dinner table before visitors. There was an old lady on a boat carrying repatriated men who asked why certain soldiers were isolated. "Oh, they're V. Cs.," replied the officer. It was very nice, thought the lady, to make a distinction, and she got much pleasure by sending cigarettes and candy to the supposed heroes who had won the Victoria Cross!

News Items.

International Congress on Infant Welfare.—An international congress dealing with infant welfare will be held at London in September, 1920. Questions relating to the medical, philanthropic, and administrative phases of infant hygiene will be taken up.

\$20,000,000 Given by Rockefeller for Medical Education.—The General Education Board, founded by John D. Rockefeller, has announced the gift by him of \$20,000,000 for the improvement of medical education in the United States. The income of the gift is to be used currently and the principal to be distributed within fifty years.

Schick Test Demonstration Centres.—The Bureau of Preventable Diseases of the Department of Health, New York, will conduct demonstrations of the technic of the Schick test and its interpretation, for the benefit of all private physicians who may desire to become acquainted with the application of this test. The demonstrations were planned to begin on November 10th.

Doctor Stengel to Lecture Here.—Dr. Alfred Stengel, professor of medicine at the University of Pennsylvania, will read a paper on The Management of Valvular Heart Disease Prior to Decomposition, Thursday evening, November 27th, before the New York Physicians' Association. The meeting will be held at the Chemists' Club, 52 East Forty-first Street, New York. All physicians interested in the subject are welcome.

Hospital for Disfigured Soldiers.—An American hospital for the treatment of soldiers disfigured by face wounds is to be opened in Paris by the American Red Cross. The venture was made possible by the gift of an American committee organized for the purpose.

Dr. William Palmer Lucas Decorated.—Dr. William Palmer Lucas, professor of children's diseases at the University of California Hospital, has been awarded the order of the *Chevalier de la Légion d'Honneur* in recognition of his work for the children of France. He was also awarded the *Médaille de Vermeil des Epidémies*.

Increase of Mental Disease Among Recruits.—An increase in the number of cases of mental disease among enlisted men recently recruited is causing some anxiety in the army medical department. The Surgeon General has called on surgeons under his command for more information on the subject and for their opinion as to the cause of the increase.

French Orthopedic Congress.—The first session of the *Congrès français d'Orthopédie* was held at the Faculty of Medicine, Paris, October 10th and 11th, under the presidency of Professor Kirrmisson. The three topics discussed were: 1, Amputations in their relation to prosthesis; 2, spondylites in war surgery; 3, treatment of pseudoarthrosis. Dr. F. H. Albee, of New York, who attended the congress, read a paper on the last topic.

Medical Mission in Poland.—The interallied medical mission which is studying typhus and other epidemic diseases in Poland is composed of the following members: Dr. Visbecq, chief physician of the French military health service; Colonel Hugh S. Cumming, director, representing the health service of the United States; Dr. Aldo Castellani, of Italy, professor in the School of Tropical Medicine, London, and Dr. George S. Buchanan, officer in the English ministry of health.

Health Survey Among Winnebago Indians.—A survey of health conditions among the Winnebago Indians recently undertaken by the Nebraska Tuberculosis Association, revealed an alarming prevalence of syphilis among the Indians and a lack of facilities for treatment. It is stated that these cases of syphilis and tuberculosis are a distinct menace to the country at large, as many Indians leave the tribal reservation in an actively infectious condition and go to work in nearby communities.

Personal.—Dr. Henry M. Christian, of the medical faculty of Harvard University, has accepted in Washington, for the academic year 1919-20, the position of chairman of the Division of Medical Sciences of the National Research Council.

Dr. William F. C. Steinbugler, having been released from military service, has resumed the practice of ophthalmology at 815 Park Avenue, New York, and 94 Lenox Road, Brooklyn.

Dr. Edward Wallace Lee, of 616 Madison Avenue, New York, has been discharged from the medical service of the United States Army and has resumed his private practice.

Dr. William V. P. Garretson, of 11 East Forty-eighth Street, New York, has been appointed consulting neurologist and psychiatrist to the Manhattan State Hospital, Ward's Island, New York.

Major General Ireland Honored.—The Royal College of Surgeons of Edinburgh, Scotland, has conferred honorary fellowship on Major General Merritte W. Ireland, surgeon general of the United States Army. It is explained that the college wished to offer honorary fellowship as an appreciation of service rendered to each group of the medical forces of the British empire and its allies, and that Major General Ireland was selected as representing the whole of the American Army Medical Corps.

Artificial Limbs for Serbians.—The impossibility of obtaining artificial limbs to replace those lost in war is the greatest obstacle which the Serbian soldier has to overcome in his transition from a warrior to a citizen capable of making his own livelihood in a world at peace. Frozen feet and gangrenous wounds resulting from lack of medical attention and exposure caused the number of amputations in the Serbian army to be especially great. The American Red Cross has established in Belgrade a factory for the production of artificial limbs. A unit of American limb makers was sent to Belgrade some time ago. A portion of the two hundred thousand dollar appropriation for relief work in Serbia was reserved for this purpose.

Scholarships for Negro Medical Students.—The general education board, of New York, announces the offer by Julius Rosenwald, a Chicago capitalist and philanthropist, of six scholarships of \$1,200 each for negro graduates of American medical colleges who wish to take postgraduate work in pathology, bacteriology, physiology, pharmacology, or physiological chemistry. Appointments are to be made next year. The committee which will pass upon candidates comprises: Dr. William H. Welch, Johns Hopkins School of Public Health, chairman; Dr. David L. Edsall, dean of the Harvard Medical School, and Dr. Victor C. Vaughan, dean of the medical department, University of Michigan. Abraham Flexner is secretary of the committee.

Boylston Medical Prizes.—The Boylston Medical Committee announces an open competition for a prize of \$300 and the Boylston prize medal for the best dissertation on the results of original research in medicine, the subject to be chosen by the writer. The Boylston prize medal will be added to the money prize only in case the winning essay shows special originality in the investigations detailed. Dissertations entered for this prize must be in the hands of the secretary on or before December 31, 1919.

In awarding these prizes, preference will be given to essays which exhibit original work, but if none is considered worthy of a prize, the award may be withheld. By an order adopted in 1826, the secretary was directed to publish annually the following votes:

1. That the board does not consider itself as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2. That, in case of publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith.

For full particulars concerning the conditions of the contest address the secretary, Dr. Harold C. Ernst, Harvard Medical School, Boston, Mass.

Illness Chief Cause of Poverty.—More than half of the cases of poverty reported to the Brooklyn Bureau of Charities during the past year were due to illness, according to a survey made by that institution. In many cases there was such a narrow margin of savings that illness reduced the family to destitution.

Hospital at Montdidier as American Memorial.—An Associated Press Dispatch from Paris states that a municipal hospital in memory of American soldiers who fell at Cantigny is to be established at Montdidier. The hospital will be constructed from American Red Cross barracks. Cantigny, in the valley below Montdidier, was the first American battlefield in France.

Virginia Physicians Elect Officers.—The Medical Society of Virginia held its fiftieth annual meeting October 28th to 31st in Richmond. The following officers were elected: President, Dr. Paulus A. Irving, Farmville; vice-presidents, Dr. Marshall J. Payne, Staunton; Dr. George T. Klipstein, Alexandria, and Dr. George J. Williams, Newport News. Petersburg was chosen as the next place of meeting.

New York Working Women Physically Unfit.—Ninety-two per cent. of the working women of New York are below par physically and 506 out of every 1,000 lose time from their work on account of illness, according to statistics presented to the International Conference of Women Physicians by Dr. Kristine Mann. Doctor Mann has made a study of the health of working women in New York department stores.

University of Illinois to Conduct Health Advice Column for Newspapers.—The department of hygiene and public health of the University of Illinois has inaugurated a press bulletin service whereby the larger newspapers of Illinois will be supplied weekly with news stories and information articles pertaining to public health, hygiene, and sanitation. This is announced to be part of the university's public health education work, the articles being contributed by members of the faculty who are authorities on their particular branches of health work.

Association of Cardiac Clinics.—A meeting of this association will be held at the New York Academy of Medicine, 17 West Forty-third Street, Tuesday evening, December 2nd, at 8:30 o'clock, with Dr. Robert H. Halsey in the chair. The following program will be presented: Experiences with Special Charts for Cardiac Clinics, by Dr. Joseph C. Roper; Districting the City for Cardiac Patients, by Dr. H. S. Carter; the presentation of the classification of cardiac patients adopted, by the association. The Relations of the Cardiac Clinics of the Convalescent Homes, by Dr. Charles Hendee and Dr. Frederic Brush; the Relations Between the Cardiac Clinics and the Public Schools, by Dr. William P. St. Lawrence. Among the topics to be considered are buildings, grounds, variety of cases to be sent to homes, daily regime of patients in regard to rest, exercise, walking, stair climbing and medical supervision. The board of education will be represented by Mr. Edson, and the department of health by Dr. S. Josephine Baker. Dr. Harold E. B. Pardee is secretary of the association.

Medical Director for Santa Domingo.—A medical director is being sent to Santa Domingo by the American Red Cross to take charge of a hospital and to make a study of health conditions on the island. It is reported that disease is prevalent and hospital facilities are inadequate.

Mental Hygiene Survey in Missouri.—A mental hygiene survey to gather information concerning every phase of the care of the mentally diseased has been begun in Missouri, under the direction of the National Committee for Mental Hygiene. Dr. Samuel W. Hamilton, of New York, has been appointed to carry on the survey.

Typhus Epidemic in Siberia.—Siberia is threatened with one of the greatest typhus epidemics in history, according to reports received from Colonel Rudolph Balling Teusler, former director of St. Luke's Hospital, Tokio, and now a member of the American Red Cross. There have been 120,000 cases among Siberian troops since January 1, and thousands of new cases occur daily.

Tri-State Medical Association.—Dr. Walter B. Helm, of Rockford, Ill., was elected president of the Tri-State Medical Association, of Illinois, Iowa, and Wisconsin, at its recent annual meeting; Dr. E. B. Cooley, of Danville, vice-president for Illinois; Dr. G. V. I. Browne, of Milwaukee, vice-president for Wisconsin, and Dr. John O'Keefe, of Waterloo, Iowa, vice-president for Iowa. Dr. William Peck, of Freeport, Ill., is business manager. The next convention will be held in Waterloo.

Bequests to Medical Institutions.—By the will of Mrs. Samuel Bridgham, formerly of Providence, R. I., various charitable and educational institutions will receive \$500,000. Among the bequests are the following: New York Eye and Ear Infirmary, \$30,000; Roosevelt Hospital, \$15,000; New York Institute for the Education of the Blind, \$15,000; Home for Incurables, \$20,000; Hospital and House of Rest for Consumptives, \$10,000; Association for the Aid of Crippled Children, \$5,000; St. Luke's Hospital, \$10,000; Bar Harbor Medical and Surgical Hospital, \$15,000.

Changes in Washington University Medical Faculty.—Dr. Eli Kennerly Marshall, Jr., associate professor of pharmacology in Johns Hopkins University, has been appointed to the newly endowed chair of pharmacology at Washington University Medical School. Dr. Everts Graham, of Chicago, who was recently appointed professor of surgery but whose time was required by the War Department, has been released from government duty and has taken charge of his department at the medical school. The following appointments have been made: Mr. A. W. L. Bray, associate in anatomy; Dr. Alfred Conrad Kolls, associate in pharmacology; Mr. Edgar Allen, instructor in anatomy; Dr. Edward Adelbert Doisy, instructor in biological chemistry; Dr. Frederick Eberson, assistant in dermatology; Dr. Arthur Strauss, assistant in clinical medicine; Dr. L. S. Luton, assistant in clinical medicine; Dr. Isaac D. Kelley, assistant in clinical otology; Dr. F. O. Schwartz, assistant in clinical ophthalmology; Dr. H. D. Lamb, assistant in clinical ophthalmology; Dr. M. Hayward Post, assistant in clinical ophthalmology; Dr. Lawrence Post, assistant in clinical ophthalmology.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 730.)

In a previous issue the possibility of confusing acute osteomyelitis with rheumatic fever was referred to, and the treatment of the former condition, when present, briefly discussed.

Another affection which under certain circumstances may assume a confusing resemblance to acute rheumatic joint involvement is pyemia accompanied by suppurative arthritis. In pyemia, as in acute rheumatism, several joints are likely to be affected; where but one joint is attacked, it is apt to be a large one, e. g., the knee or hip. Aside from infection with the ordinary pyogenic organisms, typhoid and other fevers, as well as the puerperal state, may be associated with septic joint involvement. As in rheumatic fever, the affected joints as a rule soon swell; pain is a prominent symptom and in pyemic arthritis may be complained of even before any distinct change in the joint is apparent. The joint affection may pursue either a mild or a severe course. Where the constitutional resisting powers are adequate to overcome the existing infection and the disease is tending toward recovery, the joint involvement may consist of a synovitis rather than an actual arthritis. On the other hand, where the resisting powers are relatively low as compared to the virulence of the infection, pus may occur in the joints almost from the beginning, the disease progressing with marked rapidity. According to Poynton, 1913, pyemia with suppurative arthritis is particularly hard to distinguish from rheumatic fever in some cases which follow acute otitis media.

Among the general features that may assist, when called to mind, in the differentiation are, in particular, the history of the case and the tendency of rheumatic involvement to pass from one joint to another. The history of a recent wound which has been suppurating suggests pyemia, as does also one of acute otitis media, pyelitis, or prostatic abscess. Typhoid, acute tuberculous, pneumococcal, and other acute infections may precede pyemia with arthritis, whether the latter arise through secondary invasion of pyogenic germs or through direct attack by the primary infection. Some cases complicate puerperal septicemia. Again, some are cryptogenetic, or start in some obscure disease focus, e. g., in a diseased bronchial lymph node, and in these, the history may be of no service in the differentiation from rheumatic fever. Severe and frequent chills, coming on at irregular intervals, are suggestive of pyemia, although in some instances the chills come on with a considerable degree of regularity. Generally the fever in sepsis

is more plainly intermittent than in rheumatism, and the temperature rises higher. Subcutaneous foci of pyogenic infection may develop in pyemia, and small abscesses arise at these points; or, an actual pustular skin eruption may be present. On an average, general intoxication and prostration are more marked in pyemic arthritis than in rheumatic fever. Often the skin is dark, yellowish, or erythematous. As far as the condition of the joints themselves is concerned, the onset of joint suppuration practically signifies a septic state rather than rheumatic fever, as joint suppuration in the latter is exceptional. Where the condition of the joint is in doubt, puncture under strict aseptic precautions, with bacteriological examination of the fluid obtained, may clear up the diagnosis. In spite of all these differentiating features, cases do occur in which distinction of a comparatively mild pyemic condition from a severe attack of rheumatic fever cannot with certainty be accomplished. In this connection the relative infrequency of pyemic arthritis is worth bearing in mind, the chances in an otherwise wholly doubtful case favoring rheumatic fever as against pyemic arthritis by the reason of the much greater clinical frequency of the former.

The treatment of pyemia with arthritis is both general and local. Where the primary source of infection is not apparent, an attempt should be made to isolate from the blood stream or from local foci the germ responsible for the disturbance, and when this has been successfully effected, all measures appropriate for combating the type of infection present instituted. Stock or autogenous vaccines may be tried, and agents such as collargol or other colloid preparations employed to promote leucocytosis. The ordinary constitutional measures indicated consist in absolute rest, fresh air, easily digested but nutritious food in amounts as large as digestive conditions will permit, free use of water, saline enteroclysis or hypodermoclysis, hydrotherapy for fever, stimulants for circulatory depression, and blood transfusion as an ultimate measure. Antistreptococcal serum in full doses is indicated where streptococcal infection exists, though little confidence is felt in its actual curative power. If meningococcal or Type I pneumococcal infection should be found, the corresponding sera could be used.

Local treatment is of great importance, and includes removal of the primary source of infection, if it can be found, and the treatment of the suppurative arthritis. The former measure is the key to successful surgical treatment, and should where practicable be undertaken whether the procedure required to save the situation is a mere incision for drainage or a mutilating operation such as amputation. Besides, any other accessible pus collections should be drained, unless the condition is already hopeless. If a thrombosed vein is the cause of the pyemia, radical incision of the infected area

is indicated to obviate further embolism. Rost, 1916, has reported two wound cases in which sepsis, with repeated chills and embolic processes followed amputation of the lower extremity; under these critical circumstances he ligated the femoral vein on the infected side, with the result that, in each case, chills did not recur, the temperature gradually subsided, and the men recovered.

Local treatment of the acutely inflamed joints themselves comprises rest, support, and wet dressings, cold or heat; aspiration and lavage with boric or other antiseptic solution if the condition fails to subside, and free incision and drainage if suppuration becomes pronounced. The newly developed principles of joint cleansing followed by prompt closure might in some instances be applicable in these cases.

(To be continued.)

Diet in Tuberculosis.—I. J. Clarke (*Boston Medical and Surgical Journal*, August 28, 1919) says that perhaps the most important factor in feeding the consumptive is that all food should be of first quality; there should be no substitution in the line of fats. The utmost care should be taken that all the food is cooked and served in a proper manner. Even a hungry patient will refuse to eat a poorly prepared meal, and a number of conditions are enumerated that cause loss of appetite, which makes feeding difficult. It is impossible to force nourishment for months and years as is done for the acutely sick during a few days. The most desirable foods and their administration are commented upon. Under the head of protein milk is the easiest to digest, with eggs second. Milk should be given midmorning and afternoon if the patient eats well at mealtime. At least a quart should be taken daily, and it may be prepared in various ways. Eggs may be given any way except fried. Meat comes third in the dietary; beef contains the highest per cent. of protein, pork of fat. Skimmed milk cheese yields a higher protein per cent. than beef, gelatine the highest per cent. of any article of food. The foods yielding the highest per cent. of carbohydrates are: arrowroot, ninety-seven and one half; tapioca, eighty-eight; corn and rice, about eighty; honey, eighty-one; sago, seventy-eight; wheat flour, sixty-five; toasted bread, sixty-one; crackers and zwieback, seventy to seventy-five; dried peas and lentils, sixty; potatoes, twenty; bananas, twenty. The highest percentage of fat: unrefined lard, ninety-four; butter, eighty-five; medium fat bacon, sixty-seven; smoked bacon, sixty-four; pork, forty-four. A week's menu of the Haverhill Sanatorium is given as an example. Bread is served at all times.

SUNDAY.		
Breakfast.	Dinner.	Supper.
Cereal	Roast chicken	Cold meat
Beans and fish-cakes	Giblet sauce	Sliced tomatoes
Rolls	Stewed tomatoes	Rolls
Milk, tea, coffee	Summer squash	Cake
	Boiled onions	Stewed prunes
	Mashed potatoes	Milk, tea
	Vanilla ice cream	
	Milk, tea	

MONDAY.		
Breakfast.	Dinner.	Supper.
Boiled eggs	Broiled steak	Cold meat
Cereal	Potatoes	Hot biscuit
Corn bread	Sliced tomatoes	Preserved pears
Boiled sweet and white potatoes	Cracker pudding, cream	Milk, tea, coffee
Coffee, milk	Milk, tea	
TUESDAY.		
Breakfast.	Dinner.	Supper.
Cereal	Boiled cod with egg sauce	Cold meat
Scrambled eggs	Potatoes	Fried potatoes
Baked potatoes	Cabbage	Cake
Hot gems	Apple pie	Apple sauce
Milk, coffee, tea	Milk, tea	Milk, tea
WEDNESDAY.		
Breakfast.	Dinner.	Supper.
Cereal	Roast beef	Fish chowder
Scrambled eggs	Potatoes	Fried potatoes
Muffins	Tomato soup	Cold meat
Milk	Turnip	Milk, tea
Coffee	Frozen jelly	
	Milk, tea	
THURSDAY.		
Breakfast.	Dinner.	Supper.
Cornmeal mush	Irish stew	Cold ham
Fried eggs	Sweet potatoes	Fried potatoes
Bacon	Washington pie	Bread
Corn cake	Milk, tea	Chocolate cake
Coffee, milk, tea		Milk, tea
FRIDAY.		
Breakfast.	Dinner.	Supper.
Boiled eggs	Boiled haddock	Clam chowder
Plain potatoes	Creamed sauce	Fried potatoes
Cereal	Boiled potatoes	Cake
Hot biscuit	Boiled onions	Preserved pears
Coffee, tea, milk	Rice pudding	Milk, tea
	Milk, tea	
SATURDAY.		
Breakfast.	Dinner.	Supper.
Oatmeal	Boiled dinner	Baked beans
Griddle cakes, maple syrup	Rice pudding	Brown bread
Coffee, milk, tea	Milk, tea	Stewed prunes
		Milk, cocoa, tea

Roy Morgan (*Boston Medical and Surgical Journal*, August 28, 1919) says that happily the time of forced feeding in tuberculosis is past, and that the idea of overfeeding is fundamentally wrong. He believes that all the adult tuberculous patient needs is three good meals a day, and that the practice of serving lunches should be abolished, except as a special prescription for an unusual condition. The food must be of good quality, prepared in an appetizing way, and well served, but it is of the greatest importance that the food should appeal to the taste of the person who is to eat it, and a variety must be offered at each meal when patients of both sexes, many nationalities, all ages, and from all conditions of life are grouped together in a sanatorium. The problem of how to do this was solved at the Westfield State Sanatorium by the establishment of a cafeteria system. He states the results thus: 1. Our patients have gained as much as under the old system or possibly more. 2. We have had a very noticeable decrease in digestive disturbances. 3. The patients are satisfied that they are getting enough nourishment and relish their meals better. 4. There is considerable saving in food cost.

Treatment of Meningococcic Infections.—W. W. Herrick (*Southern Medical Journal*, October, 1919) ascribes the decline in the mortality of meningococcic meningitis, from the former seventy to ninety per cent. to the recent fifteen to thirty per cent., to more effective treatment, specific serum treatment in particular, rather than to any diminution in the virulence of the infection. But he is impressed with the tendency to focus entire attention upon the serum treatment to the frequent neglect of more general measures, while the importance of the latter has been borne in upon him in an experience with 340 cases. The patient should be kept in a quiet, easily darkened room, with light that does not shine in his face, allowed to lie in the position of greatest comfort to conserve his energy, and not be spoken to unnecessarily, nor touched without reason. The bed should be rather narrow and high, with a single small pillow, often with none at all. He should be bathed twice a day with tepid water followed by alcohol and powder. Cold baths and sponges ordinarily are best avoided. An initial purgative is perhaps desirable. The bladder should be watched carefully as retention of urine is frequent in the early stages of the disease and often is overlooked. The extreme irritability, headache and apprehension of the early stages should be controlled by as much morphine as is necessary. This also tends to prevent serious immediate serum effects. Chloral hydrate, fifteen or twenty grains, with or without forty grains of sodium bromide, may be given two or three times a day by rectum as an adjunct to the morphine if needed. An ice-cap on the head may help to control the headache, but need not be used for any other purpose.

It is difficult to persuade patients to take sufficient food, but this should be insisted on unless he is exhausted by the efforts. Diet should be fluid, and given at least every three hours. Milk, broths, cocoa, soups thickened with flour, rice, or other cereal gruel, any cooked cereal, milk toast, ice cream, custard, junket, or other simple pudding may be given. Tea and coffee are to be avoided. An adequate fluid intake is of the highest importance. Patients may drink almost without limit water, lemonade, orangeade, imperial drink, or other grateful beverages, to which lactose may be added to furnish additional calories. In patients who persistently resist the giving of nourishment gavage may be resorted to, best given when the patient is under the influence of chloroform or morphine and in connection with the narcosis that may be required for intraspinal treatments. Sufficient fluid intake may be insured by hypodermoclysis or infusions of saline solution. The eyes should be shielded from strong light but otherwise left alone, bearing in mind the possibility of panophthalmitis and the tendency of any trauma to bring this about. If meningococcic conjunctivitis is present, cleansing with boric acid solution followed by a drop or two of argyrol, twenty per cent., is indicated two or three times a day. A fifty per cent. solution of antimeningococcic serum may be dropped into the eye in the intervals with good effect. The virus is often present in the nose and throat. The mouth should be cleansed; sputum and nasal discharges must be collected upon

paper or gauze and burned. Gowns and masks should be worn by attendants, and the hands must be washed in an efficient antiseptic after handling the patient or his discharges.

The specific serum treatment is dealt with very fully and deserves reading in the original. In the ordinary case from three to four intravenous injections and an equal number of intraspinal treatments should be given within the first forty-eight hours. If this does not result in a satisfactory effect something is wrong. The trouble may be: 1. An overwhelming infection, when death is not long delayed. 2. Employment of a serum not containing antibodies specific for the strain of meningococcus affecting the patient. 3. Meningococci walled off in some part of the ventricular or subarachnoid systems inaccessible to serum treatment. 4. Other complications than meningitis. The second is the most important of these causes, and the only two tests of the therapeutic efficacy of a serum are its clinical effect and its agglutinin content. If the serum does not agglutinate the organisms isolated from the cerebrospinal fluid, blood, or nasopharynx in a dilution of one in 100 it is rarely of therapeutic value.

Acute Diffuse Peritonitis.—Basil Hughes (*British Medical Journal*, September 20, 1919) details a treatment for acute diffuse peritonitis which he carried out in a series of twenty-one consecutive cases with recovery in all but one, in which there were intestinal obstruction and gangrene of the gut. The treatment is based upon a careful consideration of the physiological pathology of peritonitis. In the first place the cause should be removed surgically at the earliest possible moment, but this should be done with the minimum of disturbance to the gut and to the peritoneum. The peritoneum cannot be drained since, if the reaction to the inflammation is a beneficial one, any drain inserted will promptly become blocked by the formation of a thick coating of fibrin. The degree to which fibrin (adhesions) is thrown out is more or less a measure of the degree of the patient's vitality and ability to combat the infection. Instead of draining, or trying to drain, it is quite sufficient in the early cases to mop out carefully any obvious collections of pus in the region of the operation, using dry sterile swabs only. No attempt should be made to clean the entire peritoneal cavity or to wash it out, since the latter merely removes a fluid which is highly valuable as an aid to the patient's overcoming the infection. A small tube or glove drain may be left, extending down to the site of the operation, to be removed after forty-eight hours. No measure or drug which stimulates peristalsis, such as calomel, pituitary, or physostigmine, should be employed to counteract the intestinal distention, since such stimulation merely disseminates infection and increases the toxemia. The only rational treatment at this stage is absolute rest. To this end fifteen mgm. (one quarter grain) of morphine should be given every eight hours until the pupils show contraction when the interval should be lengthened to twelve hours. Along with the morphine 0.6 mgm. (grain 1/100) of atropine should be given every twelve hours. Both drugs should

be continued until flatus is passed and vomiting has stopped. Since the vomiting in these cases is a method of eliminating part of the toxins it should not be checked. If the vomiting becomes fecal it indicates intestinal obstruction which demands immediate surgical relief. Vomiting, however, dehydrates the patient and this should be prevented and an excess of fluid should be given to dilute the toxins. To this end nine to ten pints of normal saline should be allowed to flow into the subcutaneous tissues by the drip method during each of the first two twenty-four hour periods, after which the amount can be reduced to five pints in twenty-four hours. Copious draughts of water containing sodium bicarbonate and citrate should be given, even if they are frequently vomited. This washes the stomach at first, and then some of the alkali is absorbed and soon a profuse diuresis begins. When the vomiting stops the subcutaneous injection of saline is stopped. Flatus and copious stools of foul smelling fluid are passed at this stage and bismuth with camphor can be given with benefit. No nourishment is allowed until the third day, when glucose is given rectally and continued during the fourth day. Beef extract and albumen water may also be given frequently in small amounts at this time, the latter being sweetened with glucose. Only after the tenth to twelfth day should any laxative be given.

The Treatment of Dacryocystitis by Curettage Supplemented by Immediate Rapid Dilatation of the Lacrymonasal Duct.—John Green, Jr. (*American Journal of Ophthalmology*, October, 1919), operates as follows: After slightly dilating the punctum with a conical probe the sac is irrigated with bichloride of mercury one in 5,000 and a few drops of cocaine, five per cent., with epinephrine injected. The lower canaliculus is then freely slit. A medium sized curette is passed into the sac and the surface gently curetted. A moderate sized probe, Theobald five or six, is then introduced and passed to the nostril. The purpose of this preliminary probing is to insure that the curette shall find its way into the lumen of the duct and avoid the possibility of making a false passage, and to create an opening sufficient to permit an anesthetic solution to come in contact with the mucous membrane. After withdrawing the probe a few drops of cocaine, ten per cent., with epinephrine, are injected, and this injection is repeated twice at two minute intervals. During this time the patient is to bend his head forward so that the strong cocaine solution shall emerge from the nostril. The surface of the membrane of the entire duct is then curetted, and after this Theobald probes eleven, twelve, thirteen, fourteen, and sometimes fifteen and sixteen are passed one after another. An applicator with tightly wound absorbent cotton is used to apply tincture of iodine lightly to the walls of the sac and duct. Green has devised a set of lacrymal burrs and reamers with which to perform the curettage, and an applicator for the application of the iodine, but Buck's aural curettes may be used as recommended by Thompson, to whom should be credited this portion of the operation. Postoperative reaction is said to be slight, the results excellent. The ad-

vantages claimed for the combined operation of curettage followed by immediate rapid dilatation are: 1. It removes any foreign material that may have lodged in the canaliculi, lacrymal sac and bony duct. 2. If polypi or granulation tissue are present in any part of the lacrymonasal duct, they are effectually removed. 3. Thus prepared, the duct readily admits large probes, Theobald eleven or twelve, and can be dilated up to Theobald thirteen, fourteen, fifteen, or sixteen at the first sitting, thus insuring adequate primary and secondary drainage. 4. The application of tincture of iodine to the mucous surface sterilizes it and stimulates it to normal activity and regeneration. 5. If pus should reform, the operation can be repeated. 6. It is an office or outpatient operation and is often successful even when the patient cannot return for subsequent observation and probing. 7. Should this method fail, the sac can be extirpated or destroyed as readily as if no operation had been performed. 8. In the writer's opinion, this operation will give relief in many cases of dacryocystitis which hitherto have been condemned to extirpation of the sac. As it offers the chance of efficient drainage through the natural passage, it should be preferred to any endonasal operation.

Treatment of Chronic Cough.—I. W. Voorhees (*American Medicine*, October, 1919) classifies the causes of chronic cough under three heads: 1, mechanical irritation of the vagus; 2, bacterial infection somewhere along the path of the airways; 3, sensitization to proteid toxin and to pollens. Mechanical causes are new growths, enlarged glands, diseased tonsils, aneurysm, elongated uvula; foreign body in the trachea, bronchi or lungs. Bacteria may include not only the pneumococcus, the tubercle bacillus, but even the common bacteria involved in ordinary colds. Foreign proteins may be from horse dandruff, chicken feathers, the hair of dogs, cats, mice, and rabbits; food proteins such as egg, lobster, veal, etc. If mechanical and sensitization causes can both be excluded then we have to deal chiefly with the activities of pus forming microorganisms. In such event an autogenous vaccine may be of great service in treatment, and acidosis must be guarded against by the administration of sodium bicarbonate, sodium citrate, and other alkalies in large doses plus the acid fruits. General tonics may be used with good effect, and of these strychnine is especially useful since it acts almost specifically on relaxed mucous membranes. Finally, antiseptic agents must be judiciously employed, as the silver salts, or the oily antiseptics, such as menthol in oil, thymol, oil of cloves, in from five to twenty-five per cent. solution, one c. c. being introduced into the trachea at each sitting and allowed to gravitate into the affected bronchus by the patient lying down on the side in question. Dichloramine-T in chlorococane oil is one of the most active antiseptics for chronic infections and the only precautions to be observed are that the liquid be fresh, neither acid nor alkaline, free from foreign matter, and that it reach the free exposed surface where the bacteria are supposed to be. To succeed, the patient must be willing to have the x ray and other tests which may be necessary.

Duodenal Lavage in the Treatment of Catarrhal Jaundice.—James W. Ousley (*Southern Medical Journal*, October, 1919) prefers to use the duodenal tube of Rehfuß, though any duodenal tube may be employed. The patient, with stomach empty, swallows the tube, lies down on his right side, and drinks a tumblerful of water. Gravity brings the olive shaped sinker near the pylorus and peristalsis soon pushes it into the duodenum. Aspiration from the tube of the yellow, clear, viscid and alkaline duodenal contents shows that the tube has entered the duodenum. Lavage is then begun. The duodenal tube is attached to an ordinary irrigator or rubber bag containing the irrigating fluid, the patient turns on his back, and the fluid is allowed to trickle into the bowels by the Murphy drip method. Ten or fifteen minutes is enough for 1,000 c. c. of fluid to run in and for peristalsis to push it onward so that there will be no distention of the bowel. The best solution is sodium bicarbonate, sodium sulphate, two drams each, and sodium salicylate one dram, in a litre of water, followed by fifteen c. c. of a twenty per cent. solution of argyrol. The writer ordinarily uses tap water as cold probably excites peristalsis of the gallbladder and ducts. Treatment should be given every other day. It causes very little discomfort. Patients should drink freely of alkaline mineral waters. The diet should be nonirritating with a limited amount of sugar and fats. Satisfactory results have been given by the following diet: Milk, buttermilk, green vegetables, peas, beans, tomatoes, asparagus, spinach, celery, lettuce, watercress, endive, and chicory; fruits of all kinds except those high in starch or sugar; orangeade, lemonade, and one orange and one lemon three times a day between meals; lean meats, chicken and eggs; soups, all stock soups and bouillons—soups to be served twice a day; bread, crackers, and dry toast; oatmeal, cream of wheat, pettyjohn, farina, and rice; and such desserts as junket, custard, gelatine, prune whip, stewed and baked fruits, and grapefruit. No tea, coffee, or cocoa is allowed.

Cardiac Massage as a Means of Resuscitation.

—Lionel E. C. Norbury (*Lancet*, October 4, 1919) presents a comprehensive review of the subject from both the experimental and the clinical aspects and lays special emphasis upon the following points. Cardiac massage offers a very important adjunct to the methods of resuscitation and one which is applicable in cases of heart failure during surgical operations, and in certain other conditions. No time should be lost after the heart stops during a surgical operation before starting subdiaphragmatic massage of the heart, and valuable time should not be wasted in the administration of drugs. Artificial respiration should be carried out simultaneously with the massage of the heart. When the massage is begun at once after stoppage of the heart in most surgical operations only a few compressions of the heart will usually be required to restore its beat. In any case in which massage of the heart is contemplated it should be begun within five minutes from the cessation of the heart, and it would seem wiser to give other methods of resuscitation a trial of not more than two minutes before beginning

massage. It may prove necessary to continue the rhythmical compression of the heart for several minutes before spontaneous contractions occur. The subdiaphragmatic method is certainly the best and most efficient of the procedures for cardiac massage, and in desperate cases one should not hesitate to make a rapid incision high in the epigastrium to admit the hand, even if aseptic conditions cannot be fulfilled. In addition to cardiac massage and artificial respiration, the latter of which must be continued until spontaneous breathing begins, it is often beneficial to adopt means of raising the systemic blood pressure. For the latter purpose one may employ intravenous injections of weak solutions of epinephrine in normal saline, or one can compress the abdominal aorta, bandage the extremities, or apply Crile's pneumatic suit if it be at hand. Injection of epinephrine into the heart wall or directly into its cavities is very likely to set up fibrillations and it is not only of no value, but is often harmful. Finally, permanent recovery is seldom, if ever, possible if the heart has been stopped for more than about eight minutes, for even if the heart be made to beat again and the respiration restored, the damage to the central nervous system has been irreparable and the patient will succumb.

The Nature of Rabies and Antirabic Treatment.

—David Semple (*British Medical Journal*, September 20, 1919) reviews the several preparations used for the specific treatment of rabies, including the preparations of dried rabbit's spinal cord, diluted living and virulent virus, antirabic serum, and killed rabies vaccine. He points out that the first two methods are not free from objection on the basis of possible danger from the introduction of the living virus. The third method was extensively tried by the author, but was always followed by the use of one of the other preparations, so that it was not possible to state its true value. It seemed reasonable, however, to think that it was of some value in producing an immediate passive immunity while waiting for the development of an active immunity from the injection of one of the other preparations. This should be valuable especially in cases in which time is of great importance, since the active immunity is slow in developing, requiring nearly two weeks at the least. Finally, the author is a strong advocate of the use of killed rabies vaccine, prepared by treating the fresh emulsified cords of rabbits, dying from infection by fixed virus, with phenol for a sufficient time to destroy the virus. This preparation is free from the objection raised against the first two preparations, it is easy to make, and it keeps well so that it can always be available for use. Such a vaccine has been used by the author since 1912 in the treatment of more than 22,000 persons with only 0.68 per cent. of failures. Of these only 2,009 were Europeans, the remainder being natives of India who generally do not come for treatment so early as Europeans. Among the Europeans treated the failures were only 0.19 per cent., which shows the results to be quite as good as those obtained with any other preparation. Emphasis is laid upon the need for immediate treatment in every suspected case and the proper adjustment of the dose of the vaccine.

Miscellany from Home and Foreign Journals

Headache.—William Wilson (*Practitioner*, October, 1919) says that a satisfactory classification of headaches according to their causes is very difficult, but propounds the following to include the commoner conditions: 1. Autointoxicant: Gouty, rheumatic, hepatic, nephritic, intestinal; specific infectious diseases; menstrual and climacteric; disorders of the ductless glands, like the thyroid and pituitary. 2. Circulatory: Anemias, arteriosclerosis, plethora, cardiac disease, deficient coagulability of the blood. 3. Extraintoxicant: Poisons generally, like alcohol, tobacco, opium, and lead. 4. Neuro-genous: Neuroses, neurasthenia, true migraine. 5. Reflex: Ocular, nasal, aural, pharyngeal, dental, visceral, genital, chiefly uterus and ovary. 6. Local organic disease, as of the brain and its coverings. 7. Variation in the tension of the cerebrospinal fluid: Serous meningitis, cerebral edema. Of the chronic headaches, the most unbearable are those of brain tumor, brain syphilis, and arteriosclerosis. Always suspect congenital syphilis as a cause of persistent and severe headaches, which are worse at night, in a child.

In investigating a case of headache we should note: 1. Whether it is unilateral or bilateral. The presumption in the former case is in favor of a unilateral cause, in the latter of a general cause, but not necessarily so. 2. The locality of the pain. 3. Any local tenderness and whether superficial or deep. 4. Whether it is constant, intermittent, or remittent. 5. The diurnal incidence and variation. 6. The character of the pain, whether paroxysmal, throbbing, boring, dragging, feeling of tension or the reverse, aching, or feeling of pressure on the head. 7. Whether it is produced or aggravated by any position of the body or by movement. 8. Is there any complaint by the patient of any organ of the body, or is there any systemic fault, e. g., anemia or other blood condition, pathological condition of the urine, dyspepsia, constipation, rheumatism, syphilis, or malarial history. The writer considers all these things in detail, with a little extra attention to headaches of nasal origin.

Conjugal Tuberculosis.—E. Ward (*Lancet*, October 4, 1919) studied over 4,000 contacts of tuberculous cases with a view to securing evidence with reference to the frequency and probable cause of conjugal tuberculosis, the examination having been made as a routine procedure and without the definite object mentioned. Of 120 wives whose husbands were tuberculous, fifty-five per cent. were found to be tuberculous, ten per cent. were suspects, and thirty-five per cent. were negative for tuberculous infection. Among thirty-six husbands whose wives were tuberculous, sixty-nine per cent. were definitely tuberculous, eleven per cent. were suspects, and thirty-two per cent. were negative. Among 156 instances in which the husband or wife of a tuberculous mate was examined the partner was found infected in fifty-eight per cent., was suspected in ten per cent., and was not infected in thirty-two per cent. In contrast with these findings are those of 1,057 tuberculous con-

tacts other than husband and wife. These showed twenty per cent. of the contacts to be tuberculous, seventeen per cent. of suspects, and fifty-three per cent. not infected. Definite conjugal tuberculosis was nearly three times as frequent as other types of contact tuberculosis, and from a consideration of the conditions prevailing in the small community in which the author worked, and in which he personally knew most of the inhabitants, he concludes that the occurrence of conjugal tuberculosis is due to infection of the one mate by the other. He excludes the possibility of "assortative mating," which has been invoked by other students of the problem. He concludes that the great majority of the mates of tuberculous wives or husbands sooner or later become infected and show symptoms of tuberculosis, but among those so infected the great majority recover and do so more rapidly than most other tuberculous patients. This more rapid and more frequent recovery is probably due to the existence of an enhanced immunity as the result of receiving graduated doses of tubercle bacilli.

Gallstone Disease Complicating Pregnancy.

Aime Paul Heineck (*Western Medical Times*, October, 1919) makes the following statements: 1. Gallstone disease occurs with far greater frequency in women than in men; with far greater frequency in women who have borne children than in those who have remained sterile. Its greatest period of incidence is the child bearing period. 2. Alone or associated with one or more other related or non-related pathological states it not uncommonly complicates a pregnancy otherwise normal or abnormal. 3. The first manifestations of cholelithiasis may date from the existing gestation or from a previous pregnancy; may precede, coincide with, or follow an abortion or premature labor, accidental or induced. 4. All conditions that are associated with, that favor or cause bile stasis, inflammatory or degenerative changes involving the gallbladder or bile tracts, or pathological alterations in the composition of the bile, predispose to gallstone disease. 5. Pregnancy is an important etiological factor in the causation of cholelithiasis. 6. The pathology of gallstone disease complicating pregnancy is the same as that of gallstone disease in the nonpregnant. 7. Some of the symptoms are due to the irritation caused by the presence of the stones; others to the concomitant inflammation. 8. Rupture of a distended gallbladder can occur during gestation, or during or immediately after labor. 9. In the differentiation of this condition one should bear in mind that not infrequently gallstone disease originates during, or may complicate, pregnancy; that cholelithiasis and cholecystitis are often mistaken for gastric disease; that appendicitis and gallstone disease frequently coexist; that digestive disturbances associated with acute pain and tenderness in the right hypochondriac region, with or without jaundice, or symptoms of biliary colic, are in themselves justification for operative exploration of the gallbladder and ducts. 10. Chole-

lithiasis calls for operative relief. 11. Gallstone disease in itself is never an indication for the artificial termination of pregnancy. 12. Whenever, for any reason, the abdomen of a woman in or past the child bearing period is opened, the gallbladder and larger bile ducts should be examined if it can be done with only slight trauma; without exposing the patient to too much additional risk; and without contaminating clean peritoneum. A history of chronic digestive disturbance is an absolute indication. 13. Women exposed to pregnancy, suffering from calculous cholecystitis, or any other form of gallstone disease, should have the calculi removed and the gallbladder drained. 14. Pregnancy does not contraindicate operations on the gallbladder or bile tracts. 15. The operative relief and cure of cholelithiasis does not unfavorably influence gestation or parturition. Icterus, whether acute or chronic, is a constant menace to the fetus. 16. Early operation is a safe procedure in proper hands. 17. Cholecystotomy, cholecystectomy, and choledochotomy have been successfully performed upon pregnant women for the relief of gallstones. After these operations drainage is to be employed until the bile ceases to flow spontaneously through the wound, until complete subsidence of whatever degree of cholangitis existed. 18. The prognosis of operative intervention is not unfavorably influenced by the existence of pregnancy. 19. In persistent gallbladder disease trouble changes in the urine manifested by the presence of casts and albumin are not uncommon and are not necessarily a bar to operation.

Concerning the Ocular Phenomena in the Psychoneuroses of Warfare.—G. E. de Schweinitz (*Archives of Ophthalmology*, September, 1919) disregards the comparatively small group of concussioned patients with organic lesions and deals with the functional group, the patients with psychoneuroses, war shock, and hysteria. Sharp distinctions are difficult, readily become artificial, so a definite classification of the ocular symptoms is not satisfactory, but for convenience he groups the conditions as: 1. Various types of amblyopia and amaurosis, including disturbances of the color vision, in other words, "incomplete and complete anesthesia of the visual sense." 2. Asthenopias and anomalies of the accommodation. 3. Anomalies of the iris movements. 4. Anomalies of the eyelid and exterior eye muscle movements. 5. Phenomena not included in the preceding groups. Under the first group he discusses cases in which the vision was lost or blurred for a few minutes, for from several hours to two weeks, and for months or even years. He says: "During the period of being semiconscious or dazed he is partly or entirely blind; vision often returns with the restoration of consciousness, or it may persist for varying periods of time if the soldier's attention is fixed upon or directed to his eyes." He may also have tonic or clonic blepharospasm, when he cannot open his eyes. If the lids are forced open the eyes are usually rotated upward; the pupils react normally, and the eye grounds show no change. Frost is quoted that the symptoms of these neuro-

tics are always the definite effect of a definite suggestion in some form. Concentric contraction of the visual field, with or without inversion of the color lines, tubular fields, and spiral fields, are commonly observed and readily suggested among those who suffer from hysteria resulting from various forms of war shock. A case of sudden loss of the color sense is described. The asthenopias and anomalies of accommodation are the same as those met with in civil life in hysteria and neurasthenia. Pupillary phenomena seem to have a definite physical basis and not to be symptoms of a neurosis, except perhaps when there was a temporary sluggish reaction. War neuroses do not differ from peace neuroses in their symptoms and evolution except in the association of the war coloring.

Ascending Renal Tuberculosis.—Leo Buerger (*American Journal of the Medical Sciences*, October, 1919) reports three cases which, in his opinion, give clinical and pathological proof of the occurrence of ascending renal tuberculosis, ascending at least in the sense that the renal and ureteral lesions are secondary to the bladder involvement. They show that minimal tuberculous renal lesions, when associated with extensive vesical and ureteral changes, are doubtless, in some cases, later involvements of the urinary tract, be they produced in the true ascending, canalicular sense of propagation by contiguity, or in a more circuitous fashion by late embolic invasion of the kidney. The results of the removal of the kidney in two of these cases give testimony to the value of nephrectomy even in this type of urinary tuberculosis. Although the renal parenchyma is practically uninvolved in some of these cases the retention of tuberculous urine in the pelvis of the kidney, and the constant contamination of the bladder with tuberculous products elaborated in the ureter, are sufficiently active factors in interfering with recovery.

Transitional Leucocytosis and Its Diagnostic Value in Chronic Appendicitis.—G. A. Friedman (*American Journal of the Medical Sciences*, October, 1919) thus summarizes his findings: 1. Transitional leucocytosis or an increase in large mononuclears and in transitional leucocytes, or an increase in either of them, was found in the blood of eighty-seven per cent. of the patients in whom evidence of chronic appendicitis was obtained. 2. There was no transitional leucocytosis in the blood of patients in whom evidence of chronic peptic ulcer was obtained, or in the blood of those in whom cholecystitis, renal stones, or other organic abdominal conditions were found at operation. 3. A transitional leucocytosis was found in patients in whom appendicitis was present with other organic abdominal conditions. 4. A hyperleucocytosis and a polynuclear leucocytosis are not as frequently found in chronic appendicitis as a transitional leucocytosis. 5. A transitional leucocytosis as a diagnostic aid is superior to such roentgen signs which are supposed directly or indirectly to point to a diseased appendix. 6. Transitional leucocytosis often persists in the blood after an appendectomy has been performed.

Hemolysis and Blood Autolysis.—Roger (*Presse médicale*, June 19, 1919) refers to his earlier demonstration that autolysis reduces the toxicity of organ extracts and causes them to raise blood pressure instead of lowering it, as before. His recent researches showed that these same changes occurred in the case of blood. Sterile defibrinated blood was subjected to repeated congelation and decongelation in order to break up the corpuscles. Injected intravenously it caused a marked fall of blood pressure and, in a dose of nine mls, death. After eight days of autolysis, it raised the pressure; the injection of forty mls caused little disturbance, sixty mls or more being required to produce death. These experimental results may be correlated with clinical facts. In cases of burn or frostbite, the disorders resulting are due at least in part to products issuing from the erythrocytes destroyed in the involved area. In the event of blood coagulation, absorption of the exudate occurs through autolysis and causes no disturbance.

Postinfluenzal Tuberculosis.—Timothy J. Murphy (*Boston Medical and Surgical Journal*, August 28, 1919) arrives at the following conclusions:

1. Epidemics of influenza are not followed by any measurable increase in the incidence of tuberculosis.

2. In people with mild or arrested tuberculosis a higher incidence of influenza is evident than in those with the advanced type.

3. In people with active tuberculosis a certain degree of immunity is produced by the constant presence of a low grade chronic inflammatory process of the respiratory tract, which protects them to some extent against a frank invasion of influenza.

4. Cases of glandular tuberculosis, especially the cervical and tracheobronchial type of children, show a very high incidence of influenza, but very few frank cases of pulmonary tuberculosis follow.

5. Individuals in the prime of life, apparently free from physical defects and previous history of illness, are more susceptible to influenza.

The Diagnosis of Late Syphilis of the Central Nervous System.—The small group of cases reported by Channing Frothingham (*American Journal of the Medical Sciences*, September, 1919) shows that it is possible to overlook syphilitic involvement of the central nervous system in an ordinary careful history taking and physical examination as completed in the wards of a general hospital, even when syphilis is known to exist. This possibility of error must be magnified outside the hospital. The study of the spinal fluid will readily give evidence of syphilis of the central nervous system when symptoms and physical signs are not obtained on careful routine examination. As the procedure of lumbar puncture, although somewhat time consuming to the patient, is practically without danger; as it opens up a means of diagnosing late syphilis of the central nervous system when other diagnostic means fail, and as late syphilis of the central nervous system calls for special form of treatment, it is recommended that in all cases of old syphilis a lumbar puncture should be performed as a diagnostic procedure before instituting treatment.

Pernicious Anemia Followed by Acute Leucemia.—A. Chauffard and M. Bernard (*Presse médicale*, July 3, 1919) report a unique case in a man aged fifty-one years, in which the following conditions appeared in rapid succession: Ictericus pernicious anemia; preleucemic myelemia, and hyperacute, terminal myeloid leucemia. Appearance of the final leucemic stage was followed by death in less than three weeks. No primary etiological factor could be discovered. The authors look upon the case as one of atypical myeloid leucemia with marked destruction of erythrocytes in which the complete leucemic picture was postponed to a late period.

Acute Mastoid Antrum Infection in Infants.—Homer Dupuy (*New Orleans Medical and Surgical Journal*, September, 1919) calls attention to the existence behind and slightly above the ear of an air space known as the antrum which communicates with the middle ear and is liable to suppurative inflammation, although no mastoid process is present in an infant. He urges that when an infant has a persistent otorrhea, septic temperature, and leucocytosis, an operation becomes imperative. We should not wait for postaural swelling in an infant as an indication. While a thin cortex over the mastoid antrum invites perforation from the antrum side, not a few patients must succumb to intracranial and septic complications before the appearance of a postaural swelling. When it is absent the temperature record and leucocyte count must be the guiding factors.

Spastic Paralysis in Children.—Jacob Grossman (*Medical Record*, September 13, 1919) after discussing a number of cases, sums up as follows: Spastic paralysis may result from an apparently normal delivery. Infants who apparently recover may develop a spastic hemiplegia at a later period. A guarded prognosis should be given in all cases. In a number of cases the only clue to a cerebral injury is the presence of stiffness which mothers notice when bathing and dressing the children. In other cases delayed functions of sitting and walking direct one to the existing spastic condition. Convulsions in infants, either immediately or shortly after birth, should make us suspect cerebral injury. The possibility of syphilis as the etiological factor should always be borne in mind. Massage, electricity, supports, tenotomies and muscle education usually offer relief and influence to a certain degree the existing condition.

Necrosis of the Index Finger from Lysol.—Horace K. Sowles (*Boston Medical and Surgical Journal*, October 23, 1919) reports the case of a man who noticed soreness and redness at the base of the nail of his index finger, and soaked the finger in a basin of water with an indefinite amount of lysol four times during the next forty-eight hours. Four days from the beginning the finger "had a typical carboic acid gangrene appearance." The gangrene is ascribed to the lysol, but it seems hardly fair to do so from the history as given, as the case would appear to have been one of paronychia, which has been known to produce such destruction unaided when not relieved by surgical measures.

Proceedings of National and Local Societies

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Meeting of Wednesday, October 8, 1910.

The President, Dr. B. FRANKLIN STAHL, in the Chair.

SYMPOSIUM ON SOME OF THE PROBLEMS IN ORTHOPEDIC SURGERY THAT CONFRONT THE GENERAL PRACTITIONER.

Deformities of the Spine and Joints.—Dr. J. TORRANCE RUGH presented a paper on this subject in which he said that his purpose was to draw attention to certain fundamental facts regarding some of the common conditions, which might be of practical value to the general practitioner. He said that ordinary spinal conditions might be grouped into the inflammatory or organic and the noninflammatory or functional. These two classes had three symptoms in common, namely, inflammation, pain, and deformity, and were, therefore, not commonly differentiated by the medical man. The common impression among medical men that scoliosis was related or was due to tuberculosis had no foundation. The cause for such confusion was failure to strip the patient and carefully examine the spine. The lower part of the back presented more variations from the normal than any other portion of the body, but conditions such as subluxations were not shown by the x ray. Doctor Rugh emphasized the fact that some slight deviation from the normal might be a normal condition in a given individual. In all cases of painful backs the particular part which was affected should be ascertained and then appropriate treatment given. The old diagnosis of lumbago, like that of rheumatism, was now obsolete because of the increased knowledge of etiological factors. In chronic joint conditions tuberculosis must be ruled out. In the majority of cases this was easily done; other chronic joint affections had some distinguishing group of symptoms. In the treatment of inflammatory joint conditions the keynote was rest. In cases of injury, one must consider whether the trauma had been inflicted upon the joint or its structures, or whether the effect was a secondary one. The importance of this latter influence was not sufficiently recognized. Doctor Rugh believed the most important thing to remember was that joint cases should not be termed rheumatic until every other condition had been eliminated.

The Foot and Shoe Problem.—Dr. WALTER G. ELMER said that the foot was a well constructed mechanism, capable of an immense amount of work if properly treated, and easily giving way to strain if badly treated. The inner side of the foot—the longitudinal arch—is the weak side; the outer border rests on the ground, and is the strong side. This creates the transverse arch. The metatarsal arch is supported by a pad of fat and connective tissue. The inner aspect of a normal foot is concave. In correct walking the feet should be held parallel to each other, and the weight should fall chiefly on the outer side. Under faulty weight bearing, the

foot yields gradually to strain; there is the overhanging inner ankle; the inner aspect of the foot becomes convex; the anterior portion of the foot becomes abducted on the posterior part. Pain is due to abnormal strain on ligaments, bone pressure where it does not belong, and pressure upon or injury of nerve filaments between bones. An outline tracing should be made of the patient's foot with the weight upon the foot. The shoe should have a straight inner margin, a medium rounded toe, a square heel about one inch high for a man, one and one half inches high for a woman. The shoe should be as wide as the foot across the ball, and three quarters of an inch longer than the foot for the adult, one half inch longer for a child. The inner margin of the sole and heel, in cases of foot strain, should be raised three sixteenths of an inch. In more advanced cases a steel shank is put into the shank of the shoe and a pad of firm piano felt fastened in the shoe to support the hollow of the foot. In cases of metatarsalgia, this pad is extended forward to support the metatarsal arch also, the support being just behind the heads of the second, third, and fourth metatarsal bones, a little higher behind the third. The ball of the great toe and the ball of the little toe rest upon the sole of the shoe. Massage and flat foot exercises should also be used. Pain may be relieved by baking in the superheated air oven every other day.

Deformities of the Hand.—Dr. A. BRUCE GILL described the various forms of congenital and acquired deformities of the hand with their etiology and drew special attention to Volkmann's contracture and malunion of Colles' fracture. He said that Volkmann's contracture might be a very serious condition, partially or wholly destroying the use of the hand and disabling the patient for life. It resulted from interference with the blood supply which was occasioned by fracture at the elbow and less commonly by fracture of the bones of the forearm. If the fracture at the elbow was properly reduced and the bandage properly applied, the circulation of the forearm and hand was not interfered with. If, however, the attempt was made to dress the elbow in acute flexion without first reducing the fracture, there was pressure on the vessels in the flexure of the elbow which resulted in more or less complete obstruction of the circulation. The arm should never be dressed in acute flexion until the fracture had been first reduced.

Malunion of Colles' fracture was an extremely common condition. Many patients had passed months and even years with serious disability of the hand as a result of Colles' fracture. This disability many times interfered with the patients' livelihood, or at least prevented their following their usual vocation. Here, too, the loss of function resulted from interference with the blood supply. The hand became swollen and shiny, later on blue and cold, and the fingers became more or less rigid. Treatment by baking and massage and manipulation failed even through many months to secure return of function. The condition of arthritis, with

formation of fibrous tissue at the joints, had occurred as a result of interference with the blood supply. Many times it was impossible to secure complete flexion of the fingers, even when the patient was under an anesthetic. If the fracture were properly reduced the blood supply would not be interfered with. Reduction should always be attempted under an anesthetic. If a week after the fracture the hand and fingers were still swollen and motion was limited, and there was no evidence of rapid subsidence of the swelling, open operation should be made to secure reduction of the fracture.

Meeting of Wednesday, October 22, 1919.

SYMPOSIUM ON INTESTINAL OBSTRUCTION.

Experimental Research.—Dr. J. E. SWEET, of Philadelphia, said that in acute high obstruction a toxic condition developed in eighteen hours which could be designated only as a tragedy. He thought it was not unlikely that the solution of the problem of high obstruction would bring with it the answer to the question of intestinal stasis. Obstruction at the pylorus, at the ileocecal region, in the sigmoid, or in the rectum, gave a picture of chronic disease contrasted with that of high obstruction. The acute problem lay, clinically, between the pylorus and the ileocecal region. It had been shown experimentally that the source of the poison could be limited to that portion of the small intestine of the dog corresponding roughly to the anatomical limits of the duodenum. The hypothesis developed was that the poison found in acute high obstruction was a normal product of the duodenum and that it was normally destroyed in the jejunum. According to this theory, in acute obstruction we were not dealing with the formation of a new poison, but the obstruction had merely interfered with the normal process of the destruction of a poison normally formed and always present in the upper gut. There was no demonstrable source of toxin formation in the lower portion of the gastrointestinal tract from the beginning of the ileum perhaps to the anus. The actual source and character of the poison had not been so easy to determine. It had been shown that the toxin belonged to the class of the so-called protein poisons, and it was therefore related to a class concerning which the chemists were not yet agreed. However, the poison found in high obstruction was related to the toxic proteoses and to the cause of death in anaphylactic shock, and the pictures at autopsy of all these conditions had much in common. A poison of this nature had been found in the content of the stomach, but not constantly. The stomach had been ruled out as had also the liver. Other organs had been suspected and, as so often happened in research work, the further one went the more intricate the problem appeared, until suddenly, all became clear. While the illumination of this problem of obstruction had not yet appeared, the geographic source of the cause of the symptoms had been experimentally located. The reasons for treatment were based on the presence of an extremely powerful poison formed somehow in the gut above the obstruction; therefore, the necessity for the immediate operation; therefore, the value of the stomach pump.

Acute Intestinal Obstruction.—Dr. HENRY D. JUMP presented a study of the general symptoms of acute intestinal obstruction without attempt to differentiate between the causes, or to specifically localize the portion of bowel affected. It was a lamentable fact that in most cases of acute obstruction no diagnosis had been made until the case was far advanced and in many not until the terminal symptom of toxemia had occurred. The mortality had been over forty per cent. in reported cases. Moynihan believed that any mortality above ten per cent. should be credited to delay. The burden of early diagnosis lay on the family physician as did also the responsibility of calling for surgical intervention. That there was an alarming tendency to persist in medical treatment without relief must be due to the rarity of the disorder and a consequent lack of appreciation of its danger. Deaver and Ross reported 276 cases in ten years from a busy clinic. Doctor Jump said that we were today in about the same position with intestinal obstruction as we were twenty years ago with appendicitis, at which time surgery was the last resort. While the medical man was justified in attempting to relieve the obstruction by lavage and enema, purgation was dangerous and must not be used. Ochsner had said that he had had practically no mortality in cases in which cathartics had not been used, and that where they were used "they did an enormous amount of harm." Strangulated hernia was the cause of the obstruction in more than half of the cases. In such the diagnosis should offer few difficulties except in umbilical, ventral and internal hernias. According to Coley if the strangulation could not be reduced in five minutes by taxis it was unsafe to continue. In the presence of symptoms of intestinal obstruction an abdominal scar must make the physician consider the possibility of postoperative adhesions, which were the cause of many cases, and be alert in the making of his diagnosis.

The Treatment of Intestinal Obstruction.—Dr. GEORGE P. MÜLLER said that intestinal obstruction in all its forms was essentially a surgical condition and if diagnosed by the attending physician should be passed on to the surgeon for treatment, but with most physicians the habit of purgation upon the appearance of any abdominal lesion was fixed. The patient himself was principally at fault in this matter, but sometimes the physician hesitated and waited for the effect of a dose of oil, salts, or calomel, or even all three. If laymen and physicians would consider acute abdominal pain as a contraindication and not an indication for purgation, many lives would be saved. If operation must be delayed, the preoperative treatment was absolute withdrawal of food, water, and medication by the mouth, with the use of gastric lavage; the administration of water by the bowel, if it could be done satisfactorily, or by hypodermoclysis, if necessary; water must be given and retained; enemas to empty the lower bowel and encourage the escape of gas and other bowel contents would be desirable but for the probable interference with the use of water; enough morphine to subdue pain, quiet the nerves, and put the bowels at rest. Doctor Müller believed morphine was absolutely indicated before operation in mechanical ileus, to put a stop to violent peristalsis.

He believed toxemia and infection were responsible for the severe symptoms in intestinal obstruction. As a rule local anesthesia was to be preferred in all cases of intestinal obstruction. Young children with intussusception did best under ether. In old irreducible hernias with recent incarceration, gas oxygen-ether worked better than local anesthesia because of the edema of the tissues, and the presence of adhesions inside the sac hurt and even shocked the patient during their separation. Spinal anesthesia, skilfully administered, might be given the preference but, if allowed to extend up to the splanchnic area, became highly dangerous. The speaker admitted a personal preference for ether when the diagnosis was doubtful, the patient not dangerously ill, and exploration of the abdomen probable.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Principles of General Physiology. By WILLIAM MADDOCK BAYLISS, M. A., D. Sc., F. R. S., etc., Professor of General Physiology in University College, London, Illustrated. Second Edition, Revised. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1918. Pp. xxiv-858.

All physiologists, many students and some practitioners will remember the glow of pleasurable satisfaction when Verworn's *General Physiology* first appeared, and many no doubt felt, as did the present reviewer, when many years ago he expressed himself in these columns that a new and valuable intellectual tool had been forged that would greatly enhance the physician's power to penetrate into the secrets of the human machine and further his as yet almost infantile attempts to understand its workings in health and in disease. For many years this admirable work stood alone and though revised and edited and ably translated was the sole exponent of the general principles which strove to unite into a series of unified concepts the fundamental laws upon which our understanding of physiological activities rested.

Fortunately, however, an even greater work has come from an English university and now in its second edition, following closely on the heels of the first, challenges the attention and awakens the admiration: the former by reason of the originality of its plan and the ingenuity of its conception, the latter by the excellence of its performance and the charm of its presentation.

Bayliss's *General Physiology* stands out, in our mind at least, as one of the most masterly of the many works which have come to our attention, not only as a representative of the comparative few that come to the reviewer's table, but when compared with the world's output as seen on the shelves of our incomparable metropolitan libraries.

Our duty to our readers first requires us to state that for those who have purchased the first edition, this second varies but little from the first. As the author himself says in the introduction, matters con-

nected with the war have prevented much important research and hence his task of revision has not been onerous. In the case of some aspects of the activity of muscles, of the kidney and of the visceral nervous system, new facts or changes in point of view necessitated considerable rewriting.

To those who have not seen the book it can be most heartily recommended. But it must be emphasized that to one not fairly in touch with modern biological thought it will prove no easy text. The general practitioner who has not been reading much physiology will find it a "tough proposition," but if he has the grit and wants to know he can learn much valuable physiology—the most fundamental aspects of physiology. There is much physical chemistry, and in no work with which we are acquainted is it better stated than here. To one not trained in mathematics these chapters may be passed over, yet Bayliss has been extremely helpful in so arranging the mathematical material that one can read even the highly technical chapters on Energetics, Permeability of Cell Membranes, and Osmotic Pressure and almost skip the mathematical discussions without missing the essential facts.

Each chapter presents an admirable short summary of the preceding pages in the essay, for this work is really a series of coordinated essays in physiology of a most attractive type. The chapter on the Nervous System is most admirable, but they all are that and it is impossible to pick out one chapter which is better than its neighbor. The discussion of hormones, drugs and toxins contains most valuable material for the practising physician.

There are a series of most pedagogically valuable illustrations and excellent portraits of the great physiologists of the world. These contribute greatly to the pleasurable feeling that in spite of the great and intensely profound learning which demands close attention in its study the book is a human document, lightened by a wholesome feeling for and intense interest in this most intricate of nature's products, the human machine.

Births, Marriages, and Deaths.

Died.

BAILHACHE.—In Staten Island, N. Y., on Tuesday, October 28th, Dr. Preston H. Bailhache, aged eighty-four years.

BENNETT.—In Busti, N. Y., on Saturday, November 1st, Dr. Andrew J. Bennett, aged fifty-nine years.

BREEN.—In Hudson, Mass., on Tuesday, November 4th, Dr. James H. Breen, aged forty-one years.

MAGGARD.—In Corning, Cal., on Saturday, October 18th, Dr. William F. Maggard, aged sixty-four years.

MURPHY.—In Boston, Mass., on Sunday, November 2d, Dr. Francis Charles Murphy, aged sixty years.

SEARS.—In Portland, Conn., on Tuesday, October 19th, Dr. Cushman A. Sears, aged seventy-nine years.

TAYLOR.—In Philadelphia, Pa., on Tuesday, November 4th, Dr. Charles Fremont Taylor, aged sixty-three years.

VALK.—In New York, N. Y., on Wednesday, November 5th, Dr. Francis Valk, aged seventy-four years.

WILLIAMS.—In Brazil, Ind., on Monday, November 3d, Dr. L. L. Williams, aged sixty-two years.

WILSON.—In Baltimore, Md., on Wednesday, October 29th, Dr. Robert Taylor Wilson, aged fifty-nine years.

ZIEBER.—In Philadelphia, Pa., on Thursday, October 30th, Dr. Edward S. Zieber, aged sixty years.

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Original Communications

THE SIGNIFICANCE OF THE VASCULAR CHANGES IN THE SO-CALLED PANDEMIC INFLUENZA.

BY DOUGLAS SYMMERS, M. D.,
New York,

Director of Laboratories, Bellevue and Allied Hospitals.

In spite of the fact that the recent prevailing pandemic infection popularly known as influenza has been made the subject of innumerable investigations, its cause is still a matter of doubt. Until the identity of the provocative agent is established, speculation as to the sequence of events is more profitably to be based on anatomical and clinical correlations than on the insecure results of bacteriological endeavor as thus far unfolded. In the so-called pandemic influenza, the initial effect of the provocative agent, whatever its nature and origin may be—filterable virus or what not—appears to be exerted on the vascular system, so altering the circulation as to produce an extraordinary degree of capillary dilatation and congestion in the skin, mucous membranes and viscera, simultaneously apparently, or approximately so. A knowledge of the pathology of the circulatory changes is valuable both from the viewpoint of treatment and the interpretation of symptoms.

The extraordinary vascular dilatation and the concomitant tendency to hemorrhage are comparable to the effects of certain poisons. For example, in a case of trinitrotoluene poisoning, I observed bilaterally distributed hemorrhagic foci in the lungs that gave to these organs naked eye appearances strikingly like those of the so-called influenza, and similar hemorrhagic foci are not uncommonly to be found in the lungs as a result of death from morphine, cocaine and other alkaloids. A counterfeit is also to be seen in acute poisoning by methyl alcohol. In the course of the past year, a large number of such cases were investigated by Dr. Charles Norris, chief medical examiner of the city of New York, and his first assistant, Dr. Benjamin Schwartz. The chemical and microscopical examinations were carried out in the Bellevue Hospital laboratories. In acute methyl alcohol poisoning hemorrhagic foci in the lungs are not uncommon and in at least some of the cases the naked eye resemblance to the pneumonic lesions of the so-called influenza is impressive. The comparison, moreover, is borne out by the remarkable degree of ca-

pillary dilatation to be found in the meninges of the brain and in the liver, kidneys and suprarenal capsules in both conditions. In morphine poisoning and in tetanus the vascular injection of the cerebral meninges is likewise comparable to that of the so-called influenza.

It is recognized that, early in the course of the so-called pandemic influenza, the conjunctivæ and the skin of the face, neck and upper chest are suffused, and that later this duskeness may be replaced by cyanosis, added to which such symptoms as dermatographia and the white line of Sergeant still further indicate the instability of vascular control. One of the most illuminating signs of circulatory embarrassment, however,—a change which sometimes is to be observed before there are any detectable evidences of pneumonic involvement—is that the blood pressure is low, on occasions alarmingly so, and that the pulse is often slow, even in patients who have not received digitalis. In connection with the phenomenon of low blood pressure and as tending to prove the occurrence of visceral congestion previous to the onset of pneumonia, it is significant that, in the recently prevailing disease, postmortem examination revealed congestion of the medullæ of the suprarenal capsules in no small proportion of cases. Microscopically, the medullary capillaries in these circumstances are distended to a degree rarely encountered in infective diseases, with the exception of diphtheria¹ and bubonic plague and in certain forms of sepsis, especially in children, and even hemorrhages into the substance of the gland may be observed. In one of the Bellevue Hospital autopsies, thrombosis of the suprarenal veins was present and identical lesions have been described by others. In some respects the action of the provocative agent on the circulation is not unlike that of certain members of the nitrite series, particularly with regard to the flushed skin, low blood pressure and dilatation of the capillaries in the splanchnic area. On the other hand, it is scarcely conceivable that conditions such as have been de-

¹The presence of marked congestion and even hemorrhages in the suprarenal medullæ of children dead of diphtheria is a well known fact among pathologists. Identical lesions occur in guinea-pigs that have been injected for the determination of the virulence of different strains of diphtheria bacilli. These anatomical facts, taken into consideration with the clinical observation that the blood pressure in diphtheria patients is often diminished, assume even greater significance when it is recalled that Marie's experiments and those of Stutzer suggest that the presence of diphtheria toxin in the circulation tends to exhaust the supply of epinephrin, the latter substance combining with the toxin to render it harmless.

scribed in the adrenal medullæ are compatible with proper function, but that embarrassment of the adrenal circulation must interfere with the manufacture and discharge of those products of the gland which have to do with the regulation of blood pressure, thus furnishing at least a contributing factor in the lowering of vascular tension. The conception of suprarenal insufficiency is furthermore substantiated by the profound asthenia which so commonly is observed in this type of infection.

Finally, it is a matter of observation that the pneumonia associated with the so-called influenza is practically always preceded by intense injection of the capillaries in the mucous membrane of the nose and pharynx. In response, no doubt, to the same cause, the capillaries in the mucosa of the trachea, bronchi and bronchioles and, indeed, throughout the pulmonary parenchyma, are found at autopsy to be engorged, thus preparing the way, it would seem, for the entrance of any of the several varieties of bacteria which have been identified in the pneumonic lesions.

In the pathological laboratories of Bellevue Hospital I have had occasion to study two cases of so-called pandemic influenza in which death occurred without the intervention of pneumonic changes of other than negligible proportions. Both cases were observed near the close of the pandemic of last fall. In one case the signs of consolidation were limited to two or three small patches in the lower lobe of one lung, the largest approximating the size of one's thumb nail. In the other case there was a small focus in the middle lobe of the right lung. Consolidated areas of such limited extent could not possibly have occasioned the capillary injection which was found throughout the viscera. In view of the importance of such cases in establishing the fact that generalized visceral congestion precedes the pneumonic changes, I am presenting the clinical and anatomical data in detail.

CASE I.—The patient, a man, aged forty-five years, was admitted to Bellevue Hospital with the statement that, five days previously, he had suffered a chill followed by violent headache, cough and mucopurulent expectoration, great prostration and generalized pains and aching sensations. At the time of admission to the hospital the patient's temperature was 103.8° F. and fluctuated between 101° and 104° F. throughout the six days that he was under observation. The blood pressure was 132 over 62. The respirations varied from 20 to 36, rising to 60 just before death, and the pulse rate was between 72 and 112. Physical examination showed an acutely ill man, breathing rapidly and laboriously, with prolonged wheezy expirations. The face, lips, and ears were cyanotic. The skin was the seat of a diffuse erythema and the mucosæ of the tonsils and pharynx were injected. Examination of the chest revealed diminution of the respiratory murmur throughout the pulmonary area. Expiration was prolonged, low pitched and wheezing, and sibilant and small moist râles were audible, particularly over the bases of the lungs. Physical signs of consolidation were not detected. On the eleventh day of his illness the patient, who was

now markedly cyanotic, died with signs of pulmonary edema.

Autopsy (abbreviated protocol): The body was that of a man, forty-five years of age, 168 cm. in height, of large, well developed frame, good musculature and nutrition. On section, the skeletal muscles were raspberry red in color and dry. Both pleural cavities were free from fluid and adhesions and the pericardium was unchanged. The lungs were removed easily and the pleuræ were thin and glistening. The bronchi were bathed in mucopus and the mucosa was diffusely covered by a thin, whitish sheeting which, upon being removed, disclosed intense injection of the underlying capillaries with velvety swelling and edema of the membrane. The upper lobe of the left lung was injected and markedly edematous, but no areas of consolidation were found. The lower lobe of the left lung was rich in edematous fluid and embedded in its substance were two or three firm, deep bluish, consolidated patches, the largest approximating the size of a thumb nail. The right lung was essentially the same as the left, although no areas of consolidation were found. The peribronchial lymph nodes on both sides were edematous and congested. The spleen was somewhat enlarged, dull pink in color and its substance was almost diffident in consistency. Both suprarenal capsules were large, the medullæ intensely congested, dripping blood when incised. The kidneys were congested, the glomeruli standing out as minute reddish points and the cortical capillaries as delicate, reddish lines. The liver was likewise injected. Both sides of the heart were distended by huge quantities of bluish-black clotted and fluid blood.

CASE II.—The patient, a man aged twenty-four, was admitted to Bellevue Hospital in an irrational state. He was exceedingly restless. The face was cyanotic. It was learned of the patient that he had been ill for a period of about two weeks, during which time he had complained of aching sensations in the head and back. At the time of admission the patient's temperature was 103, the blood pressure was 112 over 70 and the white blood cells numbered 3,600. Respiration varied between 30 and 40 and the pulse rate between 84 and 120. Sibilant and small moist râles were audible over the pulmonary area, but no clinical indications of consolidation were found. The abdominal muscles and those of the extremities were rigid. Death occurred three days after admission with signs of pulmonary edema.

Autopsy (abbreviated protocol): The body was that of a well nourished man, 170 cm. in height. On section the muscle tissues were well developed, raspberry red in color and dry. The belly of the rectus abdominis on both sides from pubes to umbilicus was infiltrated and disintegrated by bluish-black blood. The diaphragm was contracted and thrown into large, rigid folds. The heart was increased in size. The right side was immensely distended by bluish-black clotted and fluid blood and similar material, in smaller quantity was released from the left side. The mucosa of the larger bronchi was covered by a grayish sheeting which, upon being removed, disclosed injection of the un-

deifying capillaries together with numbers of small hemorrhagic extravasations. The upper lobes of the lungs were emphysematous, the lower lobes congested and edematous, releasing large amounts of grayish-red fluid on pressure. No sign of consolidation was detected in any portion of the lungs with the exception of a patch in the lower lobe of the right. This patch was about the size of a thumb nail and lay under the pleura, extending downward for a distance of about two cm. It was firm to the touch and airless, smooth, grayish-red in color and exuded quantities of opaque, pinkish fluid on pressure. The spleen was slightly enlarged and congested throughout. Both suprarenals were enlarged, the medullæ swollen and velvety in appearance, bluish-black in color, dripping blood on being incised. The underlying celiac ganglia were bright red in contrast to the pink of the normal. Both kidneys were universally congested, as were the liver and pancreas.

Microscopical examination was made of all the organs in both cases, but revealed nothing worthy of record in the present connection with the exception of the rectus muscle in the second case. This muscle was infiltrated by blood and its substance was disintegrated. The better preserved fibres were swollen, hyaline, and poorly nucleated, the changes corresponding to those seen in the same situation in the so-called Zenker's degeneration. Blood agar plates inoculated from the muscle at the time of autopsy were sterile after seventy-two hours. The natural inference seems to be that the rectus muscle had undergone degenerative changes of the sort more or less commonly encountered in such infections as typhoid fever, croupous pneumonia, influenza and the like and that the patient, who was exceedingly restless during his last illness, had sustained mechanical rupture of the altered fibres with subsequent hemorrhage.

The commonest variety of pneumonia encountered in the recently prevailing pandemic infection was a rapidly progressive bilateral confluent lobular lesion, in which the brunt of injury was borne by the blood vessels. Hemorrhages were practically constant and occurred beneath the pleura and into the interstitial tissues of the lung, while the presence of free red cells in the alveoli constituted the most striking feature in the process of exudation. In a certain proportion of cases the exudate in the alveoli consisted almost entirely of red cells. At the same time the capillaries in the intervascular tissues, as well as in the walls of the trachea, bronchi, and bronchioles, were injected to an extent rarely if, indeed, ever seen in any other variety of pneumonia. Further evidence of vascular injury was obvious in the form of inflammatory edema in which the escape of serum occurred not only in quantities in excess of those seen in any other variety of pneumonia, but the phenomenon was seldom missing.

In a second but smaller group of cases the lungs were the seat of a different variety of pneumonia, namely, the acute productive bronchopneumonia of Delafield, which is likewise a bilateral process, at least in the majority of cases. It is characterized by the presence in the lungs of myriads of pinhead

sized, grayish-white or cream colored foci which are rounded or angulated and in the centre of each of which a minute opening or depression is discernible.

On microscopical examination, it is found that each whitish spot corresponds to a small bronchus whose lumen is partially or completely filled by polynuclear leucocytes and desquamated epithelium. The connective tissue framework of the bronchiole supports numbers of dilated and deeply injected capillary vessels, between which are more or less dense collections of round cells. The lumina of the bronchioles and the alveoli in the vicinity are filled, however, by polynuclear leucocytes or by leucocytes and desquamated cells. The later stages of this variety of pneumonia are attended, among other things, by the overgrowth of connective tissue in the smaller and medium sized bronchi, in the interalveolar septa and thus by permanent changes of a productive nature.

In still another group of cases, mixed lesions occurred in the lungs. For example, it occasionally happened in our autopsy experience at Bellevue Hospital that a bilateral confluent lobular pneumonia of the lower lobes was associated with lesions of the bronchopneumonic form in, say, one upper lobe. In other instances the confluent lobular type of pneumonia was found in company with typical although limited lesions of the ordinary lobar variety.

The bacteriology of the recently prevailing pandemic disease varied no less than the pathology. In one group of cases the bacillus of influenza was isolated from the lungs, either in pure culture, or with other pathogenic microorganisms. In other cases streptococci, pneumococci, and the like were obtained in pure culture. The nearest approach to a common factor in the disease as a whole was to be found in the injection of the capillary system, not only in the lungs, but in other tissues. This, I believe, is the primary and fundamental effect of the causative agent. The opinion appears to be substantiated by the two cases here recorded in which death occurred without the intervention of pneumonic lesions of other than negligible proportions, and yet in both of which there was intense and widely disseminated capillary injection. As far as the pathogenesis of the several varieties of pneumonia is concerned, it would seem that injection of the capillary apparatus of the bronchial system together with secondary exudative changes in the mucosa offer favorable conditions for the entrance of microorganisms into the pulmonary substance, the immediate reaction in the lung tissues depending, among other things, upon the variety and virulence of the microorganism introduced. Moreover, the same process of reasoning seems equally applicable to the pathogenesis of certain other lesions associated with the so-called influenza, particularly meningitis. In the autopsy rooms at Bellevue Hospital it was a common observation that the recently prevailing pandemic infection was attended by marked injection of the capillary vessels in the cerebral meninges. In three cases purulent meningitis was observed, always in company with a bilateral confluent lobular pneumonia. In

one of these cases, a pure culture of a nonhemolytic streptococcus was obtained from the meningeal exudate; in a second there was a pure growth of the bacillus of influenza and in the third a pneumococcus. Thus it would appear that the vascular disturbances occasioned by injection of the smaller blood vessels in the meninges provide conditions which are no less propitious for the entrance of infective microorganisms than related changes in the vascular apparatus of the lungs.

The presence of hemorrhages, however, is by no means confined to the lungs. Epistaxis is frequent, sometimes profuse. In one case which was brought to my attention the patient was almost exsanguinated as a result of rupture of one of the smaller vessels in the nasal mucosa. In other instances blood may be present in the stools due, apparently, to the spontaneous rupture of overdistended capillaries in the intestinal mucous membrane. Varying grades of hematuria have been observed depending upon the escape of blood either from the dilated capillaries in the substance of the kidney or from the congested mucous membrane of the pelvis, ureter, or bladder. In one of the Bellevue Hospital autopsies a large extravasation of blood was found in the mesentery, another in the soft tissues behind the pericardium. In still another case the muscles of the right side of the chest near the costal slope were richly infiltrated by blood, and in several instances the lower belly of the rectus muscle was extensively disintegrated by hemorrhage. In seven of the Bellevue cases slight jaundice of the conjunctivæ was observed. Inquiry into this feature showed that the mucous membrane of the duodenum was swollen and congested to an extent sufficient to impede the exit of bile through the papilla of Vater and thus, in part at least, to account for the jaundice.

CONCLUSIONS.

1. The cause of the so-called pandemic influenza has not yet been satisfactorily established.

2. The initial effect of the provocative agent appears to be exercised on the vascular system, bringing about an extraordinary degree of capillary dilatation and injection, not only in the skin and in certain of the visible mucous membranes, but throughout the viscera, simultaneously, or approximately so. At the same time the blood pressure is low and the pulse may be slow, even in patients who have not received digitalis. All of these facts combine to show that the circulatory action of the provocative agent is more complex than that of any known single poison. The occurrence of intense injection of the suprarenal medullæ is common, however, and is sometimes associated with hemorrhagic extravasations into the substance of the gland or even with thrombosis of the suprarenal veins. These changes in the suprarenal circulation offer at least a partial explanation for the low blood pressure as well as for the profound asthenia.

3. In certain respects the anatomical changes in the vascular system in the so-called influenza are comparable to those encountered in the same situations as a result of the action of poisons, notably in some cases of death from acute methyl alcohol

poisoning and in certain instances of death from trinitrotoluene.

4. The advent of pneumonic lesions in association with the so-called influenza is secondary to injection of the bronchi and bronchioles and of the intervascular capillaries, these changes so lowering the resistance of the pulmonary tissues as to permit the entrance of infective microorganisms.

5. The presence of exudative lesions in the cerebral meninges in the so-called influenza is likewise to be explained on the basis of circulatory disturbances followed by the invasion of infective microorganisms.

STUDIES IN PARAPHRENIA.*

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The name paraphrenia is used here in the same more or less indefinite sense as one finds it among all writers on the subject. Kraepelin's *Paranoiden Verblödungen* (paraphrenias) have never impressed me as something clean cut and clear; on the contrary every case that I have finally put into this group could easily have been added to the paranoid form of dementia præcox, or better to the cases we used to designate in the New York State Hospitals, following Doctor Mayer's suggestion, as allied to dementia præcox. In using this term I am also thinking of the suggestions made by Professor Bleuler and Professor Freud, who wish to designate the entire dementia præcox group as schizophrenia and paraphrenia, respectively. The cases under consideration although they are not typical præcoxes or paraphrenias are very similar to them and surely would not fit into any other group. They represent paraphrenic types which one rarely sees in hospitals, but which I feel are quite common and are often encountered in private practice. I am referring to the types whose delusional formation is seemingly entirely absent, who move among us and seem to adjust themselves fairly well to their environments but who nevertheless show a definite morbid picture on careful examination. A brief description of a case might serve as an example.

CASE—W. M., aged forty-six, single, an expert in a big concern. He was brought to me in 1914 by a member of the firm employing him because he was considered very nervous. People who knew him well considered him somewhat eccentric but never imagined that he was in any way mentally wrong. My informant stated that the patient had been with the firm almost thirty years, and that although his accomplishments were not of a kind to produce great changes in the business he was a "steady, very reliable, and very methodical person." Indeed he was so methodical that very few people could get along with him. When something even trifling was done that was not exactly to his liking he would become very angry and almost furious over it. He would keep up his tantrum for days and weeks so that it was often necessary to remove from his office the person who displeased him.

*Read before the Medico-Psychological Association, Chicago, June 4, 1919.

though it was recognized that there was hardly any offense. For the last eight years he came into business contact with five people only, the member of the firm who brought him to me, two clerks who were described as very tactful, and two managers who had been with the firm for years and "who knew how to manage him." His employer told me that if it were not a question of sentiment the patient would have been discharged long ago, he was considered a very difficult person to get along with and more or less of a nuisance that one had to tolerate. For years he was urged to retire on a substantial pension, and as he had accumulated considerable money on account of his regular habits and unpretentious living he could have lived in more than comfort, but he refused to leave the business. In answer to my question, his employer stated that if it were not for his peculiarity he would be considered quite useful to the firm, that whatever he did was well done and that he possessed a certain amount of knowledge about a particular branch of the business which was valuable to the firm.

The immediate cause of his being brought to me was this: On his return from a short vacation he found that his old office chair was replaced by a new one. He simply could not endure the new chair, he insisted that his old one be returned to him, and as this was impossible—the chair had meanwhile been disposed of—he became very nervous and excitable, and for a time was unable to attend to his work. This chair, I was told, must have been used by the patient for at least twenty years; it was just worn out, as if dying of old age; for years attempts were made to furnish him a more comfortable chair but he objected, and as it was considered unsafe to let him use it any longer, advantage was taken of his absence to have it removed and replaced by a comfortable office chair. The episode just described occurred about six weeks before the patient was brought to me and he was still inconsolable over it. He thought it was a mean trick and attributed it to the hostility of the manager of the purchasing department. He saw no real reason for coming to me, he admitted that he was a bit nervous at times, but as his employer insisted that he should put himself under my care he was quite willing to do so. We gradually became used to each other, and as he had been under my care for a few months I learned to know quite a little concerning his mental structure.

He was born in New York of Dutch-English stock. His mother was considered nervous, his father was a drinker. Nothing else could be found in his heredity. He was the second in the family of three children; both his older and younger sisters were married and normal as far as one could see. His sister, who was his senior by six years, told me that the patient had always been a reserved person, that even as a boy he had but few playmates, that he never had what one calls chums, that he always minded his own business, and that he was considered by the family a very well behaved boy and a quiet young man. She could not give much information about his childhood or early boyhood although she was as close to him as anybody and knew much about his later life. She

added that he had always been very quiet, not very affectionate, and very obstinate. At the age of fourteen he graduated from public school and as the father was incapacitated through drink and the mother was ailing it was found necessary to send him to work. All this information was verified by the patient. He worked for brief periods in two other places before he entered the present firm. His second sister also volunteered the information that he was never known to have been in love, that he was not at all a ladies' man, that he was, however, quite attached to his parents and although not demonstrative, was very generous to his sisters. The family was not brought up religiously, so that the patient was not attached to any church. He said that he had a religion of his own which was "Mind your own business." When I asked him how he occupied his leisure time he said that he was fond of reading philosophy (he had a fair knowledge of the subject), that he occasionally went to the movies and the theatre. He was well informed on the topics of the day but took only a superficial interest in things; he paid little attention to the war but became irritable when, owing to the exigencies of the times, his firm had to make many changes in its business methods. He himself told me that he was considered a miser but that it was not true, that he really did not care for money but "people nowadays constantly impose upon you." His attitude and manner appeared quite normal. He seemed alert when spoken to, was very polite, looked very neat in appearance, but one was struck by the fact that he did not keep up with the times in the manner of dressing. His clothes undoubtedly belonged to the last generation. He told me that he had them made to order and that he did not believe in changing styles so often, he considered it a sign of effeminacy. His insight as to his mental condition was poor, although he realized that he was slightly nervous and that people thought him eccentric.

To sum up, we have here a man of forty-six years who, except for chronic constipation, presented nothing to note in the physical or neurological field; mentally, however, he showed a picture which could be designated as paraphrenia or schizophrenia. There was a dulled affectivity, some weakness of judgment, and a restricted capacity for work. There was no dilapidation of the inner unity of the psychic life, nor did he manifest any of the accessory disturbances of schizophrenia described by Bleuler (1). As far as one could discover by ordinary examinations he at no time evinced any active hallucinations or delusions. The last statement might be slightly modified for, as I have stated, the patient showed transitory ideas of mild persecution, and close association showed that he was often controlled by mild ideas of reference. What struck one forcibly was the fact that the patient seemed to be very restricted in his interest, that he was not at all moldable, that he was unable to adjust himself to new situations or ideas, that he seemed to be emotionally congealed; anything unusual could only take place in the form of an outburst, as if something had to be torn off or

cut into; it took him some time to get over any affect, but once the situation was accepted he seemed to forget all about it. There were many other episodes like the one mentioned into which we need not enter here.

Not all of my patients were of this type; some showed a deeper development of the symptoms. A number of patients passed through one or several hallucinatory episodes lasting a short period without attracting attention; others represented a milder type than the case described, they had considerable insight, usually realizing that they needed help and invariably came to me of their own accord. Some of them thought of it for years before they finally decided to consult me. In a much milder form they represented almost all the reaction types so excellently described by Adolph Meyer (2). None of my patients had ever been in a hospital for the insane, and only a few had ever been under a doctor's care. The reasons for their coming to me were very bizarre to say the least. Thus a woman of thirty-five had a theory as to how she could be cured. She felt that her organs were almost dead, they were rotten and distorted, that her brain was full of decayed material and other similar ideas. She suggested that some one like myself should take her under his care, keep her secluded in the dark without any nourishment until she was at the point of death, and then by a very complex system of ceremonies which she had carefully elaborated, bring her back to life, "as a new, perfect and superior being." Even those closest to her had no inkling of her symptoms.

A man of about thirty-eight years sought treatment because his mother's teeth annoyed him so much that he constantly entertained fancies of murdering her. Another man came to me because he had read something about psychoanalysis and felt that he had always known all about it, except that his own method acted so much swifter than psychoanalysis. He could cure any form of insanity in a few days.

Those who were brought to me usually refused to be treated though in quite a number I succeeded in arousing enough affect to keep their interest for a while at least. I have in mind a young boy of nineteen who finally consented to call on me because he was anxious that I should explain some hallucinatory episodes which he experienced. He delved much in literature dealing with psychic phenomena and imagined that he himself possessed supernatural powers. He was very suspicious, mildly delusional and showed considerable impairment of judgment and insight. He hated his father, was entirely indifferent to his mother and had absolutely no relations with his classmates; nevertheless, he managed to go through college and neither parent considered him worse than eccentric. I have seen him on and off now for over six years and there seems to be very little change in his condition. He is a chemist and has kept a steady position since graduation. He is very methodical apparently doing well whatever is assigned to him, but in five years his salary was raised only once. He seems perfectly contented. He takes absolutely no interest in the opposite sex, though he occasion-

ally has erotic dreams in connection with urination and defecation. This mechanism is often seen in the erotic dreams of precox types. Object love seems to be undeveloped or repressed and their erotic fancies and dreams remain on an infantile basis.

The cases whose histories do not show any distinct episode are often quite difficult to diagnose from psychoneuroses. Indeed, I have often diagnosed such cases as hysterias and compulsion neuroses only to find out after months that I had been mistaken. My experience taught me that one must be very careful in venturing an opinion before the patient has been carefully studied for at least a month. I feel, however, that even in the mildest cases where the patients seem to show distinct hysterical reactions, a diagnosis can usually be made within a few weeks. Without going into a detailed differential diagnosis I will give a few salient points. Bleuler urges that no diagnosis should be made without knowing the patient's complexes; in mild cases this sometimes takes a long time. I usually guide myself by the transference. The psychoneurotic usually gets a good transference—positive or negative—after a few interviews. He or she either likes or dislikes the physician in a normal manner. The paraphrenic either shows no affect, or it evinces itself in a morbid and very inadequate way. For over nine years I have been in the habit of putting this question to all my patients: "What person from history or legend, present or past, do you admire most, or what is your ideal?" Besides those from my patients I have also collected answers from friends and acquaintances and from school children and college students. The findings are very interesting. My assumption is that the person we admire most, who is our ideal, is the one with whom we consciously or unconsciously identify ourselves, whose type of reaction appeals to us, and whom we constantly endeavor to emulate. Now it will interest you to know that most of intelligent American adults answered: Napoleon; Lincoln and Washington came next. (3) The answer also shows the type of transference that appeals to the person. Psychoneurotics answer like nonnervous individuals, while paraphrenics either cannot answer the question, they say they have no ideals, or what is more often the case they select a person after considerable hesitation but soon change their minds and give some other name; a few days later they suddenly think of it again and feel badly over their selection. The personages they select are not of the usual types. This is especially true of cases where there is considerable mental dissociation.¹

I found that the manner of answering the question always threw light on the patient's unconscious. I was once asked to see a paraphrenic who became nervous following the death of his mother. The patient was a favorite son of forty-six and had the following history. He was born and bred in New York city, graduated from school, college, and university, and for years practised successfully his profession. About ten years before I saw him, when his father was eighty-six years old and his mother, who was invalidated through arthritis, was

seventy-one, it occurred to him that he ought to give his mother more of his time. He started by leaving his office an hour earlier, then two hours earlier, then three hours earlier. In the course of time he only came to the office for an hour or two and finally left the firm altogether, resigned from his guard regiment and all other social organizations, and simply stayed at home with his mother. In time he even refused to go to the barber, neglecting his person to such an extent that his former associates could hardly recognize him. He explained his actions by saying that nothing was as precious to him as his mother, that nothing gave him more pleasure than being with her, that an hour with his mother was more than a life time at clubs, offices, or regiments. He also felt that his mother needed him as a protection against his annoying and crabbed father. (As a matter of fact there was no truth in his statements; I was told that his mother strongly objected to his mode of living and constantly urged him to return to normal life.) He hated his father and insisted that he must be home so as to shield his mother from him; his great hope was that his father would die and leave him with his dear mother. When his father finally passed away at the age of ninety and his mother followed him a few days later, he began to show an active psychosis. He insisted on going daily to the cemetery to his mother's grave, he wanted to stay there all the time and blamed himself for her death as well as for his father's death. The idea was that had he shielded her better she would have still lived; at the same time he also felt that it was his ill treatment which hastened his father's death. Altogether he presented a very typical ambivalent mechanism often seen in paraphrenia. The interesting part was that although he objected to his father on the ground of brutality calling him a Prussian, his first answer to my question was: Frederick the Great; later he changed it to Lincoln and then to Washington. One can readily see that although he objected so much to his father's behavior he unconsciously imitated him. At home he was an absolute tyrant and his emphatic index Frederick the Great showed that he identified himself with his father whom he called a Prussian.

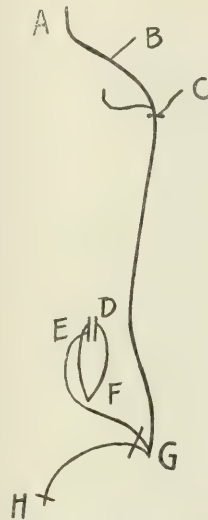
The second point in diagnosing these mild paraphrenics is to find their systems. All of them go through at least one emotional catastrophe followed by a partial adjustment with the gradual formation of a system. Some of the systems are quite transparent; others are very complicated. It is usually difficult to make them give up the secret. An interesting case in question is that of a paraphrenic married woman who refused to live with her husband in marital relations; here is her system as she described it after considerable urging:

"When perception of the male and female organs

came to me, I turned them aside, or rather pushed it up. Any tube suspended, or any spigot was symbolic and must not be apperceived. Consequently my vision was pushed over by a cloud, A, my hearing also, B, for any sound made by man or woman, that must not be heard. Also anything

that seemed to symbolize two together a fusion or joining must be turned aside. Recently I saw two boys romping, one on top of the other—it must not be thought of, it must be turned aside. So when consciousness touched the sexual organs discriminating male from female. in the persons of my parents and brother and sisters, I would not allow the joining to take place. If I did allow the union to take place I was a part of that person, so I held it off. Just at this time I was conscious of my father's dominant attitude toward his family, overcoming them in anger, and by blows with his hand. So I think the hand symbolized the physical overcoming, the normal sex organ of physical overcoming,

I, having been kept from assimilating on account of my mother's hypermoral attitude to life. Consciousness was thus deflected at E to the rear of the body, where my father had threatened to strike us children. It must be understood that the male consciousness was not allowed to join with the female, so unconsciously it did at F. The man in my dreams was always unnamed, he had no personality, and I have always turned aside mentally at a person's name. This touching of the male consciousness (deflected) at F of the sexual organism, produced friction. (This was ideationally represented by dream stories.) Consciousness thus confined to the sexual organs, and intense thought caused an overflow! I had feeling! something passed from me. I was terrified; mortally it meant mental death; I shut off with a terrific force at C—G, and H. Consciousness has been staying there ever since, afraid to move, because movement caused this feeling, and that might produce a flow which meant mental death. This consciousness that I cut off was the male sexual organ—part of it was out, but the nail was terrific. I froze, became stone, at F. The part that was out symbolized the nail in the barbed wire fence. The fear has been terrific that I would animate again at F, thus producing results at G and H—so consciousness has held tight guard at G and H. Mortally terrified I have been at the thought of any man, since I had not been allowed to have normal mental stipulation at D—it might produce it at F, which might cause feeling and produce feeling at F and G and perhaps something to pass from me at H."



¹Cf. Southard, The Emphatic Index in the Diagnosis of Mental Diseases, *Journal of Abnormal Psychology*, October, 1918. The term was coined by Professor Tichenor and deals with the idea of reading oneself into an inanimate or animate object. As I said, the object of my question was to ascertain the ideal one is constantly endeavoring to emulate and has nothing to do with reading oneself into an inanimate object. I feel, however, that the expression emphatic index would apply fit as a generic term to designate the ideas involved in my questions. I might say that the answer to my question denotes the person's emphatic index.

Without going into the details of the case, her description may not be comprehensible to you, but I have no hesitation in stating that no psychoneurotic could give out such a production. This woman is dominated by a polymorphous perverse sexuality, the sadomasochistic components predominating, to which she reacts with a peculiar revulsion to the physical part of sex. She talks constantly of cleanliness and contamination of her ten year old daughter through sexual thoughts. When she first consulted me I thought that she was a hysterica but I was soon struck by the fact that even after about two months' treatment we were still strangers to each other. Instead of entering into *rapprochement* with me she paid very little attention to what I said, she wished to do all the talking and expected me to listen and occasionally answer a question. She would close her eyes, assume an ecstatic and mystical mien and just talk. When she recited a dream she immediately gave the analysis. All she wanted of me was to act as a substitute for her father, through whom she wished to attain her paraphrenic ideals. These features, viz., the indifference of the patient to the physician, in spite of the fact that she was anxious to come to him, and the tendency to interpret dreams as a matter of course are very typical in flourishing cases. The last mechanism was first demonstrated by Bleuler in his *Schizophrenie* and one frequently observes it in the very mildest cases.

An interesting case of this kind was studied by me about a year ago. The man, an only son, after a prolonged and strange courtship finally married. After living with his wife for about six months he left her without any particular reason; at her suggestion he returned to her and about a year later left her again. This process was repeated about half a dozen times when his wife recognized the futility of further trials. The patient seemed mentally well preserved, he made a good impression on outsiders but there was something archaic about his manner. He still wore the cravenette one used to see twelve to fifteen years ago and he admitted to me that all his clothes were at least as old. He was, however, neat looking, and as he put it, "there was no use buying clothes when you don't need them." He had nothing against his wife, which puzzled the poor woman very much, but long before he met her he decided to marry a cousin whom he had not seen since he was nine years old. The reason for wanting to marry his cousin was to preserve certain family traits which he feared were dying out. When he came to me he had a fat portfolio filled with his dreams which he analyzed without ever having read anything on the subject. He came to me because he accidentally found Freud's *Interpretation of Dreams* while he was looking up something in the library. He was an architect by profession.

Another differential diagnostic feature is this. In normal persons and neurotics one always finds the so-called typical dreams and especially exhibition dreams, which Charles Dickens said are dreamed by everybody from her majesty the queen to her humblest jailer. The exhibition dreams are always found in people and represent the person as

being naked or scantily clad in the presence of strangers; the person is very much embarrassed and ashamed, he wishes to flee or to hide, but for some reason he is usually unable to move from the spot. A dream of this kind was given to me by a young married woman who dreamed that she was riding on a Fifth avenue bus and suddenly discovered that she was naked. With a great deal of difficulty she ran into a subway station but there again she met crowds of people and the only thing that she could find to cover herself with was a telephone directory. The remarkable thing about exhibition dreams is that the persons before whom one is ashamed are almost always strangers and they seem to be quite indifferent to the dreamer's embarrassment (4). Professor Freud traces those dreams back to early childhood. It is a recollection of the earliest period of life. "Only in our childhood," he states, "was there a time when we were seen by our relatives, as well as by strange nurses, servant girls and visitors, in scanty clothing and at that time we were not ashamed of our nakedness (5). Children love to show themselves naked and it is only with the advance of age that the reactions of modesty and shame are formed against it. But even when this feeling is repressed both normals and neurotics always show a mild tendency to exhibit, be it as young students on the college campus or as settled business or professional men. The showoff instinct is always with us and as it cannot be altogether gratified we occasionally have exhibition dreams. It means that there is a quantum of unattached libido which the individual wishes to settle on some one. It is interesting to hear Professor Freud's remarks on the manifestation of the exhibition dreams in different persons. He says:

"One's own person, which is seen not as that of a child, but as belonging to the present, and the idea of scanty clothing, which became buried beneath so many later negligée recollections, or because of the censor, turns out to be obscure—these two things constitute the nucleus of the exhibition dream. Next come the persons before whom one is ashamed. I know of no example where the actual spectators at those infantile exhibitions reappear in the dream. For the dream is hardly ever a simple recollection. Strangely enough, those persons who are the objects of our sexual interest during childhood are omitted from all the reproductions of the dream, of hysteria, and of the compulsion neurosis; paranoia alone puts the spectators back into their places, and is fantastically convinced of their presence, although they remain invisible. What the dream substitutes for these, the "many strange people," who take no notice of the spectacle which is presented, is exactly the opposite wish of that single, intimate person for whom the exposure was intended. Many strange people, moreover, are often found in the dream in any other favorable connection; as an opposite wish they always signify a secret. It may be seen how the restoration of the old condition of affairs, as it occurs in paranoia, is subject to this antithesis. One is no longer alone. One is certainly being watched, but the spectators are many strange, curiously indeterminate people." Paraphrenics, particu-

larly those who show a deeper organization, rarely have exhibition dreams. As you know the hospital patients exhibit openly when they so desire and in the mild cases that feeling is changed to delusions of observation. I feel that if one understands the language of the unconscious mental processes he can in time differentiate the mildest paraphrenic from the neurotics. Their mode of expression is absolutely different. The pantomimic expression of hysteria corresponds to the metaphorical language of dreams and visions, while the mental expression of compulsion neurotics and paraphrenics manifest themselves in special idioms. Thus the unconscious wish for pregnancy or the defense against it may be expressed by a hysterical patient through vomiting, by the compulsive neurotic through the most painful protective measure against infection, and by the paraphrenic through complaints and suspicion of being poisoned. (A number of paraphrenics have dreams in which they are watched by crowds of people.)

Within the last eight years I have seen a number of so-called nervous children between the ages of three and nine years, and I have no doubt that many belonged to the paraphrenic group, or to some disease very closely allied to dementia præcox. Most of the acute cases showed the catatonic type of reaction in the form of negative resistances, mutism, stereotyped expressions and movements colored by hysterical mechanisms, which kept up for weeks and longer. The chronic cases were shut in, suspicious and extremely resistive. Observation leads me to think that the catatonic type of reaction is the simplest and most primitive form and that it is more or less present in all children, as a protective defense reaction.

The striking manifestation in all my paraphrenic cases even in the children was some obvious sex difficulty. I am using the word in the Freudian sense. This, as is known, is plainly seen in the flourishing cases of dementia præcox and paranoia, and though hidden one readily discovers it in mild cases. Thus Mr. M., the case I cited first, was an extremely moral person (sexually speaking). At the age of from fourteen to fifteen years, a girl considerably older than he made advances to him and he fell in love with her but he soon discovered that she was very carnal, and not only rejected her but the whole sex. A masturbatic experience with a boy of nine years laid the foundation for his later repressed homosexuality and made impossible any normal adjustment to men. The strange part of it was, that although he seemingly showed no interest in the girl he continued to send presents to her mother and helped her financially whenever she requested it. Another patient was silently in love with a girl in his social circle and when she married some one else he left the city, went south and bought a small orange grove, where he remained five years leading an isolated existence. Still another patient was much in love with a girl he had known since childhood. He showed his love through childish attentions whenever he chanced to meet her, and expressed some emotivity when she finally married some one else. He is now a man of fifty-two years and he still loves the same girl and

measures every woman by the standard of his first love.

In children there is naturally no sexual rejection but there seems to be a marked sensitiveness to the love life. Four years ago I called to see a girl of three years who showed negative resistances, stereotypy, mutism, and extreme irritability. She was treated in the usual manner without any improvement. On investigation I found that her illness came on soon after her parents separated, she being in her father's house with a governess. I concluded that the child missed her mother's love and owing to the constitutional factors in the case she was unable to transfer her libido from her mother to the governess. I finally persuaded the father to let the child see her mother and after a few weeks the child was as well as ever.

Paraphrenics show *à priori* an executive weakness in managing their libido, and unlike normals and neurotics, any trauma to the love life results in a catastrophe from which they never recover. The normal always "forgets" and finds a substitute in a new attachment, or he makes a successful effort at sublimation; the neurotic changes his detached libido into a hysterical symptom or into anxiety; in paraphrenia when the libido becomes deprived of its object it gravitates into a special path, in some it retreats from sublimated homosexuality to narcissism (7 and 8) and thus form the regression characteristic of paranoia, while in others it goes back to autoerotism and manifests itself in more infantile types of reaction. That accounts for the fact that none of my adult paraphrenics have ever amounted to much in their various vocations. The one thing essential to normal life is libidinous occupation. Our vocations when they represent a successful sublimation of our libido afford us pleasure. Paraphrenics show a very precarious sublimation, their libido is largely introverted. Most of my paraphrenic patients had some income otherwise they would have found it very difficult to get along, in all probability it also kept them out of asylums. Their libido is sclerotic, no real adjustment is possible, I have never seen a paraphrenic who was in love with a woman in the normal sense. One of my patients was urged by his parents to marry because he was thirty-nine years old; they introduced him to a woman of thirty and with the active assistance of his mother he finally became engaged to her. He soon neglected her to the extent of almost forgetting her existence and was astonished when his mother called him to account for it. He then became very precise in his attention to his fiancée, he called on her every Tuesday evening but showed no interest in her in any other way. He came to see me at the advice of his parents. He claimed that he could not give any more time to his fiancée because he had something else for every minute of the time at his disposal. He became very argumentative when I criticized his method of courting and ended by saying "anyway I cannot stand the way she talks, her voice makes me angry." He spoke of her voice as "grayish rasping." This patient was described as extremely orderly and methodical. He took the utmost care of his belongings and became furious when any-

thing was moved or disarranged in his room. Unlike the flourishing precoxes paraphrenics are not slovenly in appearance, on the contrary they look very neat; one, however, soon notices the same sclerotic condition in their manner of dressing. One wealthy paraphrenic wore an overcoat which he had had for over twelve years. He said "Every spring I brush it and press it and pack it away for next winter; one cannot buy such a coat nowadays." It is this mental sclerosis which runs through the whole life of the patients that differentiates them from the neurotic. They occasionally make strong efforts at adjustment and then resemble the psychoneurotic but they are not moldable enough, no permanent impression can be made on them.

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1 WEST SEVENTIETH STREET.

LARGE SPINDLE CELLED SARCOMA OF THE RECTUM.*

Operation Performed Under Local Anæsthesia of Quinine and Urea Hydrochloride.

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In the presentation of this case, I wish to call your attention, 1, to the rarity of sarcoma in a man of his age; 2, the necessity for immediate and prompt action, as well as the advisability of transfusion in these cases; 3, to the possibility of operating under local anesthesia in these cases.

CASE.—Mr. S. H., sixty-five years old, Russian by birth, occupation storekeeper, and recently engaged in selling papers, was referred to me by Dr. J. Koronefsky, May 13, 1919. He gave a history of having had a fissure for which he received treatment from time to time in Russia about twenty years ago. About one year ago, he became constipated, noted protrusions at the time of defecation, accompanied with bleeding at stool, flatulence, indigestion, loss of appetite, loss of weight, decrease in strength and dysuria. The protrusions had to be returned manually. During the past four months, he had noticed some form of mechanical obstruction in the rectum; had been losing very much blood with every defecation, and this bleeding had recently been so severe that his family and friends had noticed a marked change in his appearance, from that of a ruddyfaced man to an extremely pale and waxy yellow color. Within the last three or four months, this protrusion became so large, that it became necessary for him to exert a

tremendous amount of pressure during every act of defecation, before he was successful in passing any fecal matter. This mass acted as an obstruction to defecation, the effort required in forcing it out of the rectum was accompanied with severe pain, and when out required the services of a physician to return the mass into the rectum. He complained of pain only when the mass was outside of the anus. During the past month, he noticed some interference with the bladder, which hastened his search for surgical relief. Beside the local condition, he complained of general weakness, shortness of breath, cardiac palpitation especially on going up or down stairs, dimness of vision and dizziness, and dryness in the mouth, which he tried to overcome by almost continually licking his lips with his tongue.

On examination I found an old man, very aged in appearance, profoundly anemic, with a waxy deathlike pallor, face a blanched white to a ghastly yellow, mucous membranes blanched. He breathed with difficulty, and complained of general weakness and palpitation. The patient was lackadaisical, stupid and unconcerned as to his surroundings. He had a cadaverous look, and his general appearance was that of one suffering from a malignant disease. The external anal examination revealed nothing—that was noticed was an anus such as one would expect to find in a man of his years, a few skin tags or external hemorrhoids, no moisture or excoriation, no sign of pruritis or itching.

The internal examination revealed a pedunculated mass about the size of a lemon, covered with mucous membrane, about half an inch above the anal opening, low down in the rectum, and very rarely found above three inches from the anus, having three or four ulcerated spots each about the size of a ten cent piece, with indurated edges, and more or less elliptical in form, attached to the mucous membrane, and moving freely over the muscular wall of the bowel. On delivering the tumor from the rectum during examination, a copious discharge of blood and a mucopurulent discharge was noticed from the three necrotic and ulcerated areas. When the tumor is pedunculated and protrudes, as in this case, severe hemorrhages occur on account of its being partially strangulated by the sphincter muscle. These tumors originate in the submucosa and through their own weight, from the friction of the fecal mass, in its endeavors of propulsion during the act of defecation, develop a polypoid shape. In the early stages, the mucous membrane is movable over the growth. These sarcomatous growths have no odor peculiar to the discharge as disgusting as the odor in cancer.

The patient also exhibited internal hemorrhoids which manifested themselves on straining, as during the act of defecation, and which were intensified when the growth was outside of the anus. Means and measures were necessary to conserve the little blood he had left, and the removal of this obstruction was necessary for even temporary relief.

The patient was admitted to the People's Hospital, May 14, 1919, and at nine a. m. was operated upon. He was not fit for a general anæsthetic, due to his general weakened condition, his

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profound anemia and his cardiac condition; and inasmuch as the benefits which he might have derived from an immediate transfusion (which was indicated) might have been misspent, I decided upon immediate operation under local anesthesia to be followed by a transfusion. Under the influence of quinine and urea hydrochloride .25 per cent. as a local anesthetic, the growth and surrounding tissues for a distance of about an inch above and an inch below were resected and the apparently healthy mucous membranes sutured; and four very large ulcerated internal hemorrhoids were also removed by the ligature operation. I employed quinine and urea as a local anesthetic on account of its being free from toxic effects and to my mind the ideal local anesthetic for rectal operations (1). It possesses hemostatic properties due to the almost immediate production of fibrin, which by mechanical pressure about the bloodvessels prevents bleeding.

During the operation the patient felt very comfortable, exhibited no signs of pain, and the operation was almost bloodless (perhaps due to the extremely exsanguinated condition of the patient). A strip of gauze was inserted into the rectum to stimulate contraction of the sphincter, a tight gauze pad and T binder were applied and the patient was sent back to his bed. Eight hours later he was given a hypodermoclysis of 1,000 c.c. normal saline solution. In the meantime a proper donor for a transfusion was selected, and about fifteen hours after the operation, a transfusion of 500 c.c. of blood was given him through the kindness of Dr. George I. Miller. Almost immediately the transfusion was begun, a sudden change in the complexion and activity of the patient took place. First the tip of his nose began to assume a pink and then a strawberry hue, then his ears began to show color, and the capillaries in his cheeks began to fill up, and the patient who until now was in a sort of semistupor, brightened up, suddenly became talkative and appeared interested in his surroundings. The following morning he had a hearty breakfast, was placed on a full diet, and the day after that, he had a good normal movement, walked to and from the bathroom, and his bowels have moved regularly since without any trace of blood or mucus. His appetite was good, and although still somewhat weak, he went home after a week's stay in the hospital. He came to my office every second or third day for aftertreatment, and has now been placed in the hands of Dr. Joseph Van den Berg for x ray treatment. He has regained his weight, he has very good color, has no more pain, passes no more blood, and has normal fecal movements.

While I do not expect that his sarcomatous condition has been cured and while we know that he will sooner or later through the blood channels set up some metastatic deposit at some other part of the body, yet I feel justified in having operated upon him for the following reasons: 1. In removing the growth or mass which acted as a mechanical obstruction to normal defecation; 2, in relieving him of undue straining at stool, a very dangerous condition in a man of his years, suffering from cardiac disease and arteriosclerosis; 3, in preventing further loss of blood due to the ulcerated

condition of the growth and internal hemorrhoids. On May 15, 1919, through the kindness of Doctor Dubowsky, pathologist to the People's Hospital, both he and Dr. Alexander Fraser, pathologist to University and Bellevue Hospital Medical College, examined the growth and reported it to be large spindle celled sarcoma, a condition rare in a man of his years. The variety usually found is the small round celled sarcoma.

Sarcoma of the rectum is a rare condition, but when it does occur, the growth arises in the connective tissue around the bowel—though as a rule it is hard to be certain in which particular part of the connective tissue the growth started. In some cases it starts in the pelvic fascia and the rectum is secondarily involved, and in others it arises in the bone of the pelvic wall. Unlike carcinoma which is more or less confined to later periods of life, sarcoma may be found at any period of life but is more usual among young people. However, it is a very rare condition, and in a hospital like St. Mark's in London, Mummery reports only one case in three years. Cooke says, "In the later stages of the growth, the mass protrudes through the mucous membrane, and may finally become pedunculated or may remain with a broad base." Coplin states, "Sarcoma tumors are composed of embryonic connective tissue in which the cellular constituents predominate over the intercellular. The embryonic cells tend to infiltrate the surrounding tissues, as a result of which sarcomata rarely if ever are encapsulated. In sarcomata the bloodvessels are numerous and in direct contact with the cells, or separated by a thin layer of fibrillated tissue. The vessels lack distinct walls, and are margined by packed cells of the neoplasm. These cells may become detached and carried along in the blood current, therefore sarcoma spreads by the bloodvessels. Due to the thin walls of the bloodvessels, hemorrhage into the parenchyma is observed. The periphery of the tumor is not clearly defined. There is no line of demarcation between the sarcoma and adjacent structures. When the tumor is of slow growth, a pseudocapsule may be formed by condensation of contiguous connective tissue. They have a tendency to extend locally, infiltrate the surrounding structure, recur after removal and give rise to metastasis.

Secondary growths occur most frequently in the lung. Sarcoma disseminates more rapidly than carcinoma. Round celled and large spindle celled sarcomata are of rapid growth and very malignant; small spindle celled are firmer, slower of growth and less malignant. Sarcomata are sometimes irregular in growth and often remain quiescent during long periods—more commonly seen in primary tumors than in metastases or recurrent growths. Usually these latent periods of malignancy are short, but often during months and years a tumor may cease to grow; rarely does reduction in size take place. The size of the growth bears no relationship to its malignancy. Widespread dissemination of sarcoma is due to entrance of tumor cells into the circulation. Sarcoma spreads by the bloodvessels—carcinoma by the lymphatics and later by the bloodvessels. Tuttle says: "The mucous membrane covering sarcoma is at first

comparatively normal. When the tumor has grown so large as to distend it and subject it to pressure and friction from fecal passages, it may become congested, edematous and ulcerated, or it may adhere to the growth through inflammatory changes. Sarcoma differs from other neoplasms of the rectum in the rapidity of growth. It increases in size much more rapidly than carcinoma, and fatal termination occurs much sooner. The inguinal glands are the first to become involved, then the sacral, mesenteric and hypogastric chain. Sarcoma is more pedunculated than carcinoma and less than adenoma; is less firm than carcinoma and more firm than adenoma; has not so large an attachment to the bowel as carcinoma; does not spread out as carcinoma; its attachment is abrupt and the limitations and extent of the growth are clearly defined; it is more spherical and undulatory; the odor of carcinoma is absent: the mucous membrane moves easily over sarcoma, and the microscopical examination is the best means of differentiation." The prognosis is very grave. There is a tendency toward a wide metastasis and rapid fatality. Few patients survive more than a year after operation."

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345 WEST EIGHTY-EIGHTH STREET.

GROUP PRACTICE OF MEDICINE.

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It seems to be now fairly widely understood by the general public, as well as by the medical profession, that in these days clinical medicine can be satisfactorily practised only by groups. It seems clear to most of us that the days are fast passing when one doctor can alone and unaided bring to bear on the diagnosis and treatment in a given case, all the knowledge at the command of the medical profession. In England this is true to such an extent that the Labor Party is demanding the establishment of a State medical service to replace its present highly unsatisfactory and ridiculously underpaid health insurance organization, and it stipulates that this State medical service be so organized as to make group practice imperative. In the scheme outlined, the group is to be the medical unit, and this group, rather than the individual physician, is to be held responsible for the physical welfare of the inhabitants in the area under its care.

Group medicine, such as that mentioned above, is now being practised here in hospitals and dispensaries. The field for dispensaries is much larger and much more important than that for the hospitals, yet the work in the average dispensary is immeasurably inferior to the work in the average hospital. The chief reason for this state of affairs, is the long established habit of looking upon dispensaries as dealing with minor conditions, while hospitals deal with major conditions. This is true; however, only in the field of general surgery; in

the remaining fields of medicine this conception is utterly false. A consideration of the following facts should convince the most orthodox.

Tuberculosis and syphilis, it will be conceded by everyone, are the most common and most important of all diseases afflicting humanity. About seventy-five per cent. of all tuberculous and about ninety-five per cent. of all syphilitic persons are ambulant. Any doctor doing general practice will, I think, agree with me, that the next largest group of patients with whom he has to deal are those suffering from gastrointestinal diseases, and of this group more than ninety-five per cent. are ambulant.

Then take the patients with muscle pains and headaches; practically all ambulant. Here it must be said, parenthetically, that while at first thought these cases might seem minor in nature, from the viewpoint of diagnosis and satisfactory therapeutics, they are among the most important. It is only because of the pernicious fashion of sneering at such cases, and the consequent failure to give them the amount of study they deserve, that so rarely is a proper diagnosis made and the patients treated satisfactorily. If these conditions were accorded the respect due them, and treatment administered as carefully and conscientiously as in a case of meningitis, for example, fewer suffering human beings would be labeled neurasthenic or hysterical, and similar names which constitute cloaks for indolence (rather than ignorance), and fewer patients would be neglected.

Now if we consider further that over ninety-five per cent. of the patients suffering from skin diseases other than syphilis are ambulant; that similar percentages of eye patients, ear patients, and nose and throat patients are ambulant; that more than fifty per cent. of neurological patients are ambulant, and that a much larger percentage of genitourinary patients are ambulant, we cannot fail to see that dispensaries have a wider field and a more important one than hospitals. We may admit that hospital cases are more dramatic than dispensary cases, but, except in general surgical conditions, the dispensary has a wider and a more hopeful field than has the hospital.

Dispensaries have long been the victims of a vicious circle. A misunderstanding of their relative potential importance has put them in the background and the appropriations for organization and equipment have therefore always been inadequate; in consequence, proportionately poor work has resulted. Poor work has caused disrespect for the dispensary, and work in dispensaries has meagre reward and little attraction. Thus has been the constant action and reaction: Poor facilities = poor work; poor work = disrespect and poor allowance and poor facilities.

If those who are responsible for the maintenance of dispensaries will realize their mistake as to the potential value of these institutions, and provide appropriations for organization and equipment such as they provide for their hospitals, it would not be long before the wisdom of such a course would be apparent to all.

We have therefore demonstrated that with proper organization and equipment, dispensaries as well as

hospitals, can give medical service of the highest and most desirable quality; and the reason these institutions can render service which is more satisfactory than that rendered by the individual practitioner, is because the former practice group medicine.

Granted then that group medicine is the ideal type of practice, is it not possible to make such practice the general rather than the exceptional thing? It certainly is, and from the economic as well as the sociological standpoint it is most desirable. The hospitals and dispensaries now functioning need only make provision for the proper working of their outpatient departments, and they may be accepted as models and pacemakers for a largely increased number of similar group organizations, to act as medical units. Hospitals and dispensaries in such a scheme must make ample provision for the handling of all patients that may apply, and cease to be purely charitable institutions. All sick no matter in what financial condition, should be provided for, and properly adjusted fees charged for services. The doctors acting in the organization should be paid for their work, and paid sufficiently liberally to engage their wholehearted and best effort and application. It is unnecessary to go into detail regarding fees, free treatment, etc.

I would add here that I have no respect for the plans of "diagnostic" institutions. The patient is by all odds most interested in therapeutics, not diagnosis. The doctor whose interest in a patient ceases when he has exhausted his diagnostic methods, and has or has not, as a consequence, arrived at a diagnostic conclusion, may be a very good scientist, but is a very poor physician. The ultimate aim of all medical practice is the prevention or the healing of disease, of which accurate diagnosis is an imperative preliminary. The hospital or dispensary should be, and is, equipped and ready to treat as well as diagnose. The individual practitioner, unaided, can no more treat all conditions than he can, unaided, diagnose all conditions. In fact, it is right here, in treatment, that specialism has its most legitimate excuse for being. How ridiculous it is to send a patient complaining of joint pains to a medical unit for the purpose of having a group study made to determine the cause and origin of the pains, and when it is decided that accessory nasal sinus infection is at the root of the evil, to turn such patient back for treatment to his individual physician, when the latter may have no skill whatever in the treatment of nasal diseases. All physicians should have a place in a group of practitioners and function as members of such unit, and be expected to do, in a diagnostic or a therapeutic capacity, what they are best fitted to do. Institutions for group practice, whether large or small, should be prepared to do a complete job, and that includes treatment.

On the other hand, there is even less excuse for the existence of institutions limited to therapeutics. They are very generally an evil and very often a danger. They usually drive a hobby. They are almost always narrow in conception. Sometimes they drive their hobby with honest enthusiasm; but more often they work their scheme with disregard

of the necessities of the particular case. They generally are equipped to practise some particular fad, and can hardly be expected to see that the only thing which they have to offer is useless or worse in the given case. These institutions are generally appointed with large regard for psychic impressionability, and this playing up to the emotions is frequently responsible for success with their patients. While such therapeutics is often enough harmless in itself, it has many of the faults of Christian Science, in that it takes altogether insufficient interest in a searching diagnosis, which is so essential a preliminary to rational therapeutics.

So that my contention is, that it is not sensible to divorce diagnostic from therapeutic practice. Diagnosis and therapeutics must go hand in hand. Institutions or groups practising the one must be prepared equally well to practise the other. Skilled diagnosis must be complemented by skilled therapeutics. Honest therapeutics can be based only on detailed and searching preliminary diagnosis.

Now when speaking previously of group practice in hospitals and dispensaries, I did not mean to imply that group practice is possible only in hospitals and dispensaries. Very efficient groups may be formed by the cooperation of smaller numbers of physicians, but obviously, the larger the cooperating group the greater the economic efficiency, and the economics of the situation must not be overlooked. It should be possible to give good group medical service at a cost to the patients which will be reasonable and within their means, but at the same time the charge must be sufficient to leave a reasonable compensation for the physicians. Underpaid and overworked doctors will not give good service. It would not be cheap to allow them a minimum return for their work; their work would soon be as cheap as their remuneration. A doctor's efficiency will be modified by the amount of rest and contentment falling to his share; and a discontented doctor can spoil his job with more serious consequences than the discontented tailor or the discontented carpenter. I wonder how many practitioners in New York make a comfortable living out of their practice, while working only forty-four hours a week!

1845 SEVENTH AVENUE.

Keratitis Profunda (or Disciformis) with Microscopic Examination.—F. H. Verhoeff (*Archives of Ophthalmology*, September, 1919) says that disciform keratitis may be produced by a variety of causes, and that certain cases are of the same nature as keratitis profunda. The corneal changes in keratitis profunda are due to the action of diffusible toxic substances arising near the anterior surface. They consist in alteration of the epithelium, destruction of the corneal corpuscles and injury to the stroma in the anterior layers of the cornea, and proliferation of the corneal corpuscles behind and around the injured area. In addition, there is injury to, or destruction of, the endothelium, as well as, in severe cases, deposition of fibrin and leucocytes on Descemet's membrane behind the affected area. Leucocytic infiltration of the corneal stroma is conspicuously absent.

PATHOLOGY AND BACTERIOLOGY OF
BRONCHOPNEUMONIA IN FRANCE.

BY MYRON L. MORRIS, M. D.,

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The subject of bronchopneumonia has been much discussed since the participation of the United States in the world struggle. The discussion of the subject has been due to the widespread appearance of this disease in our mobilization camps as well as among the civil population. An attempt will be made in this short paper to call attention to significant pathological and bacteriological facts as observed in a base hospital in France. The observations were made in 175 cases of the disease coming to autopsy during a short period of time. During the latter part of September, October, and early November, 1918, this disease reached epidemic proportions, and it is in these cases principally, coming as they did, grouped over a period of a few weeks, that the opportunity for collective study was offered.

BLOOD PICTURE.

Routine white blood counts including a differential count were made in all cases and repeated as indicated. Added to this, later, red blood counts and hemoglobin determinations were made. The following data were gathered from this source: The average severe case, that is clinically severe, showed a count which was numerically low. This was practically the rule, and the count varied between four thousand and seven thousand, but two or three of the counts were as low as two thousand. This latter, however, was the exception. The differential counts showed a high polymorphonuclear leucocytosis, averaging between sixty per cent. and eighty-five per cent. Thus the picture became striking, a low numerical count with a high polymorphonuclear count. In general we might say we were dealing with an overwhelming infection as regards severity or virulence, but with a low resistance on the part of the host. In view of the fact that this picture was so constant, undoubtedly the latter factor resulted from the former. Contrast this blood picture with that occurring in the ordinary case of lobar pneumonia with its high numerical white count and high polymorphonuclear count, and with the similar condition as regards blood picture existing in profound acute bronchitis, of course to a much less degree, and it is easily understood how valuable the blood count became to the clinician in the differential diagnosis of these three conditions.

The blood picture changed with the patient's condition. The cases which clinically improved showed a picture resembling what one would expect in an ordinary severe infection. The numerical count increased, perhaps not more than two or three thousand, while the differential count showed the polymorphonuclears either remaining stationary or decreasing with a corresponding increase in the mononuclear cells. Analysis of the blood picture would tend to show confounding factors at work. It is a fact that influenzal infections produce a low numerical blood count as well as a relative mononuclear leucocytosis. We know that streptococcus in-

fections show a high numerical count and a high polymorphonuclear leucocytosis. The blood picture presented by a vast majority in this series of cases of bronchopneumonia appeared to be a combination of the pictures produced by influenzal and streptococcus infections. This is given purely as an observation. Our cases occurred on the tail of the influenza epidemic in France, and some of them were associated with the organism of influenza. The red blood picture as a rule showed nothing very remarkable. The average red count was three million five hundred thousand and hemoglobin averaged from seventy to seventy-five per cent.

BACTERIOLOGY.

Practically all of the cases showed a streptococcus by smear and culture of the secretion from the air passages. Standing out prominently was the fact that this organism was of the nonhemolytic variety. They occurred in shorter or longer chains, many in diplococcal form. It is true the hemolytic type was found in some of the cases, but they were extremely few in number. Culture made of the lungs at the postmortem table showed practically always the nonhemolytic streptococcus. Lung culture was not done in all of the cases. In the sputum were also very frequently found influenza bacilli and influenzalike bacilli. This is important in connection with the characteristic blood picture in these cases. The sputum, of course, also showed the usual flora of staphylococci and gram negative diplococci. Pneumococci were found so rarely, that as an etiological factor of our bronchopneumonias they were ruled out. It is possible that the disease might be ushered in by the pneumococcus, but the presence of the streptococcus soon changes the disease entity clinically, bacteriologically, and pathologically. Blood culture made during the life of these patients was practically invariably negative. Even when repeated shortly before death, they continued to be negative.

PATHOLOGY.

The pathological condition demonstrated at the postmortem table was perhaps the most constant and at the same time most striking of the demonstrable changes.

General appearance.—On general examination the large majority of the cases coming to autopsy showed little evidence of having succumbed to so severe an infection. There was none or little evidence of tissue wasting. As a reason for this we ascribe the fact that in most of the fatal cases death ensued so quickly that little opportunity for emaciation was offered.

Jaundice.—It was very striking that twenty-eight per cent. of the cases showed jaundice. This varied in severity from a faint yellowish tinge to the skin and mucous membranes to a most profound greenish yellow discoloration. We are of the opinion that some of this jaundice was due to the presence of the few hemolytic streptococci demonstrated. The greater number, however, it is believed was due to other causes. As will be described later the gastric mucosa showed evidence of a severe gastritis, which extended up into the bile passages. To these two causes are laid our cases of jaundice. Again we should like to impress

on the reader the fact that although in our opinion the *Streptococcus hemolyticus* was present in small numbers, yet the possibility of its causing a profound jaundice, even when only a contributing etiological factor, is conceded. Personally in this particular series of cases the obstructive factor appeals strongly to the writer. The absence of any marked anemia, as evidenced by the red blood count and hemoglobin estimation, strongly favors the obstructive factor as the cause of the jaundice.

Lungs.—In most of the patients all of the lobes were involved. Of the lobes least often involved, the right middle lobe stands out prominently. Even when all the lobes are involved, this lobe is diseased to a much less extent than any of the others. As a rule a fringe of each of the two upper lobes is comparatively or actually free of involvement. This fringe varies from half an inch to one and a half inches in width. The lower lobes were always the most markedly involved. The lungs were heavy and felt dense. As a rule they are covered with an exudate. This varies from a thin fibrinous layer to a thick fibrinopurulent exudate almost a half inch in thickness. The lobes were matted together in this exudate. The pleural layers were held together by this exudate. Diaphragmatic adhesions were very firm. Few empyemata were found. The condition of thick fibrinopurulent exudation was apparently the nearest to empyema these cases approach, death intervening before a further softening of the exudate could occur. When the exudate was torn from the lung surface, or where the surface was free from inflammatory covering, the lung was dark red or purple in color and angry looking. Occasionally it was mottled purple, red and pink.

On cross section a diffuse patchy consolidation was seen. In nearly all of the cases this consolidation was confluent, giving the lung an appearance resembling at first glance a lobar rather than a lobular consolidation. In the lobes least involved the patchy consolidation was more clearly demonstrable to the eye as well as to the touch. On cut section the color was generally grayish red, and the cut surface was dry, as a rule. Nodules of consolidation varying in size were felt throughout the lung. The cut bronchi in most cases showed the mucous membrane to be very much swollen and congested, and often it exuded a thick creamy pus. In regard to the apparent attempt at healing, some of the lobes on cross section showed a homogeneous yellowish gray color. On scraping, a thick pus seemed to be the principal constituent of this. Apparently there was an attempt at a process resembling gray hepatization, but the picture described above was the nearest approach to this condition. It appears that a short extension of the life of the patient would show nature's method of healing resulting in distinct abscess formation. In one case there was an abscess as large as a good sized fist.

Heart.—As a rule the pericardium was smooth and glistening throughout. In only a very small proportion of our cases was there evidence of pericarditis. They assumed more the form of the bread and butter pericardium than an increase in the pericardial fluid. In this respect the pericardium

responded much like the pleura, except of course, that the latter was more frequently involved. Two of the cases showed a blood tinging of the pericardial fluid, without an increase in the amount. In the average case the heart was normal. Only a small proportion of the patients died of cardiac dilatation, and these cases apparently presented a hypertrophied heart even before the onset of the terminal disease. This did not preclude in a large proportion of cases the probable existence of cardiac muscular degeneration, which was not disclosed on gross examination.

Spleen.—None of the viscera presented so characteristic and pathognomonic a picture as the spleen. It was fairly constant. The organ was small, showing no increase in size over the normal, and plum colored. The surface was smooth and glistening, but occasionally showed a scant fibrin deposit, with a resulting dulling of the surface. The viscus felt dense and regular. The margins were sharply defined. On cut section the color was very dark red. The cut surface was smooth and homogeneous. The Malpighian bodies were always evident and there was no increase in pulp tissue. The interstitial tissue was slightly increased both in density and amount. Friability was increased. Contrast this with the spleen of lobar pneumonia, with its increase in size, its soft consistence, and which on cross section showed the pulp tissue to be increased to almost the stage of liquidity and overflowing, thus obliterating the other structures usually evident on cross section, and it will be readily understood why with a pneumonia known to exist, the spleen at autopsy in these cases, not only evidenced its own picture, but also practically gave one an exact picture of the lungs, and the kind of pneumonic process to be found in them. This was practically a constant feature in our series of bronchopneumonias. Add to this the gross gastric pathology, as will be described later, and we have a trilogy which together is pathognomonic of the lobular pneumonias as we found them in France. That is, the picture of the lungs, spleen and stomach as revealed at the postmortem table bore a more or less constant relationship one to the other.

Kidneys.—Nothing noteworthy was found in these organs. They showed varying degrees of parenchymatous change from cloudy swelling to marked acute parenchymatous nephritis. The latter was the exception, however.

Liver.—This organ showed as a rule nothing more than cloudy swelling. A striking feature of many of the livers at autopsy was their extreme size and weight. We lay this to the fact that the viscera belonged, all of them, to young, strong soldiers, who were heavy eaters, and as is well known, who were offered the opportunity of eating all they could hold, and from personal observation it can be said that there were but few who did not avail themselves of this opportunity. It is my opinion that these livers were simply functionally large. The bile passages showed no marked evidence of obstruction, but the process of congestion and swelling of the mucosa was present in a large proportion of the cases, thus causing some obstruc-

tion. This plus the presence of some hemolytic streptococci accounts for the jaundice. The gall-bladder as a rule showed no abnormality other than that the contained bile was very thick and tarry.

Stomach.—As was stated this viscus presented a constant picture in the condition under discussion. Externally nothing abnormal was found. On opening the organ it was often found to contain a varying amount of dark greenish fluid. The mucosa was markedly swollen and deeply injected throughout. Most marked, however, was this in the cardiac portion, and of the mucosa itself the portions most affected were the crests of the rugæ. These crests were red and angry looking, and running away on either side into the spaces between the rugæ were engorged vessels, giving the sides of the rugæ and the spaces between a pink appearance. There was no evidence of solution of continuity of surface.

Rectus muscle.—A condition that was sometimes noted in this series but whose significance we were unable to determine was the relative frequency of rupture of the rectus on one or both sides. This rupture usually occurred between two and three inches above the pubic attachment of this muscle.

Culture from heart's blood.—Culture from the heart's blood was made in all cases coming to autopsy and twenty-one positive streptococcus cultures were obtained from this source, or eleven per cent.

Summary.—1. Number of autopsies (bronchopneumonia), 175. 2. The right upper lobe was involved 150 times or 85.7 per cent. The right middle lobe was involved 130 times or 74.3 per cent. The right lower lobe was involved 165 times or 94.3 per cent. The left upper lobe was involved 157 times or 89.7 per cent. The left lower lobe was involved 166 times or 94.9 per cent. 3. Jaundice was present in forty-nine cases or twenty-eight per cent. 4. Acute splenic tumor was present in twenty-five cases or 14.3 per cent. There were twenty-seven other cases which showed a distinct splenic tumor, but these were cases where the bronchopneumonia was a concomitant disease. These included three cases of typhoid fever, three cases of meningitis, one case of miliary tuberculosis, one case of multiple liver abscesses and nineteen cases of multiple suppurating wounds. 5. Empyema occurred in nine of the cases or 5.1 per cent. There were present seven other cases of empyema, but these were cases where the bronchopneumonia was but a complication of an extensive sepsis elsewhere than in the lungs. 6. Pericarditis occurred in seven cases or four per cent. Four other cases of acute pericarditis were present but were undoubtedly traceable to a cause other than the bronchopneumonia. 7. Acute toxic gastritis was present in ninety-three cases or 53.1 per cent. 8. The rectus was ruptured four times or 2.3 per cent. 9. Acute endocarditis was present three times or 1.7 per cent.

The most striking features were: Involvement in a majority of the cases of all of the lobes, with the lower lobes involved most frequently, and the right middle lobe the least frequently; absence of splenic tumor; presence of acute toxic gastritis; during life the absence of a hyperleucocytosis and

the presence of a high polymorphonuclear differential count. The blood culture was negative during life. A report on the microscopical examination of the tissues obtained at these autopsies is not available for the reason that opportunity in the way of apparatus to carry on this work was not at hand.

122 WEST EIGHTY-FIFTH STREET.

URETHRAL STRICTURE.

BY CHARLES O. FILES, M. D.,

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There are some points of interest in the history of the following case, although the record of it is fully thirty-five years old. I was called one night to see a man who could not urinate on account of a stricture of the urethra. The previous afternoon he had called on a physician who was unable to give him any relief, and who advised him to go to a hospital. In the evening he saw another physician, with the same result and the same advice. He went home instead of going to a hospital, and in the night, by chance, sent for me. I learned some of his history afterward, but will give it here, so that the case may be more fully understood.

He was a periodical drunkard and confessed to several attacks of gonorrhea. He had been catheterized several times when he had been unable to urinate on account of the stricture. When intoxicated he had often slept out of doors, in cold and damp weather. It was after an experience of this kind that he found himself unable to urinate, and went to the two physicians, as stated. The result of the two attempts at catheterization was such that there could be no thought of trying a catheter again. The bladder was apparently as tense as it was possible for it to be. The man's physical condition was not encouraging for even a minor surgical operation. It occurred to me that if it was possible to obtain nearly absolute relaxation of all the parts involved, he might possibly get rid of some of the urine. I gave him twenty drops of a preparation containing one grain of opium and one grain of ipecac to each ten drops, in two tablespoonfuls of water; in half an hour gave him twenty drops more. Within the next hour I gave him two more similar doses. At that time he had taken eight grains of opium and eight grains of ipecac. Before it was time for him to take another dose, he expressed a desire to urinate. To my great surprise and gratification, he completely emptied his bladder, making a fairly good sized stream. Several long and wearisome hours were spent in counteracting the effect of the opium, but he was finally left to sleep it off without any untoward results.

On meeting this man some five years afterward, he surprised me still further by saying that he had never had any further trouble with the stricture, although I could not see that his habits had improved. That, of course, was a coincidence, as there could have been no probable connection between his taking some ipecac and opium five years previously and the nonappearance of any trouble from urethral stricture during that period. On the

other hand, is it not possible that the complete, if only temporary, relaxation or subsidence of the erectile tissues of the corpora cavernosa and the corpus spongiosum, and of the elastic tissue of the tunica albuginea, may have had some effect in reducing the stricture?

195 HIGH STREET.

A STUDY OF DEGENERACY AS SEEN AMONG MORPHINE ADDICTS.

By C. B. PEARSON, M. D.,
Catonsville, Md.

My purpose in writing this article is threefold:

1. In order that justice may be done the better type of morphine addict; 2, that greater credit may be given those who care for the morphine addict; and 3, to show how much of the degeneracy among morphine addicts may be prevented. The word degeneracy has more than one meaning. In this article I am not dealing with the decline that is seen from one generation to the next, but in the decline seen in the individual addict himself from mental and physical health to a condition of mental and moral deterioration or degeneracy.

The degenerate type of morphine addict is the one who has given the morphine addict a much worse reputation than he deserves. The degenerate type of addict is always in evidence. The better type is not, for he is not suspected of being an addict. If he takes treatment and the treatment proves to be a success, his friends note an improvement in his physical appearance, but of course are unaware of the cause. The addict himself is not likely to discuss the matter. If no relapse occurs it is not probable that the fact that he was once an addict will ever become known. Naturally it is among this class of addicts that we get our highest proportion of permanent cures. And it is equally obvious that it is the part of our work that is most likely to remain unknown.

The straight morphine addict rarely becomes a degenerate. So far as my experience goes I have yet to see my first case. The causes of degeneracy among morphine addicts are the immoderate use of alcohol, mixed drug taking, syphilis of the nervous system, the repeated shocks to the nervous system caused by repeated attempts at heroic treatment that end in failure, or repeated shocks due to abstinence from the drug from any reason, viz., imprisonment, or accidental separation from the source of supply due to lack of funds or any other reason.

I have seen a number of morphine addicts who were mixed drug takers, who also used alcohol to excess and who were also syphilitics, who had not yet reached the point of degeneracy. However, I believe this combination will produce degeneracy if given time enough in every case. I do not mean by this that morphine is not one of the causal factors of degeneracy in the latter type of cases. While morphine acting upon one who lives a normal hygienic life in all other respects has not in my experience proved to be sufficient to cause degeneracy, we can readily see that the case may be different when the drug acts upon an individual

whose power of resistance is being or has already been broken down by the excessive use of alcohol, cocaine, chloral hydrate or other powerful hypnotics, syphilis, the repeated shocks of mistaken methods of treatment, even if only one of these factors is working with the morphine. But when all are combined degeneracy cannot be far away. However, it is really surprising how long some of them bear up under all these factors of degeneracy and still retain a fair degree of mental and moral integrity for some time.

Addiction symptoms should not be confused with the symptoms of degeneracy just because they are seen in the same individual at the same time. Addiction symptoms are due to the direct effect of the drug or drugs or alcohol that the addict is taking, while the symptoms of degeneracy are evidences of a more or less permanent impairment of mental and moral integrity. They are the symptoms of a condition and not of the cause of that condition. The man who is drunk is in a perverted mental and physical condition. This condition passes as soon as the alcohol is out of his system. The reader has often heard the remark that John does not drink now and has not for several years, but he still has the barroom manner, the idea being of course that the barroom manner was acquired from association. I have observed that it makes but little difference so far as the barroom manner is concerned whether the man is convivial and prefers to drink at the bar with one foot higher than the other or whether he drinks secretly from a private stock that he keeps hidden at home. This symptom is evidence of a very persistent if slight loss of moral tone due to the abuse of alcohol. Take the case of prevarication among morphine addicts, if it applies to matter connected with the addiction it is a symptom of the immediate and direct effect of the drug. Where it applies to all matters it is a symptom of general mental deterioration and is apt to persist for a long time even if a cure is effected.

The first symptom of degeneracy that I shall mention is what the patients call snooping. I have had patients who would go through every dresser, every grip, or trunk in the house. Not only would they do this once but continually. Children sometimes have a curiosity of this sort and some adults of a childish type of mind, but when a lawyer or physician who was once above this sort of thing gets to doing things like this it can have but one meaning and that is degeneracy. It is certainly not a symptom of morphinism, alcoholism, or even cocaineism. I think that it can be more properly called a symptom of degeneracy produced by the disease morphinism complicated by other degenerative factors. In looking back over my experience with these people in not one instance was this symptom observed in a straight morphine case.

Eavesdropping is another symptom of degeneracy. Eavesdropping is as old as time. It is an indication of a low type of mind. Occurring among those who are known to have once been above it it means degeneracy. Leaving the room door open at all times I take to be a symptom of degeneracy. In an institution like this it means a very careless regard for one's own privacy, also a tendency to in-

decency, for the patient knows that persons of the opposite sex may pass the door at any time; or it may mean pathological fears due to nocturnal hallucinations or delusions. In this case it shows that mental degeneracy has already begun. In looking back over my past experience I find that patients who persisted in this practice showed other signs of degeneracy.

Indecent conduct in speech or actions in patients whom we have good reason to believe at one time were particular to avoid this sort of thing indicates that the patient is on the decline mentally. The same thing among the riffraff would have no especial pathological significance. Occasionally we get patients who are continually pilfering small articles and in some cases mail belonging either to the house or the other patients. If the patient was always a thief pilfering can not be considered a symptom. Occurring in a patient who was once far above such practice it can have but one meaning.

Another symptom pointing the same way is the intense and irrational jealousy that some patients have of the other patients. One day a patient came into my room and talked with me for about a half hour, which made another patient so angry that he was determined to discontinue treatment. This jealousy is so marked among many who show signs of degeneracy, that I make it a rule never to take a patient with me when I leave the house, and further, to be as impartial as possible in all my dealings with the patients. It is so absurd and out of harmony with sensible conduct that it can mean nothing but impairment of the mental faculties.

A symptom of mental impairment that makes the handling of these cases very disagreeable at times is the feeling of bitterness among a few of the degenerates toward those who are trying to help them. If questioned about this they will usually make a vehement denial of it, but when they think that what they say will not reach the ears of those in charge, they give vent to their bitterness freely. However, most of them have a most wholesome fear of the one who administers the morphine. I will say at this point that I use the reduction system. Even this fear will not at all times keep them quiet. It is this feeling of bitterness toward those who are trying to help them that prompts them to malign the sanitarium where they last took treatment.

A frequent remark or rather lie with them is that they never knew anyone to get cured at that place. To one who is familiar with this class of addicts their remarks go for nothing, in fact, their speech is really pathological. There is as much of a sameness to the stories that they tell about the sanitarium as there is to the eruption of measles. It may not be known to the reader that these same patients are anxious to return for treatment. It is among the degenerate type that most of the relapses occur in spite of the fact that the degenerates are a long way in the minority among addicts. This type of addict is the rounder who goes from sanitarium to sanitarium and gives us many times an undeserved reputation for inefficiency. He is a trial to one's soul. He it is who, much to the chagrin of those engaged in this work, seeks to make acquaint-

ances in the neighborhood, while the addict we would be proud to have the neighbors know takes particular pains not to make himself known. He delights in scandalous stories to the discredit of his fellow patients and the house. Not infrequently they play impish tricks upon one another and upon the house. At one time there was a widow under my care who put apomorphine in the coffee. Others maliciously turn on the water spigots and leave them running, knowing that the water must be paid for by meter.

Gratitude is an attribute of the higher civilization. When degeneracy begins it is one of the first of the nobler traits of character to disappear. These degenerates often, but not always, show gross ingratitude towards those who are trying to help them. I wish to say at this point, lest the reader get a wrong impression of my work, something about the majority of addicts who are not degenerates. No doctor is more kindly remembered at Christmas or is treated more kindly in every way than I am by the better class of addicts whom I treat.

To return to my subject, many of the degenerate type show an exaggerated ego. This is most distinctly not a symptom of morphinism. The most persistent and characteristic symptom of morphinism is selfdepreciation. It does not show itself until the addict has become a degenerate through factors other than morphinism. Many of the degenerates have a most absurd idea of their importance. Many of them become pathologically suspicious, and in some cases this suspicion resolves into delusions of persecution.

Lastly, we frequently get impairment of memory. The reader might very naturally consider this to be a symptom or condition of very grave import. In my experience it has not proved to be so. I have had many patients showing this symptom who made a most satisfactory recovery. I explain this by the fact that the loss of memory is due to the immediate effect of the use of morphine, alcohol, cocaine, or other narcotic, rather than being an end product of the various additions. As soon as the additions are discontinued the memory becomes normal.

The importance of the symptoms enumerated becomes manifest when we compare the results of treatment in this class with the result in the more hopeful types of cases. Among the degenerates we find the majority of our failures. On the other hand, we get the great majority of our successes among the better types. I have come to attach great importance to these symptoms. Take even the matter of being decently dressed at all times of the day. I have observed that the patient who dresses before breakfast and who remains dressed throughout the day rarely causes any difficulty. He almost invariably leaves the drug with little trouble. While mentally of the higher type so far as the addiction itself was concerned, many of these cases were of the advanced type of morphinism; that is, the daily amount used was large and the addiction was of long duration. A patient of this higher type has just left my place who had used the drug for forty-six years. Of course being dressed properly or otherwise is not a matter of

importance in itself. It becomes a matter of importance, however, because it is an index of the patient's mental integrity to a much larger extent than many, who are not familiar with this work, would suppose. This is true of all the symptoms mentioned.

If I could decline the care of the cases showing the symptoms of degeneracy described above my proportion of permanent cures would be very high indeed; furthermore, my work would be many times more pleasant than it is. The straight morphine addict who shows none of the symptoms described is not much more trouble than an ordinary boarder, and if it were not for association with the degenerate, the addict never would be any trouble. This applies even to many mixed addicts, where mental impairment has not yet begun.

The reader may wonder why the superior type of addict should pay any attention to the degenerate. The degenerate is often a plausible and voluble talker, and the devil himself could not be much more of a successful mischief maker. I have two ways of protecting myself and my better patients. One is to discontinue treatment and the other is to refuse to take back an especially bad mischief maker of the degenerate type who chances to relapse.

The confusing feature is that we have no means of knowing in advance whether a patient of the degenerate type will make good or not. Some of the worst of them have made good. Of course when we come to consider a series of such cases, we know that the proportion of permanent cures will be very low. A part of the purpose of this article is to create a better feeling for the better type of morphine addict. By the better type of addict I mean those who confine their addiction to some form of opium and who live quiet, well ordered lives. To say that an addict confines himself to some one form of opiate is almost if not quite the same as saying that he lives a quiet, well ordered life. One of the most characteristic symptoms of morphinism is that the addict becomes seclusive and retiring. The straight morphine addict is not likely to obtrude himself upon other people's notice. Opium may cause degenerative changes. I am not writing a review. I am writing of my own personal experience. I reiterate that I have yet to see such a case. My time has been given exclusively to the care of these people now for several years.

I am of course speaking of degenerative changes that may be more or less persistent even though the drug is withdrawn. Of course opium has many unhappy direct effects upon the addict, viz., self-depreciation, secretiveness, seclusiveness, cowardice, lessened ambition, malnutrition, toxemia, but these pass when the drug is withdrawn.

The reader will notice that there is a wide difference between these symptoms and the symptoms of degeneracy that I have described in this article. The patient who left my place yesterday had taken the drug for forty-six years, and he is today and has been all his life a good citizen. He has been an active and successful merchant all of these years. This case is exceptional in the duration of

the addiction but not in other ways. I can say that at least ninety-five per cent. of my straight morphine cases have been good citizens. I am not making a plea for opium. For these same good citizens would have been much happier citizens to say the least had they never become addicts.

We must take into account the tendency of the morphine habitués to become addicted to other drugs and to alcohol.

The treatment of the morphine addict, who gets in a bad way though the operation of degenerative factors other than opium, is so unsatisfactory that I wish to lay the greatest possible stress upon what can be accomplished by way of prevention. Of course many of my readers will at once think of Congress and the State legislatures as being able to give us the quickest and surest means of prevention. There are habits and habits; to my mind the law making habit is the most vicious of all. Since the passage of the various antinarcotic laws, the authorities tell us that there are more addicts in the country than ever before. They tell us this not because they think the law has been a failure but as a plea for more severe laws. The most that the law appears to have done up to date has been to furnish a means of livelihood for certain government and State officials and persecution for the addict. We are overburdened with measures of compulsion of various sorts. We have associations and organizations innumerable each seeking to accomplish some particular object. Their rulings and bylaws so far as their own members are concerned have all the compulsory effect of actual law.

Efforts are being made to get the profession and the public so far as the addict is concerned to substitute real knowledge for prejudice. We believe, in so far as stopping the spread of morphinism and other forms of the opium habit is concerned, that education is better than compulsion.

So far as degeneracy among morphine addicts is concerned, much of it could have been prevented by intelligent advice by the family physician to the morphine addict under his care. We have only to enumerate the degenerative factors to see where prevention can be used to good advantage. First, the family physician should be wary about advising absolute withdrawal of the drug. This especially if repeated many times is almost certain to cause mental impairment. Sometimes even hopeless insanity may be caused in this way. In any case, mental impairment is more likely to follow this treatment than is permanent recovery.

The morphine addict with syphilis should receive energetic treatment by his family physician before being sent away for treatment for morphinism. For reasons that I do not feel called upon to explain at this time, I do not like to treat syphilis in conjunction with the treatment for morphinism unless the urgency of the symptoms demand it. As to the use of alcohol, cocaine, cannabis indica, hyoscine, chloral hydrate, and other drugs, the family physician should instruct the patient as to the danger of the use of these in conjunction with morphine. The danger of a general mental breakdown through their use should be fully and if need

be frequently explained. Morphine alone will satisfy the craving for narcosis. If necessary the patient should be put under the care of a competent nurse until alcohol and all other narcotics have been discontinued. After this the addict should be permitted enough morphine for comfort until considerable mental improvement has taken place. The reader may be astounded by the statement that improvement can take place while the addict is still taking morphine. However, such improvement will certainly take place. I have treated many morphine addicts who at one time were mixed addicts, and had voluntarily discontinued everything except morphine, giving as the reason that they felt they were going mad.

I have found such cases no more difficult to handle than the straight morphine addict. In taking the other narcotics away it may be necessary to increase the morphine for a time. This may seem to conflict with the law. I should advise the physician in such a case to seek the cooperation of the government or State officials by explaining in full the details of the case and the purpose in view. The law by making it difficult at times for the addict to get his morphine has, I fully believe, increased the number of mixed drug takers and in consequence has increased the number of degenerates among morphine addicts. Again, every time a morphine addict is locked up and his morphine taken away from him he becomes a worse type of addict, except in those exceedingly rare cases where this sort of thing effects a permanent cure.

In conclusion I wish to say that probably the severe laws that we now have would never have been passed except for the degenerate addict, and the laws, although well meant, are increasing this very type of addict. There are problems connected with the care of addicts that the layman can never understand. There are many things about addictions that the average medical man does not at the present time understand, but the medical man, through his scientific training, can understand these things. For these reasons the medical profession should insist that the solution of the problem be placed in their hands. There was a time when the common jailor was thought to be good enough to care for the insane. And the insane were supposed to be possessed by the devil and therefore not entitled to anything better. We think differently today. I hope the time is coming when we will think that the addict is entitled to something better than he is getting today.

Asthma.—C. G. Cumston (*Journal of the Medical Society of New Jersey*, November, 1919) recommends the following:

Potassium iodide,5 grams
Liquor ammonii anisatus,5 c. c.
Aqua destillata,q. s. ad 150.0 c. c.
Spoonful three times daily in milk.

To relieve the spasm of asthma:

Atropine sulphate5 cgm.
Acidi arsenic,10 cgm.
Quinine hydrochlor. } āā.....5 grams
Ext. gentian, }
Ft. Pil. no. 100.

A STUDY OF AUTOPSY RECORDS.*

By C. B. S. GIBBS,
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During a recent period of twenty months there were 160 cases of head injury which came under the care of the coroner of Onondaga County, New York. In seventy-four of these cases, necropsies were performed. These 160 cases comprise about five per cent. of the total number of cases brought to the coroner's attention during this period, and all showed definite evidence of traumatic injury to the head.

The etiology is as follows:

Steam railroad accidents.....	49
Automobile accidents.....	22
Falls from various heights.....	22
Gunshot wounds.....	14
Explosion accidents.....	13
Falling objects.....	11
Electric railroad accidents.....	7
Motorcycle accidents.....	4
Difficult labor.....	4
Miscellaneous.....	14

The records of the seventy-four cases which were autopsied have been examined in detail. In this study an attempt has been made to determine the results of head injuries produced in various ways in individuals of different ages with the object in view of deriving some practical points which may be of value. The cases have been primarily divided into two parts, those showing no evidence of fracture of the cranium and those with fracture.

There were ten cases which showed evidence of traumatic injury to the brain, but in which no fracture was found. In eight of these the cerebral injury was considered sufficient to cause death. Three of the eight cases were infants less than ten days old. These were described as having been born after difficult labor. One baby showed extensive hemorrhage into the pia arachnoid; another showed basal hemorrhage beneath the dura, into the pia arachnoid over the base, and into the ventricles of the brain. The third baby was found to have extensive hemorrhage into the pia arachnoid over the frontal lobe and a large antemortem clot in the venous sinuses converging at the sinus confluens. Examination of the body in each of these cases did not reveal any abnormalities. A fourth case is that of a two year old child who fell, striking the back of his head and producing a lacerated wound in the scalp over the occipital region. Here a streptococcus meningitis, resulting possibly from an extension of infection, seemed to be the cause of the fatal termination. Another case was that of a child three years old who was injured in an automobile accident. The anatomical findings were diffuse hemorrhage over the left cerebral hemisphere, and numerous punctuate hemorrhages scattered through the substance of the left cerebral hemisphere.

Of the three other cases, one was that of a man thirty years old who fell from a second story. Marked hemorrhage into the brain substance was

*Onondaga County, from January 1, 1916, to September 5, 1918.

present in the region of the left lateral ventricle, and in the floor of the third ventricle. The second case was that of a man sixty-two years of age who was injured in an automobile accident. Extensive hemorrhage was present beneath the dura and in the pia arachnoid over both hemispheres. The third adult case was that of a young man of nineteen, who dived into a swimming pool and appeared to suffer almost immediate death. There were no evidences of external injury noted. The pupils were equal and dilated. Upon sectioning the brain there was found, in the central portion of the right frontal lobe, an area of punctate hemorrhages about two cm. in diameter. From these cases it appears that a small proportion of fatal cases of head injury occur in which there is no evidence of a fractured skull; and that these cases show subdural, pial, or intracerebral hemorrhage.

We shall now consider cases in which fractures of the cranium were found. Considerable importance is attached to these cases since statistics show that fractures of the skull comprise about four per cent. of all fractures and since it is generally stated that about forty per cent. of such cases terminate fatally. This report includes a series of sixty-four cases showing fractures. These fractures were all produced by violent contact of the skull with some solid object. In some cases the injury was produced by a moving body, as when a person is struck by a club; in others the skull while moving struck an object at rest, as when a person falls from a scaffold and strikes the ground. In general the fractures appear to start from an area which shows evidence of external injury, such as a scalp laceration, and radiate in one or more directions to distant parts.

Fractures of the skull in children usually differ somewhat from those occurring in adults in that they tend to be localized rather than radiating fractures. This may be due to the fact that a child's skull is thin, more pliable, and that the sutures are largely membranous, and do not transmit the force of the blow as do ossified sutures. This was demonstrated in a child seven years old struck by a mudguard of an automobile, with a resulting localized depressed area in the occipital region. In infants the skull is particularly elastic and can be dented without evidence of fracture.

Examination of the adult skull shows, on cross section, an inner and an outer table separated by diploic tissue. The inner table appears to be thinner, harder and more brittle than the outer. Injuries to the vault may occur in which the outer table or the inner is fractured alone, but usually both are fractured together, the inner often being the more comminuted.

In this series it was found that in thirteen cases, or 20.8 per cent., the vault alone was fractured; in nineteen cases, or 33.3 per cent., the base alone; and in twenty-one cases, or 42.8 per cent., the vault and base were both fractured. It would seem, therefore, that in over sixty per cent. of those fatal cases in which the vault was fractured, the base was involved also, and in a little more than half the cases in which the base was found to be fractured, the vault was also.

TYPES OF FRACTURES.

Various types of fractures were found. These are sometimes classified as follows: Fissured, comminuted, diastasis of suture, depressed, perforated, elevated and gunshot.

Fissured fractures are seen as a single fine line, or a branching line, with no displacement of bone. They may run in fairly straight lines irrespective of sutures. These fractures usually start at the point of impact as determined by scalp wounds and not infrequently pass directly downward to the base not being deflected by sutures. The portion of the base involved depends, therefore, upon the point of impact. Upon reaching the base the fracture may involve one or more fossæ, depending probably upon the force of the blow and the resistance of the skull, there being a considerable variation in the thickness of the skulls of different people and at different ages. In general the fissures traverse the basal fossæ just as if the force of impact had been a wedge tending to split the skull into two parts in a roughly straight line.

Comminuted fractures were seen quite frequently at autopsy, since with them there usually occurs laceration of the brain, considerable hemorrhage, and speedy death of the individual. These fractures appear to be the result of extreme violence applied over a small area, and they occur most frequently in the vault of the cranium. The fragmentation consists of two or more pieces, usually with greater splintering of the inner than of the outer table. Sometimes spicules of bone are found penetrating the dura and producing laceration of brain tissue. From the comminuted area one or more fissured fractures may extend to other parts of the vault or into the base.

Fractures by diastases are a modification of the fractures just described in that the line of separation follows that of a suture. This type is seen in early life before the bones of the skull have osseous union. Lines of fracture occasionally follow ossified sutures in later life. A case of this type occurred in conjunction with a depressed fracture in a man twenty-three years of age who fell from a roof, evidently striking on the frontal region of the head. There was marked separation along most of the sutures.

Depressed fractures occurred in ten cases; three patients were under ten years, three between ten and thirty years, and four between thirty and sixty years. An example of this type is that of a lad nine years old who was struck in the occipital region. External examination showed a depressed area just to the left and below the external occipital protuberance, measuring five by seven cm. The scalp over this region was contused. Upon examining the interior of the cranium, an extensive depressed fracture was found forming an oval area just above and to the left of the foramen magnum. Numerous spicules of bone had lacerated the dura. A fissured fracture extended anteriorly through the greater and lesser wings of the left sphenoidal bone.

Perforated fractures are the result of blows upon the vault or base of the skull with a blunt or sharp instrument. These injuries appear often associated with depression, comminution of fragments, and

severe cerebral injury, spicules of bone sometimes being driven deeply into brain substance. In such cases almost immediate death probably occurs.

Elevated fracture occurred in one case with a gunshot wound. The bullet entered, passed through both hemispheres and struck the left parietal region, fracturing this bone in such a way that a large fragment was slightly elevated. The bullet was reflected into the brain substance.

Gunshot fractures, though a variety of perforating fractures, are considered separately as seven cases occurred in this series. The form of fracture and the extent of injury to the intracranial organs depend upon several factors, such as the nature, size and velocity of the bullet, the angle of impact, and the distance from which it is fired. At the wound entrance the inner table was usually fragmented. When there was a wound of exit the outer table was here comminuted with edges everted. The skull may show fissured fractures radiating from the holes of entrance or exit. The injury to the brain is of course of the greatest importance, and varies according to the area involved and the amount of destruction. It would seem that when a bullet enters the brain and does not make its exit, that its location without the use of special means is of extreme uncertainty. In the case of a child one and one half years old, .22 calibre bullet was fired apparently almost point blank, as the hair was burned around the point of entrance, and powder marks were present. This point of entrance was located above and behind the right ear. There was splintering of bone in this area, spicules being found in brain tissue. There was a horizontal fissured fracture of the left parietal bone with a branch extending vertically downward. There was diffuse hemorrhage over and into the parietal lobes. The dura fell away from the base. There was laceration of the brain beneath the point of entry with the tract apparently stretching through the parietal lobes. The misshapen mass of lead was found in an area of hemorrhage and laceration in the left parietal lobe. There was injury to the dura and a slight black mark on the interior of the left parietal bone where the fracture began, indicating that the bullet had traversed the parietal lobes and had rebounded into the left parietal lobe from the left side of the skull.

PHYSICAL SIGNS.

Physical signs, while sometimes evident and immediately suggestive of the area of injury are sometimes practically absent. When there is a scalp wound, the skull may sometimes be examined directly and the reddish line of fracture observed. Sometimes when the fracture cannot be seen it can be felt by the finger. Blood into or edema of the epicranial tissues may cause such a swelling over the skull that the fracture may not be found without reflecting the scalp. Depressed, comminuted, and perforating fractures can usually be readily recognized. In cases of fracture of the base, hemorrhage, the escape of cerebrospinal fluid or of brain substance, and the pupillary changes are considered principal signs.

LOCATION OF FRACTURE.

In these thirty-nine cases of fracture of the base the interior fossæ were involved in twenty-six

cases or sixty-six per cent., the middle fossæ in fifteen cases, and the posterior fossæ in fifteen. The anterior fossæ were the only seat of fracture in four cases, the middle alone in four, and the posterior alone in four cases.

An example of fracture of the anterior fossæ alone is the case of a man fifty-six years old who fell on the sidewalk. There was purplish discoloration around the eyes with marked subconjunctival hemorrhage. No hemorrhage from the nose was noted. There was hemorrhage into the pia arachnoid in the left frontal region, and considerable hemorrhage into the substance of the left frontal lobe. There was no laceration of brain tissue noted. Fluid in lateral ventricles, pale red in color. Examination of the base of the skull showed a fine transverse linear fracture extending across the anterior fossæ with no fragmentation or displacement of bone. Examination of the lungs showed that the patient had acute lobar pneumonia.

HEMORRHAGE.

Two cases in which the anterior fossæ were fractured and in which death occurred within a few hours after injury, showed no subconjunctival hemorrhage, while in another case in which there was marked subconjunctival hemorrhage, no fracture of the base was found. Hemorrhage from the nose was found in a case where the ethmoid was fractured, but frequently also when no such fracture was found. Bleeding from the nose appeared to occur rather frequently when the point of impact was in the occipital region and may have been due to a sudden rupturing of nasal vessels. It was found that in fifty-nine per cent. of the cases showing fracture of one or both middle fossæ, hemorrhage occurred from the ear, since most of the fractures in this region involve the external auditory canal or the middle ear. It is interesting to note that in one case in which there was extensive fracture of both middle fossæ and in which both middle ears were found filled with blood, that no blood was found in either external auditory meatus, the tympanic membranes being intact.

The escape of cerebrospinal fluid was not recorded in any of these cases, probably for the reason that when a body is observed on the autopsy table, the fluid which could escape has already drained away and has left no trace. Brain substance was noted as escaping from the area of injury in a few cases of badly crushed skulls, but in no case was it recorded as escaping from the ears or nose. An interesting condition was found in a case showing a fracture of the left posterior fossa. The fracture had apparently lacerated the lateral sinus and a large extradural blood clot had formed compressing the left occipital lobe, until it presented a concave surface. Extradural hemorrhage occurred to a greater or lesser degree in fifteen per cent. of the cases.

Hemorrhage into the pia arachnoid occurred in twenty seven per cent. of the cases, and in some instances was very extensive and considerable in amount, appearing to be sufficient to produce increased intracranial pressure. Hemorrhage into brain substance occurred in forty-seven per cent. of

the series. In many cases this was extensive, and in others present as scattered punctate areas. It was noted in connection with the occurrence of hemorrhage that it was present not only over the area of fracture, but also not infrequently at the opposite portion of the brain. For example, in a case in which a fracture of the left posterior fossa was found there was laceration of and hemorrhage into the right frontal and right temporal lobes. Another case in which the posterior fossæ were involved, showed hemorrhage into the anterior parts of both frontal lobes. Injury to the various cranial nerves could not be determined except as the fracture definitely crossed the canals through which they make their exit from the skull.

The periods of time elapsing between injury and death were investigated. In a majority of those cases which were not autopsied the patients were killed almost instantly, the cranial injury, such as a crushed skull, being an evident cause of death. Of the seventy-four cases which were autopsied thirty-three patients, or 44.7 per cent., died instantly or lived less than one hour; nineteen, or 25.8 per cent., lived one to ten hours; six, or 8.1 per cent., lived ten to twenty-four hours; sixteen, or 21.6 per cent., lived more than twenty-four hours.

This last series of sixteen patients surviving more than twenty-four hours includes those offering the possibility of surgical aid if it was considered advisable. The series has been divided into three groups.

Group I. Contains eight cases in which meningitis developed, six cases showing streptococci in smear or culture. Of these one patient lived three days, one four days, one five, one eight, one fourteen, one thirty-five, one thirty-six, and one forty-two days. In two of these cases abscess cavities were found, one of the patients surviving thirty-six days.

Group II. Contains two cases in which there was definite cerebral injury and in which lobar pneumonia developed, one patient living three, the other eight days.

Group III. Containing six cases, is of special interest for these offer the possibility of surgical interference in some instances.

CASE I.—Male, aged fifty-two, lived two days, and at autopsy showed fracture of the right orbital plate and right middle fossæ with marked subdural hemorrhage.

CASE II.—Female, aged sixty-five, lived five days and showed a large, partly organized, blood clot beneath the dura at the site of fracture and punctate hemorrhage scattered through the brain.

CASE III.—Male, aged forty-eight, survived seven days and showed punctate hemorrhage in the corpus callosum and hemorrhage into the pia arachnoid.

CASE IV.—Male, aged forty, lived seven days and was found to have a large clot in the left posterior fossa, at site of fracture, compressing the brain to a marked degree.

CASE V.—Male, aged forty-two, lived nine days, and showed at autopsy marked hemorrhage into and laceration of right temporal lobe over region of fracture.

CASE VI.—Male, aged four, surviving twelve days, showed laceration of and hemorrhage around left temporal lobe.

CONCLUSIONS.

1. Traumatic injury to the brain of sufficient severity to cause death may occur without fracture of the cranium.

2. Fractures of the skull in children tend to be more localized and less radiating than in the adult.

3. In the series of cases studied, in order of frequency, the vault and base together rank first, the base alone second, and the vault alone last.

4. Fracture of the anterior fossæ occurred more frequently in this series than fracture of the other fossæ.

5. Fractures may often be seen or felt in a scalp wound, or may be exposed by enlarging the wound, or by exposing the cranium beneath the area of traumatism.

6. Fractures usually start at the point of impact and tend to travel downward to the base, not being deflected by sutures.

7. In fifty-nine per cent. of cases of fracture of the middle fossæ hemorrhage from the ear was observed to have occurred.

8. Subconjunctival hemorrhage may be present without fracture, and absent in cases of fracture of the anterior fossæ, but in the majority of cases indicates fracture of anterior fossæ across the orbital plate.

9. Injury to brain tissue may occur at the pole of the brain opposite the point of impact.

10. Laceration of the brain occurred in twenty-eight per cent. of the cases.

11. Meningitis occurred in 10.9 per cent. of the cases, and in the majority of these the streptococcus was found.

Stability and Destruction of the Salicyl Group.

—P. J. Hanzlik and N. C. Wetzel (*Journal of Pharmacology and Experimental Therapeutics*, September, 1919) found that solutions of sodium salicylate gradually deteriorate on standing, the loss being greater with weaker solutions. Solutions containing a preservative, such as chloroform, and free from fungi do not deteriorate. Treatment of salicylate with hashed animal organs results in considerable loss of the drug, due in part at least to destruction of salicyl. About twenty per cent. of salicylate administered to normal human subjects is destroyed, since the loss cannot be accounted for in the sweat or feces or by retention. The destruction in animals—dog and cat—is even greater, amounting to about one half of the salicyl administered. The destruction of salicylate is markedly increased—about forty per cent.—in febrile conditions in man, drug habitues—alcohol and morphine—nephritis, and exophthalmic goitre. The destruction does not appear to be due to any given organ, such as liver, as the excretion in certain liver diseases in man and in hepatic degeneration in animals was within the normal range. The increased capacity for destruction is ascribed to the general increase in catabolism of febrile conditions and exophthalmic goitre, and to retention with prolonged exposure to the destructive action of the tissues in nephritis.

CLINICAL NOTES FROM FRANCE.

BY CHARLES GREENE CUMSTON, M. D.,
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THE SPLENORENAL THEORY OF PAROXYSMAL
HEMOGLOBINURIA.

The part played by the kidney in paroxysmal hemoglobinuria has been and is a moot question and many theories have been advanced, that of hemolysis being perhaps the best known. For this reason I shall refer to the splenorenal theory held by the French school or at least by a number of its members.

The renal theory of paroxysmal hemoglobinuria cannot be regarded as exclusive because such a conception does not take into consideration the hematological data so far obtained. Without speaking of the hypercholemia which accompanies the paroxysms, no one can ignore the question of globular fragility and Donath and Landsteiner's test, which, regardless of their inconstancy, have been verified by a large number of writers. Inversely, it is known that hemoglobinemia is not constant in paroxysmal hemoglobinuria and one-sixtieth, one-fifty-seventh, or one-fiftieth of the total mass of hemoglobin—which appear to be the necessary quantities for this body to enter the urine—are far from being found in dissolution in the plasma. It is also known that Donath and Landsteiner, as well as Silvagni of Bologna, have observed, during the evolution of general paralysis, hemolysins in the serum when the subjects had an attack of hemoglobinuria, and the same fact has also been noted by Gilbert, Chabrol, Foix, and Salin in old syphilis.

It is certain that globular fragility and the finding of hemolysins are alone in themselves not enough to explain the mechanism of hemoglobinuria, because it would yet remain to prove the presence of some indispensable intermediary, namely, the hemoglobinemia. It would seem far more logical to consider each conception and, accepting a mixed theory, to attribute to each of the various elements the part belonging to it. With this end in view Gilbert, Chabrol, and Benard have proposed the splenorenal theory.

The patient observed by Gilbert and Chabrol presented *in vivo* a globular fragility from the action of cold to hypotonic solutions, while the red blood corpuscles exposed *in vitro* to a temperature of 0° C. (32° F.) retained their normal resistance. In these circumstances the influence of an organic factor had to be invoked, which could not be demonstrated in the circulating blood because even with Donath and Landsteiner's test the serum of the patient offered no trace of hemolysins. This organic factor became manifest in a second case observed by Gilbert, Chabrol, and Benard in which Donath and Landsteiner's test was distinctly positive. By the action of cold the serum hemolyzed not only its own corpuscles but those of two normal subjects. However, these hemolysins that were found in the serum did not seem to be fixed in the circulating red blood corpuscles which, inversely from those of the first case, offered an absolutely normal resistance. But it is to be remarked that

the hematological contrast existing between these two cases is frequent in paroxysmal hemoglobinuria. Donath and Landsteiner's test is often negative and Czernecki estimates at thirty-six per cent. the number of cases in which this phenomenon is absent. On the other hand, when this test is negative an unusual fragility of the red blood corpuscles is quite common. A low resisting power of the red cells to hypotonic solutions has been verified by Courmont, Morel, André, Achard, and others, and in some patients it has been found associated with a special degree of fragility of the red cells in relation to normal sera. It now seems impossible to regard any one of the reactions furnished by blood analysis as the pathognomonic sign of essential paroxysmal hemoglobinuria, and in all the published cases the evolution of the paroxysms continued uniformly and retained its classic character to the end.

The intervention of a splenic factor realizes the synthesis of the data so far obtained. Gilbert and Chabrol have shown that the spleen in the normal state produces hemolysins which remain stored up in its parenchyma and destroy old and changed red cells. In pathological states autohemolysis becomes exaggerated and manifests itself in the circulating blood by cell fragility or hemolysinemia. These two evidences of splenic activity appear equivalent, and in reality they are indifferently mentioned in the published cases of paroxysmal hemoglobinuria.

Unquestionably, much remains to speculation. What, for example, is the cause of this particular activity of the spleen which presides over the secretion of hemolysins and cell fragility? Is it a special morbid activity to which syphilis—so frequently noted in the patient's antecedents—may not be a stranger? Or rather should it be admitted that red blood corpuscles, tainted by this infectious agent, provoke an intensified production of antibodies for their destruction in the hematopoietic organs? Either one of these conceptions is the more justified by the fact that Donath and Landsteiner's test is far from belonging only to essential paroxysmal hemoglobinuria. Gilbert and Chabrol have verified it in syphilis whose urine never showed the slightest trace of hemoglobin, and this is in conformity with the observation of other writers who have found it both in tabes and general paresis.

The mechanism of paroxysm is a more delicate question, in which cold seems to play the all important part. Beside the hematic antibodies, account must be taken of antihemolyzing substances which, during the interval of the paroxysms of hemoglobinuria, reestablish the humoral equilibrium. It is by breaking this equilibrium that cold seems to provoke the attack of hemoglobinuria, and, according to the hypothesis of Widal and Rostaine, it is possible that the intervention is directed toward the disappearance of these antihemolysins which momentarily prevent the destruction of the red blood corpuscles.

As a consequence of the increased splenic activity, made evident by an important destruction of red cells, the liver intervenes. This gland is also a destroyer of the red cells, as is proved by the decrease in the number of red cells from the blood

of the suprahepatic veins as compared with that of the portal vein, and the presence of ochre pigment in the liver at the time of marked destruction of red cells and of granulations contained in the leucocytes in the hepatic capillaries, which give the reaction of ferric salts. In hemoglobinuria the rôle of the liver is to collect the hemoglobinic materials which largely come from the spleen; it transforms this detritus into biliary pigments and thus throws out a modified hemoglobin possessing new coloring properties. Although the larger portion of this pigment is thrown into the intestine, a small portion is absorbed by the circulation and gives rise to icterus which is usually accompanied by a rather painful hepatic hypertrophy.

Lehsen has noted a temporary enlargement of the liver and spleen during the intervals of the paroxysms, accompanied not by hemoglobinuria but by an attack of icterus, which leads the writer to suppose that in this case the liver and spleen suffice to destroy the hemoglobin which is therefore not eliminated by the kidney. On the other hand, the cases of Gilbert, Chabrol, Foix, Salin, and Lévy-Valensi showed that the liver was normally enlarged and that the subicteric tint persisted during the interval of the paroxysms. In a case of simple acholuric icterus with paroxysmal hemoglobinuria, Gilbert and Chabrol found that the usual percentage of cholemia was 1/16,000 bilirubin, while normally it should be 1/36,500, and forty-eight hours after Ehrlich's test this percentage had attained 1/5,000 bilirubin, while at the same time the subicteric tint of the integuments and conjunctivæ had distinctly increased.

All these data show that during an attack of hemoglobinuria, as a result of the cell destruction, a large amount of blood pigment is set free, increasing the work of the liver, which becomes hypertrophied and painful. The large production of pigment elaborated by the hepatic gland results in an absorption of these pigments in the circulating blood, and as a natural consequence the integument and mucosæ assume the yellow hue always met with in these cases. It is only when the liver becomes overloaded by materials derived from massive destruction of the red cells in the blood at the time of the paroxysm that it becomes insufficient for their transformation into biliary pigments and the morbidly changed kidney allows the hemoglobin or its products of transformation to pass into the urine. This is so true that in the event of an aborted attack or a mild one experimentally produced, neither hemoglobin nor pigments can be detected in the urine with the most sensitive tests, while a slight enlargement of the liver is found, the organ becomes painful, and when a certain degree of enlargement has been reached icterus occurs. If the previous history of these patients is carefully investigated, it is not at all uncommon to note that the appearance of the icterus preceded by some time the first paroxysm of hemoglobinuria.

As far back as 1901 Gilbert and Lereboullet drew attention to this point by connecting certain cases of paroxysmal hemoglobinuria with the renal form of simple acholuric icterus, since which time many confirmatory data have been acquired, no matter

what term may have been employed for this clinical association. All these cases were examples of an icterus from hyperhemolysis, which represents the soil in which paroxysmal hemoglobinuria undergoes its evolution, and according to the various manners of red cell destruction in the subject is regarded as having a simple acholuric icterus without red cell fragility, an acholuric icterus with fragility (the so-called hemolytic icterus) or an acholuric icterus with hemoglobinuria when the renal factor intervenes only at the last.

In order to conclude with the syndrome under consideration mention should be made of the renal factor in paroxysmal hemoglobinuria. The kidney may intervene secondarily, either for the elimination of the hemoglobin previously dissolved in excess in the blood serum, if the reality of hemoglobinemia be accepted, or for completing the work of cell destruction commenced by the hematopoietic organs. The red cells rendered fragile by the hemolysins of splenic origin undergo a complement of change in the renal parenchyma which ends in the liberation of their hemoglobin. This renal hemolysis takes place all the more readily because under the influence of cold the renal circulation, being in a state of congestion, is slowed, and as renal congestion may bring about numerous glomerular effractions it can be conceived that in certain paroxysms a minute hematuria may become added to the simple hemoglobinuria present. Thus are reconciled in the same theory the data resulting from comparative examination of the blood and urine.

A renal element becomes added to the effects of splenic interference the evidence of which is to be found in cell fragility and Donath and Landsteiner's test, and the complex syndrome of paroxysmal hemoglobinuria becomes realized. The theory also takes into consideration the morbid circumstances in which the so-called essential hemoglobinuria undergoes its evolution. On account of the spleno-hepatic element the latter affection ceases to be an autonomic disease. It becomes attached to its usual clinical ascendants—simple acholuric icterus—and with them represents as many members of the same pathogenic family as are offered by hyperhemolysis.

A New Needle for Intravenous Administration.—T. L. Birnberg (*Minnesota Medicine*, November, 1919) having found the superior longitudinal sinus the route of choice for the administration of salvarsan in small children, he has devised a special needle for the purpose. This was prompted by the danger of transfixing the sinus, with the consequent danger of leakage of salvarsan within the subdural space. The needle is simply an 18-20 gauge needle upon which is mounted a sliding bronze sleeve which can be set at any distance from the point of the needle by a set screw; furthermore, the bevel is made of 45 degrees so as to avoid transfixation of the sinus. This needle may be used for intravenous medication, administration of diphtheria antitoxin, and is valuable in obtaining blood for Wassermann tests and for blood cultures.

Editorial Notes and Comments

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RECONSTRUCTION IN PEACE

One very good result of medical and surgical experience in the war should be that patients will be kept under their doctor's care until they are restored to their previous good health, not merely until their symptoms have returned to normal and have continued in that state for some time. It has now become perfectly clear that the aftertreatment of a great many diseases is extremely important for the prevention of serious developments later on. In many patients who recover perfectly from pneumonia, so far as the physical symptoms of that disease are concerned, the pulmonary tissues continue to be extremely sensitive to other infections, and serious chronic conditions may develop unless the patient is kept under observation and the lungs properly cared for. Reconstruction is needed in the real sense of that word based on army experience. The government's insistence on restoration to normal, or a definite estimation of what is lacking, has brought physicians to a realization of the many things that should be done for patients after physical recovery has taken place.

Dr. Frank Billings, of Chicago, in an article on Physical Reconstruction Applied to the Treatment of Pulmonary Tuberculosis (*Journal A. M. A.*, October 4, 1919) emphasizes the necessity for the skilled aftertreatment of consumptives. "The physician and surgeon must continue to have an interest in the convalescent patient and to prescribe the necessary measures and proper doses to insure restoration of function or to establish it as nearly

as the nature of the disability permits." This does not mean, of course, that tuberculous patients, in the active stages of the disease, should be encouraged to exercise or do anything else that would hinder the course of recovery, but just as soon as the active symptoms have subsided and it is sure that the inactive stage has been reached, reconstruction treatment should be applied. "Long physical rest begets mental unrest and discontent" and many interesting occupations may be suggested which will give new tone to the tissues and make the period of convalescence much less disturbing than it would be otherwise.

Doctor Billings accentuates the fact that tuberculous patients may become so interested in some form of occupational therapy that they may actually be trained to some new mode of making a living that will prove less likely to cause a recurrence of the disease than if they went back to the old occupation and environment in which the disease developed. Many a city dweller could be taught intensive gardening, greenhouse work, farming, stock raising, or poultry farming and thus perhaps make a better living than before and at the same time have an occupation in which there would be much less danger of the redevelopment of his disease. Dr. Philip King Brown has pointed out that training in pottery and tile making actually insures a permanent cure in cases of tuberculosis that at best would be called arrested if the patients were allowed to go back to their previous occupations. At the same time this makes a lucrative occupation and a sanatorium may become practically self-supporting by taking advantage of such opportunities to apply its patients to trades that are at once satisfying to the mind and curative to the body, while the patients are doing genuinely productive work. Doctor Knopf has emphasized this in arrested cases of tuberculosis among soldiers in an extremely practical way.

In a word, physicians must not only cure their patients' immediate ailments, but must as far as possible help them to the maintenance of health in the future in so far as their affection may prove disturbing in its sequelæ. It is quite common to find that serious nervous breakdowns occur in people who, having suffered from typhoid fever in a rather severe form, insisted on getting back to their ordinary occupation with just as little delay as their physical weakness demanded. It is very probable that so serious an affection as typhoid fever requires months of rest or at least of abstention from any occupation that would be rather ex-

acting or confining. In such cases the interest of the patient in some quiet outdoor occupation that would keep him from being impatient and satisfy his immediate interest would make an extremely valuable reconstruction work. The development of tuberculosis in adults has been noted after typhoid fever with sufficient frequency to make it reasonably sure that a latent focus of tuberculosis has been given an opportunity to awaken into activity during the disturbing period of loss of weight occasioned by the typhoid fever. In such a case definite reconstruction would be extremely valuable as a prophylactic against serious developments. In children measles and whooping cough are not infrequently followed by pulmonary tuberculosis and sometimes children are allowed to go back to school too soon after recovering from these affections for them to be quite safe from the possibility of this sequelæ, as their lungs have been subjected to a very severe strain. Here too, then, reconstruction work would be valuable.

Manifestly a policy of reconstruction in medicine should remain as one of the effects of the war. Preventive medicine is the order of the day and reconstruction is the best possible prophylactic of complications and sequelæ that might prove serious. The suggestion from a physician as to change of occupation would often be taken if properly emphasized and above all the advisability of living in the country and working in the open would often lead to a migration from the city that would be extremely valuable for future health. There are so many motives prompting people cityward at the present time that any factor that would counteract this and even add a little to the "back to the land" movement is well worthy of consideration. The physicians' part in this period of reconstruction must be to make people as efficient as possible for their own and the community's good with the prospect of prolongation of life for as long as the physical constitution will permit.

NEUROBIOTAXIS.

A brief but most interesting chapter in the history of the evolution of the nervous system appears in Dr. C. U. Ariens Kappers's study of the Phenomena of Neurobiotaxis as Demonstrated by the Position of the Motor Nuclei of the Oblongata (*Journal of Nervous and Mental Disease*, July 1919). It is sketched with the clearness of careful anatomical study and interpreted with the appreciation which belongs to the true psychologist. Kappers's interest in his study is to carry the theory of the determination of the position taken by gan-

glion cells out of the field of purely mechanical or of mere chemotactic explanation, because the former does not in reality give an explanation and the latter seems to be held on insufficient grounds experimentally. Both only displace the real question at issue.

Kappers recognizes as the most important principle of interpretation the displacement of nerve cells in the direction of stimulation, which Cajal has recognized but not sufficiently explained. He has adopted for this the term "neurobiotaxis" because he considers it as occurring in the normal processes of nervous action, that is, under the influence of reception and propagation of stimuli. His long series of studies has convinced him that the shifting of the cell can be explained only by a taxis or tropism exercised by the centres from which the majority of stimuli proceed to the cell and its dendrites.

He proceeds in this article to illustrate his theory by a brief discussion, supported by graphic plates, of the comparative position through ascending animal forms of the various motor nuclei of the oblongata, and to state thus briefly the support that these instances give to his theory already forced upon him by previous studies. One or two of the illustrations may be mentioned among those which are presented. For example, he finds the *ventral nucleus vagus* parallels in its development that of the larynx muscles and that further in its development the formation of a centre for sound production in birds is accompanied by the shifting of a certain small number of vagus cells in a ventral direction to approach the dorsal cells of the hypoglossus column the *nucleus intermedius X* and *XII*, by which the syrinx of the birds is innervated. The motor cells are here shifted toward one reflex centre, the *nucleus intermedius*, the sound being produced in birds by the conjoined action of the larynx and syrinx musculature. One of the most evident examples of this principle of neurobiotaxis is the displacement of the motor root cells in a frontal and dorsal direction in the formation of the mammalian tongue. Here they come gradually under the influence of the sensory innervation of the mouth, as the stimuli which act on the body wall are removed from them.

These studies are in line with those of Bok which have been made familiar under his term "stimulogenous fibrillation" of the axones in the study of development through functional impetus. "So we find," states Kappers, "the interesting fact that the laws which determine the material arrangements in nervous systems are strictly homologous to the laws of psychology."

BROWN BREAD AND BUTTER.

Calories have become somewhat of a fetish in estimating the nutritive value of a diet. It is an undoubted fact, and one that is not properly appreciated even by the medical profession, that a diet having a caloric content which is in scientific and theoretical accordance with the views of certain dietetic authorities, is not necessarily a nutritive diet. There are many other points to be considered and to state that a diet must be nutritious because its caloric value is exactly correct, is not infrequently misleading. Granted that a certain standard of caloric value of food has been established, this does not render a diet conforming to the standard adapted to each and every individual. Calories take no account of refuse or waste of food, as bones or gristle or the useless parts of vegetables. A diet is not calculated upon "utilizable calories" for no such list exists at the present time.

The main objection, however, to a blind adherence to a caloric standard as a guide of what to eat and what not to eat, is based on the neglect to which the vitamins as accessory food factors are subjected. These are essential to the preservation of health and to the maintenance of growth. Fats, for instance, are necessary to health, owing to their vitamin content. Some fats are rich in vitamins, others are deficient, and obviously those which are the richest are the most nutritive. Butter, for instance, is rich in vitamins and consequently is the best, or among the best of the fats to be used for human consumption.

Professor W. D. Halliburton, lecturing recently on butter and margarine before the physiological section of the British Medical Association, insisted that butter was superior by far to margarine, in that margarine was lacking in vitamins. If margarine had to be used he suggested that it should contain a certain proportion of animal fats which contained vitamins.

For the same reason that butter is more nutritious than margarine, brown bread is more nutritious than white bread, that is, because of the vitamin content of butter and brown bread. White bread made from highly milled flour is lacking in vitamins. The grain is entirely denuded of the husk which contains the vitamins, and although white bread is more palatable it is not so nourishing nor so conducive in many respects to the maintenance of health as brown bread or as bread made from a mixture of white and brown flour. In addition to the vitamin content, brown bread provides work for the jaws and incites the salivary glands to action and from its composition exerts a gently appe-

riant effect. A good deal of the prejudice which obtains against brown bread is due to bad cooking. When it is well made it is palatable. In short, brown bread and butter are greatly to be preferred to white bread and margarine, however pleasing these may be in appearance and taste.

Too much faith should not be placed in the caloric value of a diet. A well balanced diet contains a sufficient caloric value and a satisfactory vitamin content. The ideal diet is nourishing, appetizing, and satisfying, that is to say, it is well assimilated, by flavor and odor it excites appetite, and it is not deficient in bulk. Of course it must be adapted to circumstances, climate, occupation, and so on, but it cannot be termed a thoroughly nutritious and wholesome diet if it does not contain a sufficient amount of vitamins. Brown bread and butter, to a limited extent, are an excellent example of such a diet.

CHRONIC PATHOLOGICAL CHANGES IN
THE PROSTATE IN LONG STANDING
STRICTURE.

When the prostate gland follows a normal evolution it does not undergo hypertrophy in elderly subjects. On the contrary, it is more prone to sclerosis and atrophy, as is the rule for all viscera in subjects past middle age. The so-called senile hypertrophy of the prostate is a tumor and does not represent the normal evolution of the gland.

Stricture of the urethra is an extremely frequent cause of chronic prostatitis. The lesions of this morbid process, favored by stricture of the urethra, follow an evolution with symptoms which rarely give rise to any great annoyance to the patient. Attention is not directed to the process therefore which later on results in profound lesions of the prostate.

A chronic prostatitis may tend toward spontaneous cure with the formation of sclerotic tissue. According to circumstances this sclerosis—partial or generalized—will bring about either a hypertrophic prostatic cirrhosis, an infrequent result, or an atrophy of the gland whose ultimate phase is the progressive disappearance of the former gland.

If instead of tending toward a cure, the chronic infection extends more and more, at the same time increasing in virulence, abscesses of a latent type are produced, which destroy a more or less considerable portion of the gland, or the chronic suppuration, of which it is the seat, will end in causing it to disappear completely. In the prostatic pockets thus created secondary phosphatic calculi form, the result of stagnation of urine.

These prostatic lesions are the cause of various disturbances either of micturition—pollakuria, acute or chronic retention, incontinence—or of the genital function which at the age of these patients is very greatly diminished or occasionally completely abolished. Finally, as in all prostatic processes, both the general health and nervous functions suffer.

The treatment should first of all be directed to the disturbances of micturition resulting from the stricture. When the calibre of the urethra has been restored the chronic prostatitis must be dealt with by the usual classic measures. If abscesses are present in the gland they should be opened and drained through a perineal incision. Should sinuses develop from a spontaneous opening of these pus collections, the prostate itself must be cleaned out or even an atypical prostatectomy may be indicated.

News Items.

Distinguished Service Medal Awarded.—The Distinguished Service Medal of the United States was awarded on November 6th to Surgeon Vice Admiral Sir Robert Hill, medical director general of the British Navy.

Typhus Claims Six Out of Ten in Igdır.—Sixty per cent. of the entire population of the Igdır district of Armenia died in the typhus epidemic, according to reports sent to headquarters in New York by workers of the Near East Relief. Starvation is said to be one of the great contributing causes of this enormous death rate.

Army Hospital Train Carries Tuberculous Soldiers.—U. S. Army Hospital Train No. 4, one of the hospital trains with standard Pullman equipment operated by the army medical department, left New York November 4th on its last trip to Denver, Colo. The travelers were tuberculous patients invalided home, who had been at the Sea Board Military Hospitals, Otisville, N. Y.

Havana Public Officials Here.—A number of public health officials from Havana recently visited the Department of Health of the City of New York for information as to its various functions. They reported that the people of Cuba, though interested in the prevention of malaria and yellow fever, are apathetic toward more individual problems of sanitation such as child care, home sanitation, and tuberculosis.

Medical Psychology at Columbia.—A series of lectures on psychology as applied to medicine has been instituted at Columbia University by the Students' Premedical Association. The lectures will deal with various phases of psychology which are of use to the physician and their application, including character analysis, as well as the abstract principles of psychology. The complete list of speakers has not been decided upon, but the opening address will be made by Professor A. T. Poffenberger, of the department of psychology.

American Physicians Attend British Congress.—Dr. Charles J. Hatfield, of Philadelphia; Dr. David R. Lyman, of Wallingford, Conn., and Dr. William Charles White, of Pittsburgh, were in attendance at the British Conference on Tuberculosis which was held in London, October 16th to 18th.

One Hospital with No Deficit.—Though nearly every hospital in New York and doubtless many elsewhere—has a deficit, the yearly report of the Jamaica Hospital, Long Island, shows that that institution has succeeded in meeting all its obligations. The daily cost for each patient was \$3.18.

Portuguese Army Health Statistics.—The Portuguese army in France during the war numbered 75,000 men, according to statistics given in the *Presse médicale*. Of these 6,400 were wounded, 2,000 of whom died, and 460 killed outright; 300 died of disease. There was not one case of variola and only five cases of death from typhoid fever.

Dermatologists Hold Anniversary Meeting.—The New York Dermatological Society, which was founded in 1860 and is the oldest dermatological society in existence, celebrated its fiftieth anniversary with a dinner at the Yale Club, New York, Saturday evening, November 8th. Dr. George Henry Fox, one of its oldest members, addressed the society in a reminiscent vein.

National Tuberculosis Association.—The annual meeting of this organization for 1920 will be held at St. Louis April 22nd to 24th, with headquarters at the Statler Hotel. The dates immediately precede the meeting of the American Medical Association at New Orleans and immediately follow the meeting of the National Conference of Social Work at New Orleans, so that members attending either of the latter conferences can stop at St. Louis on their way to or from New Orleans.

Brooklyn Gynecological Society.—The annual meeting of this society was held Friday evening, November 7th, under the presidency of Dr. Eliot Bishop. The paper of the evening was read by Dr. John B. Swift, Jr., of Boston, on Indications for Cæsarean Section. A general discussion followed which was opened by Dr. R. H. Pomeroy, of Brooklyn. Dr. William Peiffer, of Brooklyn, reported a case of Cæsarean section and hysterectomy for rhachitic pelvis and Dr. Eliot Bishop reported a case of unusual pelvic tumor. Officers for the ensuing year were elected.

Health Centres for All New York Boroughs.—Plans are under consideration by the Department of Health of the City of New York for the establishment of health centres in all boroughs of the city. Each of the new centres is to be a miniature health department where advice will be furnished on any subject relating to public welfare and where the various functions of the health department will be coordinated. Each of the five borough offices has already been equipped with a clinic where vaccinations are performed, food handlers examined, and mothers can go for advice. An expert from each of the bureaux—preventable diseases, child hygiene, food and drugs, vital statistics, and the sanitary bureau—has been assigned to the various borough offices.

Mississippi Health Officers.—At the annual meeting of the Mississippi State Public Health Association, held in Jackson October 22nd and 23rd, the following officers were elected: President, Dr. William H. Frizell, Brook Haven; vice-presidents, Dr. Thomas E. Hewitt, Amite County; Dr. Paul G. Cope, Columbia, and Dr. Thomas L. Underwood, Monroe County; secretary-treasurer and executive officer, Dr. Waller S. Leathers, University. The meeting for 1920 will be held in Jackson.

Colorado State Medical Society.—The Colorado State Medical Society held its annual meeting October 7th to 9th at Denver, at which time the following officers were elected: President, Dr. F. H. McNaught, of Denver; president-elect, Dr. F. R. Spencer, of Boulder; vice-presidents, Dr. W. S. Chapman, of Walsenburg; Dr. Josephine N. Dunlop, of Pueblo; Dr. G. C. Carey, of Grand Junction; Dr. B. Woodcock, of Greeley; secretary, Dr. Crum Epler, of Pueblo; treasurer, Dr. W. A. Sedwick, of Denver.

American Association of Railway Surgeons.—The sixteenth annual meeting of this society was held in Chicago, October 12th to 17th, under the presidency of Dr. John P. Kaster, of Topeka, Kansas. The following officers were elected to serve for the ensuing year: President, Dr. Robert McConaughy, of York, Neb.; first vice-president, Dr. Isaac F. Harter, of Stronghurst, Ill.; second vice-president, Dr. Paul E. Gardner, of New Hampton, Iowa; third vice-president, Dr. George W. Thompson, of Winamac, Ind.; treasurer, Dr. Henry B. Jennings, of Council Bluffs, Iowa (reelected); secretary, Dr. Louis J. Mitchell, of Chicago (reelected); executive board, Dr. Samuel C. Plummer, of Chicago, and Dr. David Y. Roberts, of Louisville.

Brooklyn Diagnostic Institute.—An institution which aims to bring to the general practitioner the aid of skilled diagnosis has recently commenced its activities. The Brooklyn Diagnostic Institute was organized a short time ago to hold at the command of the medical practitioner the highest order of specialized talent, to the end that he may avail himself of such expert counsel as the nature of a particular case may require. The institute occupies a five story building at 867 St. Marks Avenue, Brooklyn, and is equipped with laboratories, examination rooms, conference rooms, and libraries. The directors of the various departments are as follows: Medicine and endocrinology, Dr. Jacob Gutman; radiology and radiotherapeutics, Dr. William H. Stewart; biochemistry and metabolism research, Dr. Max Kahn; surgery, Dr. Benjamin T. Tilton; cardiology, Dr. Louis Faugères Bishop; bacteriology and pathology, Dr. E. C. Schirmer; serology and neurology, Dr. D. M. Kaplan; psychiatry and neuropathology, Dr. Aaron J. Rosanoff; gynecology, Dr. Arnold Sturmndorf; laryngology and otology, Dr. Wolff Freudenthal; ophthalmology, Dr. James H. Andrew; cystoscopy and urology, Dr. Victor H. Pentlarge; proctology, Dr. Martin L. Bodkin; orthopedics and physiotherapy, Dr. S. Kleinberg; Dr. Alfred A. Richman, associate; dermatology, Dr. William S. Gottheil; stomatology, Dr. Bernard F. Shea; pharmacology, Dr. O. Victor Limerick.

Samuel D. Gross Prize.—The Philadelphia Academy of Surgery announces that essays will be received in competition for the Samuel D. Gross prize of \$1,500 until January 1, 1920.

The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subjects in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22d St., Philadelphia," on or before January 1, 1920.

Nutritional Research.—The National Research Council has formed a special committee on food and nutrition problems which will devote its attention to important problems connected with the nutritional values of food, for both human and animal use.

The committee, with the support of the council, is arranging to obtain funds for the support of its researches, and will get under way, just as soon as possible, certain specific investigations already formulated by individual committee members and subcommittees. These include studies of the comparative food values of meat and milk and of the conditions of production of these foods in the United States, together with the whole problem of animal nutrition; the food conditions in hospitals, asylums, and similar institutions; the nutritional standards of infancy and adolescence; the formation of a national institute of nutrition, and other problems.

The members are: Carl Alsberg, chief of the Bureau of Chemistry, Department of Agriculture; H. P. Armsby, director of Institute of Animal Nutrition, Pennsylvania State College; Isabel Bevier, director of department of home economics, University of Illinois; E. B. Forbes, chief of the department of nutrition, Ohio Agricultural Experiment Station; W. H. Jordan, director, New York Agricultural Experiment Station; Graham Lusk, professor of physiology, Cornell University Medical College; C. F. Langworthy, chief of office of home economics, Department of Agriculture; E. V. McCollum, professor of biochemistry, School of Public Health and Hygiene, Johns Hopkins University; L. B. Mendel, professor of physiological chemistry, Yale University; J. R. Murlin, professor of physiology and director of department of vital economics, University of Rochester; R. A. Pearson, president of Iowa State Agricultural College; H. C. Sherman, professor of food chemistry, Columbia University; A. E. Taylor, Rush professor of physiological chemistry, University of Pennsylvania, and A. F. Woods, botanist, president of Maryland State College of Agriculture.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 779)

Confusion of cerebrospinal meningitis with rheumatic fever is a possibility owing to the fact that in some instances of the latter disease the vertebral articulations are involved. As a result of this condition, pain as well as rigidity of the back muscles may exist, with severe pain when any movement of the neck is attempted. Especially may such a case prove confusing if, notwithstanding the actual presence of rheumatism, the joints of the extremities are not affected.

In another group of cases, again, cerebrospinal meningitis may simulate rheumatic fever in that involvement of joints is associated with it. According to Fischer, 1914, the joints usually exhibit swelling in cerebrospinal fever, while of late the frequency of meningococcic suppurative arthritis as a complication of meningococcic infection has been emphasized. Thus, Netter and Durand, 1915, reporting on 200 cases of cerebrospinal meningitis, recorded eleven instances of joint involvement, comprising 5.5 per cent. of the entire series of cases. This complication occurred, in fact, more frequently among their patients than any other except otitis. While complicating arthritis is not likely to set in until after symptoms definitely indicating meningitis have appeared, there is nevertheless a possibility of the physician being misled unless care has been taken in examining the patient.

In most instances differentiation should readily be practicable through the presence in meningitis of such typical manifestations as severe headache, hyperesthesia, Kernig's sign, pupillary derangements, etc. Lumbar puncture and examination of the fluid thus obtained for evidences of meningeal involvement will definitely separate the two conditions.

In the treatment of meningococcic arthritis, the usual specific serum treatment should prove serviceable in alleviating the condition unless a well advanced suppurative process already exists. While early serum treatment is doubtless most effectual, yet even at the frequently late period in the course of the disease at which arthritis becomes established beneficial results may reasonably be expected. Flexner has, indeed, pointed out that as long as the diplococcus of meningitis is present in the cerebrospinal fluid the serum continues more or less useful. In a case referred to by C. H. Dunn, in which serum therapy was not instituted until the late chronic stage, improvement promptly began after a single dose of serum and the patient made a rapid convalescence. That complete recovery from the joint condition does not always occur in the ab-

sence of treatment was shown in a case reported by Netter and Josias, in which ankylosis of the shoulder followed. Injection of antimeningococcic serum directly into affected joints was found by Netter and Durand to shorten manifestly the course of the joint condition, the effusion being thereafter often reabsorbed within a day or two. In five cases a sterile purulent exudate in the joints was found, the arthritis in these patients having appeared usually after the meningeal involvement had already yielded to intraspinal serum treatment.

In occasional instances, cases of pellagra have been diagnosed as rheumatism. There are sometimes intense and persistent pains in the extremities, especially the lower limbs, in this disease, and the skin involvement is at times accompanied by edema, which might, in certain locations, give the impression of a joint disturbance on superficial observation. In cases to any degree typical, however, there should be little difficulty in distinguishing pellagra from rheumatism. The skin is likely to exhibit a markedly symmetrical erythema or actual dermatitis, involving especially the dorsal aspect of the forearms, hands and feet, as well as the bridge of the nose and sometimes the cheeks and forehead. The clinical picture also includes disturbances of the alimentary tract and nervous system which would be unusual in rheumatism, such as sore mouth, indigestion and pyrosis, vomiting and sometimes diarrhea, marked languor and fatigability, sleeplessness, feelings of apprehension, vertigo, headache, and in more advanced cases changes in the reflexes, tremor, paresthesias, spasms, paralyses, psychoses and delirium, and even dementia.

For the treatment of pellagra no specific remedy is available, and the measures used are chiefly roborant and symptomatic. Prolonged rest in bed has been considered an important factor. A radical change of diet, with copious use of beef, milk, eggs, fresh fish, oysters, wild fowl, vegetables, nuts, etc., is considered helpful, as is also a change of climate. In the drug treatment, sodium cacodylate, quinine hydrobromide, picric acid, thymol, and sodium bicarbonate have been most frequently recommended.

(To be continued.)

Vaccine Treatment of Arthritis, Rheumatism, and Neuritis.—H. Warren Crowe (*Lancet*, October 11, 1919) discusses the causes of failure of the vaccine treatment of these conditions under six headings: 1. False diagnosis. 2. Errors in bacteriology. 3. Incorrect or inefficient vaccine. 4. Faulty administration of the vaccine as regards dose and interval. 5. Peculiarities of the constitution of the patient and his response to vaccines. 6. Mistakes in general treatment. The first and last of these causes of failure should be avoided fairly readily by proper care. The second cause

may be extremely difficult to avoid in some cases because it is so fatally easy to find an organism that one may readily fall into error in ascribing to the organism found the rôle of being the chief causative factor when in fact it is of no importance and other organisms are the real causes. Care must be the chief factor in overcoming such an error. The third cause of failure depends largely upon the first two. The faulty administration in regard to dose and interval can best be avoided by keeping a careful watch upon the patient's reactions, and especially by observation of his daily weight. A steadily falling weight is the surest index of wrong dosage or interval. Better results are often secured from the use of mixed stock vaccines than from autogenous vaccines on account of the difficulty frequently encountered in determining the precise organism which is causing the disease in the patient under consideration. The author believes that the use of vaccines in the conditions named will usually give more satisfactory results than any other form of treatment if the proper precautions are observed.

Heteroserotherapy in Pulmonary Tuberculosis.

—J. J. Perkins, R. A. Young, and W. O. Meek (*Lancet*, September 27, 1919) point out that an attack of acute pleurisy with effusion occurring during chronic pulmonary tuberculosis, with subsequent spontaneous absorption of the effused fluid, is often followed by a long period of improved health and a marked amelioration of previous symptoms. For various reasons the authors believe that this is related to the existence of antibodies or "something" in the fluid effused. Gilbert reported good results from what he called autoserotherapy in serofibrinous pleurisy, that is, by the subcutaneous injection of small amounts of the patient's own serous pleural exudate. The authors, therefore, decided to try heteroserotherapy in pulmonary tuberculosis to determine its value, if it had any. They withdrew pleural fluid from patients having pleurisy as a complication of tuberculosis, collected the fluid aseptically in sodium citrate to prevent clotting, and sterilized it by the addition, in small fractions, of enough phenol to make the whole contain one half of one per cent. of phenol. This was then used for subcutaneous injection, the initial doses being only one to two mls, later rising to final doses of ten, fifteen, or even twenty-five mls. Cases for treatment were those in which there was active disease of the lungs, tubercle bacilli in the sputum, and in which the patients had undergone sanitarium treatment for some months without improvement. All but one of the cases were grave. In three of the cases the administration of the pleural fluid was without any benefit and did not affect the course or symptoms of the disease. In two in which improvement coincided with the treatment there had been some improvement in progress before it was begun. The use of the injections caused rapid improvement, and cessation of its administration was followed by a tendency to relapse, in two other patients who were going rapidly downhill. Renewed injections checked the downhill progress in both. In the remaining patient the serum checked chronic troublesome symptoms.

Surgical Treatment of Diaphragmatic Hernia.

—A. Schwartz and J. Quénu (*Paris médicale*, August 30, 1919) recommend the combined thoracic and abdominal route of exposure in these cases. An incision is made in the seventh intercostal space, beginning in the axillary line and ending at the inferior margin of the thorax, passing through all soft tissues and entering the pleural cavity. In the deeper tissues of the chest wall the incision should be made cautiously, both to avoid a too sudden pneumothorax and to spare any herniated viscera adherent to the chest wall. The incision is then prolonged downward in a straight line to a point near the median line. All soft tissues are cut and the peritoneal cavity opened. Next the cartilaginous margin of the chest at the point of incision is cut with scissors and the incision continued through the diaphragm in a straight line to the hernial orifice. The herniated organs are now easily recognized, adhesions liberated, and the hernia reduced into the abdomen. The margins of the hernial orifice are then freshened, the diaphragm sutured up to the chest wall, and the cartilage brought together. In cases in which there have been adhesions to separate, a drain should be passed into the lower recess of the pleural cavity and allowed to remain for two or three days. Pneumothorax is no longer an objection to urgent intrathoracic operations, and besides, where the pleura is not adherent, even the exclusively abdominal operation does not obviate pneumothorax in the radical treatment of diaphragmatic hernia.

Treatment of Chronic Pyelitis.—S. B. Cary (*Virginia Medical Monthly*, September, 1919) states that renal lavage is the most important procedure available for the treatment of this condition. While many solutions for lavage have been recommended, silver nitrate in one to three per cent. solution was found to give the best results. At the first treatment five to ten mls of the one per cent. solution are injected by the gravity method. The strength of the solution is increased at each successive sitting. The treatments are given at five to seven day intervals, and from three to five treatments usually suffice. A rather severe reaction sometimes follows injections of strong silver solutions; but no harm results. In the majority of instances the disturbance is referred to the bladder, which is more sensitive than the renal pelvis. Bladder irritation can, however, in large measure be prevented by injecting several ounces of saline solution before withdrawal of the catheters; this protects the bladder by taking up the silver as it comes from the ureters. Sometimes the author gives autogenous vaccines in conjunction with the lavage treatment, beginning with a very small dose, gradually increasing until there is a well marked local and general reaction, and then continuing with this dose. Drugs are also given internally, and appropriate general measures prescribed. Under this treatment, results in the author's case were uniformly good. Before a patient is discharged, catheterized specimens should be examined microscopically and bacteriologically. At least two negative cultures must be obtained before one can be reasonably sure of nonrecurrence.

Treatment of Septic Wounds by Ionization.—F. W. Baker Young (*Lancet*, September 20, 1919) found by a series of experiments that the chlorine ions released by the passage of a small electric current through a solution of sodium chloride rapidly destroyed cultures of staphylococci; thus ten milliamperes passed for ten minutes completely sterilized a heavy culture. It was further determined that the passage of a small current stimulated phagocytosis. In a considerable number of cases the patients were then treated by ionization with sodium chloride with a view to sterilization of septic wounds. The results showed that ionization did not possess any advantage over other methods of sterilizing infected wounds for the purpose of delayed primary suture. On the other hand, cases of cellulitis showed a marked improvement from ionization, both in the relief experienced by the patient and in the final result, which was highly satisfactory in every case, cicatricial contractures having been practically unseen. The treatment gave good results in one case of septic joint, and seemed worth while for extended trial in such cases.

Treatment of Fracture of the Patella.—F. F. Struther-Smith (*Indian Medical Gazette*, September, 1919) thinks it better not to operate immediately but to wait for a week or ten days to allow the swelling to disappear, and the blood to be absorbed. The patient is prepared in the usual way and a general anesthetic given. Great care must be taken as regards aseptic or antiseptic technic, as the synovial membrane of the joint is often torn. A semilunar incision is made with the lowest part of the arc at the middle of the ligamentum patellæ. The upper limit of the lateral incisions must reach about one inch above the upper border of the upper fragment. This flap of skin and subcutaneous tissue is dissected up, leaving bare the patella ligament, the patella, the lower part of the quadriceps extensor, and the lateral expansions on each side of the patella. A layer of partly absorbed blood clot is usually found in front of the patella. This is removed and the line or lines of fracture exposed. The torn prepatellar fibrous sheath is seen and the blood clot is removed from between the ends of the bone. Great care should be taken not to interfere with the postpatellar fibrous sheath, which is usually torn, as the synovial membrane of the joint, which often escapes, may be opened by rough scraping. The ends of bone are brought together by pressure above and below, and a large curved needle threaded with silver wire is inserted through the middle of the ligamentum patellæ in a transverse direction, keeping close to the patella, and brought out after a quarter circle round the patella is made. The needle is reinserted through the hole from which it emerged, another quarter circle is completed, and this is repeated until the needle emerges where it first entered, thus placing a complete circle of wire around the circumference of the patella. The wire is tightened and tied. Care must be taken not to wound the synovial membrane while placing it. A few catgut sutures are placed in the prepatellar fibrous sheath and the lateral expansion, which is usually torn, and the wound closed with silkworm gut without a drain.

Surgical Treatment of Claw Hand.—René Le Fort (*Presse médicale*, July 31, 1919) states that where the last two fingers are in flexion owing to lesion of the ulnar nerve, the first question to be settled is whether the nerve lesion is amenable to treatment or is permanent. In the former case, the flexion will disappear when the functions of the nerve are restored. In the latter, surgical treatment can be successfully carried out where the fingers are not tightly bound down but are still reducible. In the "claw" condition, the first phalanx of each finger is in hyperextension and the second and third phalanges in flexion. Extension of the second and third phalanges normally results chiefly from contraction of the interossei and lumbricals which are inserted into the extensor tendon below the metacarpophalangeal articulation. Anastomoses of the extensor tendons with the palmar fascia and the bands given off from the tendons to the bases of the first phalanges greatly limit the extensor action of these tendons on the distal phalanges. The surgical treatment consists, therefore, in severing the connections of the extensor tendons with the palmar fascia and first phalanges, and also in severing the insertions of the paralyzed interossei and lumbricals into these tendons. Often a portion of the insertion of the extensor proprius minimi digiti into the first phalanx can be spared; often, too, opening of the metacarpophalangeal joint is unnecessary. The author reports a case in which the operation described completely restored extensor power over the fourth and fifth fingers. Where there is still a possibility that the nerve function may return, the insertions of the interossei and lumbricals should not be divided. The operation would be contraindicated in the presence of marked trophic disturbances.

Mixed Treatment of Chronic Intestinal Amebiasis.—P. Ravaut and Charpin (*Paris médical*, August 16, 1919) report five cases of amebic dysentery, under observation for from six to sixteen months, in which numerous recurrences took place after initial improvement under emetine injections, and from twelve to twenty intravenous injections of novarsenobenzol likewise only yielded temporary improvement. While the injections of these drugs had lost their effect, the solution of the therapeutic problem presented was finally found to be in administering the same remedies by the mouth. Intravenous and subcutaneous medication constitutes the proper measure for acute dysenteric attacks as yet untreated, for certain subacute forms, and for hepatic complications; oral treatment, on the other hand, is that indicated in certain chronic, resistant forms, and is generally the only procedure available which will cause disappearance of the parasitic cysts, whether in dysenteric or in normal subjects. The double iodide of emetine and bismuth, efficacious in doses of 0.18 grain daily, often cannot be increased to this amount owing to cramps, diarrhea, and circulatory and renal disturbance; it should be used only with caution in weak subjects or patients with cardiac or renal impairment, and even in stronger individuals is an unpleasant remedy to take. The combination of remedies which the authors found most effectual in the five intractable

cases referred to was novarsenobenzol by the mouth in 0.1 gram gluten coated capsules, and a paste consisting of 100 grams each of powdered charcoal, powdered bismuth subnitrate, syrup, and glycerin, together with four grams of powdered ipecacuanha. Where there is violent and painful diarrhea, 0.8 gram of powdered opium or 0.4 gram of opium extract is added to the latter formula. Every teaspoonful of the paste contains 0.1 gram of ipecacuanha. Two to ten teaspoonfuls of the paste are taken one day, one or two capsules of novarsenobenzol the next, and so in alternation for twelve to twenty days. No nausea, vomiting, diarrhea, nor cramps was caused in any of the five patients by this treatment. The appetite and general condition rapidly improved, the dysenteric symptoms allayed, and in some instances the parasites soon destroyed. As a supplementary measure, enemas of 0.15 to 0.3 gram of novarsenobenzol, in fifty to 100 mls of water, and with a little laudanum or extract of opium added, have proved useful.

The Successful Treatment of Asthma.—Mark I. Knapp (*American Medicine*, October, 1919) considers that asthma is due to insufficiency of the pylorus and that treatment is to be directed to the cure of this condition by the administration of alkalies at a time when the chyme is out of the stomach. The writer most often uses bicarbonate of soda, oxide of magnesia, and the carbonate of calcium. Rhubarb and soda, nux vomica, strychnine, the mydriatics, cascara, and sodium salicylate may have to be combined with the alkalies. Constipation which is common is combated by a pill of aloin and podophyllin of each one quarter grain, phenolphthalein from one to one and a half grain, and atropine one hundred and twentieth of a grain. Also potassium or ammonium iodide may have to be used to loosen the mucus. Diet is of the most importance, and here experience is the only guide; the patient should go to bed early, and the usual morning spell of coughing may be greatly alleviated by drinking hot water at bedtime.

Observations on the Treatment of Vesical Calculi.—J. Dellinger Barney (*Boston Medical and Surgical Journal*, October 9, 1919) presents the following points drawn from a study of 455 cases at the Massachusetts General Hospital. 1. The combined mortality of lithotripsy and suprapubic cystotomy is 9.5 per cent. Of lithotripsy alone the mortality is 7.23 per cent.; of suprapubic cystotomy it is twenty-five per cent. 2. Recurrence is to be expected in at least twenty per cent., especially where the previous operation was lithotripsy. 3. After lithotripsy patients may expect to stay in hospital an average of about eleven days, though many patients can leave sooner, often in two or three days. After suprapubic cystotomy the average stay is about thirty-five days, although in favorable cases this time may be considerably shortened. 4. Bladder drainage is of undoubted value in the aftercare of cases of lithotripsy and litholapaxy; in cases of cystotomy it is an essential. 5. The choice of the proper anesthetic undoubtedly plays an important part in the outcome of these cases. 6. Barring certain obvious contraindications to its performance, lithotripsy is the operation of choice. Among these contraindications

is the general surgeon's lack of training in the use of lithotrite and evacuator. 7. The steady fall in the number of cases of lithotripsy and suprapubic cystotomy shown in the hospital records from 1900 to the present time is due neither to a growing scarcity in the number of stones nor to an increasing unpopularity of the hospital. As a matter of fact more stones have been removed from the bladder during these years than ever before; but, owing to modern methods of diagnosis, the stone has been relegated to second place, while the underlying cause has commanded the surgeon's attention.

Corpus Luteum Extract in the Vomiting of Pregnancy.—J. K. Quigley (*American Journal of Obstetrics*, August, 1919) gives histories of several cases in which this treatment was applied. The total number of patients treated by him was seventeen; twelve were permanently benefited by the treatment, and four others were benefited but relapsed, not enough of the drug having been given. In one case, of the pernicious type, there was complete failure. The corpus luteum extract was often injected intramuscularly, e. g., in the deltoid muscle, in doses of one mil, repeated every four days, daily, or even oftener. In some cases five grains of extract were given by mouth three times a day. The average number of injections given was seven. In the four relapsing cases only three to five doses had been given. Had these patients been given more of the drug at the onset as a routine, permanent benefit would probably have resulted. The one mil ampoules of extract employed in administering the intramuscular injections each contained 0.2 gram of desiccated corpus luteum substance.

Antimony in Bilharziasis.—George C. Low and H. B. G. Newham (*Lancet*, October 11, 1919) record the details of five cases of bilharziasis in which the patients were treated by the intravenous injection of tartar emetic in total doses ranging from sixteen to thirty grains. In all of the cases the ova were completely removed from the urine, and the general condition of the patients was very greatly improved. From their daily observation of these patients the authors believe that at least twenty to thirty grains of the drugs should be administered to be certain of ridding the patient of his parasites. Much larger total doses have been given by the authors in other diseases without producing harmful effects, but they call attention to the possible danger of causing fatty changes in the liver and other organs, though the latter seems to be completely recovered from if the drug is stopped. The initial dose should always be small, not over one half grain, and the maximum single dose should be two grains. The doses should not be given more frequently than twice weekly, and the solution of the drug should always be freshly prepared. The drug should always be given well diluted, two grains requiring about two ounces of normal sterile saline solution. The injection should be made very slowly through a fine needle to avoid the possible danger of sudden damage to the heart. The function of the kidneys should always be determined by careful uranalysis before beginning treatment and when the kidneys are damaged the treatment should be administered very cautiously, if at all.

Treatment of Diphtheria.—A. S. Alvarez (*La Medicina Ibero*, September 6, 1919) considers that the following rules should be observed in administering antitoxin: In children under one year with tonsillar membrane give 5,000 units; if the infection is severe or laryngeal give 10,000 units. If the child is over one year double these doses. In adolescents or adults give 15,000 units in ordinary cases and from 20,000 to 120,000 in severe or laryngeal cases. Other general measures are strict diet, purgation with sodium sulphate, administration of adrenal, bleeding, etc. Local or topical treatment includes bicarbonate of soda, collargol, hydrogen peroxide, methylene blue, novarsenobenzol, or best of all gargling or spraying with a hot aqueous solution of tincture of iodine in one per cent. strength.

Twilight Sleep in General Practice.—G. Hamilton Winch (*Lancet*, September 27, 1919) has used morphine scopolamine anesthesia in a series of 435 cases in private practice without harmful or even unfavorable effects upon mother or child in a single instance and with neither maternal nor fetal mortality. He believes that it is perfectly safe if the original perfected directions given by Gauss are followed, and he finds it quite feasible even in the patient's home if a good nurse can be secured. He contends that the only absolute contraindication to its use is primary uterine inertia. Other abnormalities of labor do not in any way contraindicate its employment, and should operative procedures become necessary the latter are made safer by reason of the fact that but relatively little anesthetic need be given. Winch outlines the treatment as he practices it, his outline differing in no essential way from that given by Gauss.

Obstetric Paralysis of the Newborn.—A. M. Arquellada (*La Medicina Ibero*, September 27, 1919) divides paralysis of the newborn from obstetrical injuries into three classes, as follows: brachial or upper extremity paralysis, lower limb paralysis, and facial paralysis. The first class, or brachial palsies, frequently disappear spontaneously in two or three weeks, especially if the paralysis is apparent in the first few days of life. The later the appearance of the symptoms the longer time it takes to clear up the paralysis, often two to three months. The prognosis depends on several factors, as the intensity of the case, the grade of the lesion, the kind of treatment used, and the period at which this treatment is instituted. In cases which fail to clear up spontaneously the writer uses electric applications, electric massage, and, later, mechanotherapy. Paralysis of the lower extremity is treated in much the same way; nux vomica internally, gentle massage (at first manual and later electrical), and finally mechanotherapy. Facial paralysis is the most frequently seen of the obstetrical paralyses and is almost invariably due to the pressure of the forceps blades. It is the most benign of all forms with a uniformly good prognosis in a surprisingly short time. While it is the variety of paralysis which most frequently clears up spontaneously, in case it does not do so the methods of treatment employed for the other forms may be resorted to.

Preliminary Note on Selenium in Inoperable Carcinoma.—E. Watson-Williams (*British Medical Journal*, October 11, 1919) reviews the literature of the use of selenium in the treatment of carcinoma and records his own observations on its use in twenty-four cases. The largest dose employed by the author was 0.005 Gm. of the colloidal selenium daily, the injections being given intravenously or intramuscularly. In doses not in excess of this the drug has proved nontoxic. The earlier injections may be followed by a transient rise in the patient's temperature and slight general reaction with headache. The beneficial results observed have included a diminution or disappearance of the pain, this being the earliest and most striking result. The second most striking result has been improvement in the anemia and cachexia. Tenderness in the affected area diminishes, ulcerated surfaces heal, the discharge decreases, often the tumor and the secondary deposits diminish in size, and the surrounding tissues show increased mobility. Sleep is improved and there may be a gain in weight. The improvement so far observed has been most marked in carcinoma of the alimentary canal. The author says that he sees nothing to suggest that selenium has any curative properties in carcinoma, but the relief it affords is sufficient to warrant its more extended employment.

Intravenous Injection of Antimony in Filariasis.—Leonard Rogers (*Lancet*, October 4, 1919) records the results of some preliminary observations upon the intravenous injection of antimony in patients infected with filaria. He employed both the sodium antimonyl tartrate and colloidal antimony sulphide, but found the latter to be entirely without evident benefit. He feels that all that can be said from his preliminary studies is that the intravenous injection of safe doses of the antimonyl tartrate seems to cause a decided diminution in the number of filarial embryos in the peripheral circulation. This is probably due to a direct toxic effect upon the embryos, as shown by a marked diminution in the activity of their movements and in their resistance when removed from the host. It cannot yet be stated whether or not the treatment has any influence upon the adult worm or on the symptoms of the disease.

Tranquil Tracheotomy.—St. Clair Thomson (*British Medical Journal*, October 11, 1919) directs attention to the usual great disturbance and distress caused by the opening of the trachea by the common methods, and finds that these can be entirely eliminated by the simple procedure of injecting cocaine into the lumen of the trachea before incising it. The trachea should be exposed in the usual manner under local anesthesia with procaine and from five to fifteen drops of a two and one half per cent. solution of cocaine are injected into the lumen of the trachea through a fine needle plunged through the space between two rings. This at once causes a slight stuffy cough which is only transitory. From five to ten minutes should then be allowed to elapse when the trachea can then be opened with absolutely no disturbance whatever. The author has employed this technic for about five years with uniformly good results.

Miscellany from Home and Foreign Journals

Clinical Evidences of Arterial Wounds.—H. Mondor (*Presse Médicale*, August 7, 1919) lays stress on the fact that pulsation in the distal portion of a wounded artery does not necessarily mean that blood is being poured into this distal portion by collateral trunks. Frequently pulsation persists in spite of the injury to the artery, as is shown by the fact that when the artery is ligated above and below the wound the distal pulsations cease at once. The surgeon should not allow himself to be convinced that because pulsation persists below the wound in a case of doubtful arterial injury, the vessel has not been wounded. War experience has shown that there occur various types of arterial injury, viz., wounds with hemorrhage to the exterior; wounds with progressive anemia of the part and hematoma; wounds without hemorrhage and without hematoma, but with suppression of the pulse distally; wounds without hemorrhage, hematoma, or pulse suppression, but with a widespread ecchymosis; "dry" arterial wounds without pulse suppression or ecchymosis, but with surprising degrees of local pain and functional impairment; finally, nonpenetrating wounds without a single symptom or sign. Arterial wounds are thus frequently less dramatic in their symptomatology than they are generally described to be. Widespread ecchymosis often reveals an arterial wound. Below the ecchymosis an aneurysmal hematoma, hitherto considered a characteristic feature of arterial wounds, is extremely uncommon. A persisting pulse below the site of arterial injury is due in the majority of instances to preservation of a sufficient permeability of the vessel.

Elasticity of Diseased Lungs.—J. Amar (*Presse médicale*, August 21, 1919) devised an apparatus for studying the intrapulmonary pressure during inspiration and expiration, and reports the results of his studies with it under both normal and abnormal conditions. The elastic property of the lungs was not found to be directly the cause of expiration. It is controlled through the intervention of the pneumogastric nerves, these, in turn, being subordinate to the requirements as to blood oxygenation at any given time. The ratio of the duration of expiration to that of inspiration diminishes when a normal subject passes from repose to fatigue, and increases or remains unchanged under abnormal conditions. Furthermore, the curves of respiratory pressure or tonograms are deep and with undulating plateaux among the emphysematous, owing to the resistance to inspiration and the absence of elasticity in expiration in these cases. They are shallow, frequent, and marked by an initial jerk among the tuberculous, as the respiratory surface is reduced in these patients and the weakened elastic power is exerted on a column of air mixed with serous secretions. The tonograms in pretuberculosis are clearly distinguished from those of established tuberculosis in exhibiting less frequency and greater depth. The tonographic peculiarities described are constant and diagnostic in these cases.

Blood Pressure as Influenced by War Emotions.—G. Etienne and G. Richard (*Paris médicale*, August 9, 1919) report the results of several years' observation of the effects of shelling in the town of Nancy on blood pressure. All violent shocks were found to affect the blood pressure, generally bringing about a brief stage of hypertension, lasting five or ten minutes, followed usually by one of hypotension lasting from a few minutes to two or three hours. The average rise of systolic pressure was eight to twelve millimetres of mercury, and of diastolic pressure, three or four millimetres. Where the emotional shocks are repeated, e.g., if the town is shelled throughout the day, each successive shock finds the blood pressure a little higher than it had been before, and subsequently the return of the pressure to normal may be slow, especially in old persons, in whom several weeks may elapse before it reaches normal. Where the shocks are repeated for weeks or months, the systolic pressure shows a constant elevation of from ten to forty millimetres, and of the diastolic, from ten to twenty-five millimetres. In a man aged seventy-nine years the blood pressure had not yet returned to normal after spending more than seven months in a quiet locality.

Repeated emotional shocks may cause disturbances of the glandular organs, the ductless glands in particular. In one young woman, menstruation ceased on the second day when a large projectile fell not far from her. Another subject's menstrual periods always began six or eight days too soon when the town was being shelled. In several instances the mammary glands ceased to secrete. Chlorosis was frequently met with. In one case suppression of menstruation was accompanied by a considerable enlargement of the thyroid gland, with increased pulse rate. Several instances of Basedow's syndrome were seen. Two patients showed glycosuria after bombardments. The glands most notably affected by emotional shocks are the adrenals.

The majority of the symptoms in subjects thus shocked are to be ascribed to sympathetic stimulation through increased secretion of adrenin. Such subjects show ocular manifestations, retraction of the cutaneous muscles, diminution of saliva, and tireless activity in seeking shelter. Where the shocks are particularly violent, an inhibitory action on the adrenals, or a destructive effect on the parenchyma of these organs may be substituted for the increased production of adrenin. Relatively slight but repeated emotions, however, cause persistent adrenal excitation with hypersecretion of adrenin and a lasting abnormal exaltation of the sympathetic system. The relatively marked effect of repeated emotions on the diastolic pressure is due to the increased adrenin secretion, which augments peripheral arterial resistance. The chronic sympathetic overactivity resulting from the constant hypersecretion of adrenin accounts for all the functional changes occurring in the other endocrine organs.

The Use of Obstetrical Forceps.—Charles J. Kickham's (*Boston Medical and Surgical Journal*, October 30, 1919) notes are very full and give definite directions for the use of forceps in obstetrics. His experience has led him to conclude that mistakes are due to failure on the part of the operator to grasp the fundamental and practical principles underlying the application of forceps. To make these principles clear he discusses the indications for forceps in the interests of the child and of the mother, and the contraindications; the various types of forceps; the conditions necessary for their use; the position of the patient; and the rules of technic covering application of the forceps in the various positions of the head. Finally, he sums up the essential points as follows: Remember axis of inlet at different plane than axis of outlet and that axis of whole pelvis describes a part of circle, with symphysis as centre. Examination of patient should be made before forceps are applied. Position of child and exact application desired should be visualized before actual introduction of forceps. Take time to make application and use no force in introduction of blades. All movements and manipulations must be gentle. All traction should be intermittent and under control of operator. In head above brim, at a high level in pelvis, or in posterior position, or other position which will make difficult forceps probable, remember time spent in locating exact position and obtaining a good application of blades will save time in the end, resulting in less danger to mother and child. When in doubt as to findings or application, stop and try again or send for assistance; do not run risks when lives are at stake.

Diarrhea in Malaria.—E. Job and L. Hirtzmann (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 2, 1919), after experience with malaria in Morocco and the Orient, note that diarrhea is a common symptom in recently acquired malaria. It may be of the serous type, with or without vomiting; the stools are usually markedly bile colored, and at times are blackish. Its characteristic feature is that it often disappears within twenty-four to forty-eight hours under quinine medication. In some instances the stools resemble purée, may contain mucus and a little blood, and thus suggest dysentery. Stool cultures and dysenteric serum diagnosis are, however, negative. Diarrhea is often met with in pernicious malaria, and the author recently examined postmortem five patients who had been placed in a hospital for dysenterics. In none of these were there any typical lesions of amebic or bacillary dysentery, though there was some edema of the colon, in one instance blood extravasations in the mucous membrane, and in another minute erosions of pinhead size. The intermittent paroxysms of the secondary period of malaria may likewise exhibit diarrhea, which is usually evanescent, terminating with the acute attack or upon administration of quinine; diarrhea may even become substituted, as a pseudodysenteric attack, for a malarial paroxysm. In chronic malaria, independently of cachexia, diarrhea suggesting dysentery may also be observed, which is peculiar in that quinine will remove it in the absence of any other

medication. In some instances of malarial diarrhea the plasmodium acts directly on the intestinal tissues. In others, it is probably due to wastes poured into the portal circulation by the spleen at the time of the paroxysms; prolonged residence in the tropics and earlier attacks of malaria doubtless predispose the liver to trouble from this direction. Possibly the pancreas and intestinal nervous mechanism are also disturbed by the malarial poison, diarrhea resulting. Furthermore, persons sojourning in tropical countries often develop a simple but often recurrent mucous and bilious diarrhea, with stools negative except that they frequently contain flagellates, amebæ, coli, and spirilla. Such subjects are predisposed to further intestinal disturbance where malaria is contracted, and in them quinine, while reducing the number of stools, is incapable of restoring normal conditions.

Oxygen of Arterial and Venous Blood in Pneumonia and Its Relation to Cyanosis.—William C. Stadie (*Journal of Experimental Medicine*, September, 1919) determined in a group of thirty-three cases of pneumonia and five normal controls the oxygen of both arterial and venous blood, in an attempt to explain the unusual frequency of cyanosis in influenza pneumonia. A definite relation between the degree of cyanosis and the per cent. of arterial unsaturation was noted, as with increased cyanosis the arterial and venous unsaturation increased. In some of the cases studied in which marked cyanosis and high arterial unsaturation was seen, the clinical improvement of the patient was accompanied by a diminution in the arterial and venous unsaturation, and vice versa, increased cyanosis was accompanied by an increased arterial unsaturation. The cyanosis in pneumonia is apparently due to the incomplete saturation of venous blood with oxygen in the lungs. The oxygen consumption (the difference between arterial and venous contents) was inside the normal limits, so that the cardiac output in these cases was not diminished.

Prognostic Significance of the Blood Nitrogen in Acute Infections.—Merklen and Kudelski (*Bulletins et Mémoires de la Société médicale des hôpitaux de Paris*, June 26, 1919) maintain that the blood nitrogen affords one of the best prognostic indications in acute infections. Icterohemorrhagic spirochetosis, by virtue of the high level of blood nitrogen it entails, is a good example of this. Fatal influenza behaved similarly, the figure rising, according to Libert, from 0.37 to 1.67, from 0.486 to 0.7, and from 0.417 to 0.898 in separate instances. The blood urea may increase very rapidly, estimations at intervals of only a few days showing marked changes; where such rapid rises occur, the prognosis is serious. In a case of tuberculous meningitis the blood urea rose from 0.54 to 0.75 and later to 1.30. Generally, a decreasing amount of blood urea is attended with a favorable prognosis, but this relationship is by no means as certain as in the converse case. An influenza patient succumbed in spite of a reduction of blood urea from 0.97 to 0.59. The main cause of a rise in blood urea in infections is a disturbance of nutrition resulting in subnormal catabolism.

Relation Between the General Nervous System and Symptoms of D. A. H. in Neurasthenic Patients.—H. W. Davies and J. G. Priestley (*British Medical Journal*, October 4, 1919) investigated 100 unselected patients admitted to hospital for neurasthenia and found definite symptoms of D. A. H. in thirteen, less marked symptoms in fifty-seven, and no appreciable evidences of D. A. H. in the remaining thirty patients. Among the 100 patients fifty-two gave a history of gassing or of recent infection previous to the development of the neurasthenia. Among those with definite D. A. H. symptoms ninety-two per cent. gave a history of recent gassing or of infection; sixty-five per cent. of the less marked D. A. H. cases gave a similar history; while among those without such symptoms only forty-seven per cent. gave a history of gassing or infection. The neurasthenic symptoms were so varied that they could not be properly analyzed, but no relation could be discovered between the frequency of occurrence of exaggerated reflexes and the severity of the D. A. H. symptoms, or between exaggerated reflexes and a history of recent gassing. The occurrence of tremors was studied and it was found that tremors were more severe in cases showing well marked D. A. H. than among those not suffering similarly. The Hering-Breuer respiratory reflex was very commonly disturbed in these cases and in view of the prevalence of functional nervous symptoms it was sought to determine whether or not this disturbance was of a functional nature. The results of attempts to control the reflex by hypnotism failed to show definitely the functional nature of the disturbance. Under hypnotism the respiration could be slowed for a short time during the period of the patient's relaxation, but permanent effects could not be obtained.

The Nutrition of the Fetus.—J. Morris Slemmons (*American Journal of Obstetrics*, August, 1919) asserts that, at least during the latter half of pregnancy, the placental partition between the maternal and fetal organisms behaves as a semipermeable membrane. The amino acids from which the fetal protein is built and the glucose supplying the energy for tissue construction pass freely to the fetus. The quantities of these substances reaching the new organism are regulated chiefly by the rapidity of their utilization in its tissues. Probably the supply of water and of most, if not all, of the inorganic salts is similarly regulated. The fats and lipoids of the mother's blood are held in check by the placenta, and the fetus manufactures these substances out of some other material, probably glucose contributed by the mother. All the fetal waste products, including carbon dioxide, pass through the placenta in accord with the laws of diffusion. Active elimination of these products by the mother results in a steady purification of the blood of the fetus. Intrauterine death in the presence of maternal nephritis or organic heart disease may be explained on the basis of inefficient removal of fetal waste. There is no diet specifically adapted to the state of pregnancy. The prospective mother should, however, avoid that which she cannot digest and assimilate. Most women follow the dictates of ap-

petite in pregnancy as safely as at other times. The quantity of the mother's food is more influential than its quality. The popular opinion that during pregnancy the mother "should eat for two" is erroneous. A diet which has previously been ample will likewise be sufficient throughout pregnancy. Overeating during pregnancy is much more likely to provoke discomfort than is insufficient nourishment. On the other hand, there can be no justification for measures intended to restrict the growth of the fetus, for when rigidly carried out they tend to weaken the mother.

Case of Mediastinal Hodgkin's Granuloma with Perforation of the Chest Wall.—M. W. Lyon (*American Journal of the Medical Sciences*, October, 1919) describes a case of neoplastic growth having the tissue characteristics of Hodgkin's granuloma situated primarily in the mediastinum of a young adult white male of good previous and family histories. Its duration was sixteen months. It caused pressure erosion of the chest wall; the right pleura became infected and a retropleural and retroperitoneal abscess developed, the patient dying of toxemia and exhaustion. The chief pathological findings were extension of the mediastinal growth into the right lung, involvement of the bronchial and mediastinal lymph nodes, of many abdominal lymph nodes, and of the retroperitoneal and inguinal nodes. Metastaticlike growths were found in the unenlarged spleen, in the tail of the pancreas, in the right kidney, in the epicardium, and beginning to invade the myocardium. The liver and the cervical, maxillary, and axillary lymph nodes were not involved.

Detection of Bacillus Dysenteriae in the Stools.—C. S. Panganiban and O. Schöbl (*Philippine Journal of Science*, February, 1919) state that even in a typical acute dysenteric stool the laboratory test as ordinarily conducted may fail to isolate *Bacillus dysenteriae*. If amebæ are present in the specimen, the clinician may easily be misled and diagnose amebic dysentery. There is a relatively high percentage of amebæ contact carriers, and a superposed bacillary infection in chronic amebic dysentery is not rare. Having found the methylene blue eosin plate method of Meyer and Stickel a convenient medium in the bacteriological diagnosis of typhoid fever, the authors applied it likewise in bacillary dysentery, the typhoid and dysentery germs behaving alike as regards acidification of lactose. Each stool was plated directly on litmus lactose agar and on methylene blue eosin lactose agar. A flake of bloody mucus was fished out, washed in salt solution, and smeared on the plate. After incubating overnight, colorless colonies were thoroughly searched for, and the agglutination test performed in hanging drops. Bacillary dysentery was found to form small colorless colonies, the various types of the bacillus showing no particular differences of growth. Of the thirty-eight stools examined thirty-three were found positive. The methylene blue eosin lactose plate proved slightly superior to the litmus lactose plate, thirty-two specimens being positive with it as against twenty-nine. Altogether, the procedure is held to be a considerable improvement in diagnostic technic.

Diurnal Variation in Weight of Tuberculous Patients.—J. MacNaught Scott (*Lancet*, October 11, 1919) kept the daily records of weight in a large number of cases of tuberculosis and found that 146 patients showed no variation in weight, 205 showed an increase, and 611 showed a decrease in weight. The average increase in weight was 0.77 pound, while the average loss was 1.03 pound. When the cases were divided into definitely positive and suspect groups the weight loss among the positive group averaged 1.06 pound as compared with an average loss of 0.8 pound among the suspects. The author does not explain the cause of variation in the daily weights in cases of tuberculosis, but he believes that his observations show that at least seventy-five per cent. of tuberculous patients showing any variation in daily weight show a loss of weight, and this loss is greatest in patients between the ages of twenty to twenty-four years.

Further Experience in the Ocular Functions of Aviators.—W. H. Wilmer (*Archives of Ophthalmology*, September, 1919) comes to these conclusions: Absolute normality of the eyes is one of the greatest physical assets that a flier can possess. Affections of only passing inconvenience on the ground are serious in the air, such as scintillating scotoma, muscæ volitantes, photophobia, epiphora, heterophoria, and, for the night flier, poor dark adaptation. A successful combat pilot with trained air vision who loses one eye may, during the exigency of war, be seriously considered for a return to flying status under certain conditions, but only when the confidence is unimpaired and there is keenness to get back. In classification a cycloplegic should be used and the fields for form and color taken and recorded. The regular eye reexamination of the flying officer should be made every two months at least. The simple visual reaction time is of great value to the chase pilot if associated with cool determination and caution.

Patellar Apophysitis Simulating Fracture.—Mouchet (*Presse médicale*, August 7, 1919) reports the case of a boy of fourteen who was brought into his service for effusion into the right knee following slight trauma. The x rays showed a piece of bone detached from the upper and outer angle of the patella, but the same condition was found also in the uninjured limb. The author was thus reminded of the case of bilateral "patella bipartita" reported by Wenzel Gruber in 1883. He thinks the condition in his patient was an instance of developmental osteitis with pain on the outer aspect of the patella at the site of the anomalous fragment of bone, with circumscribed synovial effusion at this point. A group of cases appropriately described by the term patellar apophysitis should be recognized, just as are the now well known cases of apophysitis of the calcaneum or of the tubercle of the tibia. Such cases are perhaps not as exceptional as might be thought, and might account for certain instances of curable joint effusions of adolescents, hitherto ascribed perhaps too easily to tuberculosis. X ray examination of the patella in such a manner that it may be readily distinguished from the femur is recommended, in order that further instances of this anomaly may be brought to light.

Congenital Megacolon.—Pauchet (*Presse médicale*, August 7, 1919) has had occasion to operate in twelve cases of this affection. Of the last three cases two were dealt with in the absence of inflammatory symptoms and the other while in a state of acute occlusion. Each of the three patients recovered after resection of a voluminous loop of sigmoid. From his experience with this class of cases Pauchet concludes that where there is no strangulation the proper surgical treatment is partial or complete colectomy, followed by end to end colorrhaphy. Postoperative drainage of the bowel, and in some instances fixation of the suture, exert a favorable influence on the subsequent course of the case and afford additional safety as regards the parietes. In the presence of acute obstruction, partial or complete colectomy is again the procedure of choice. In partial colectomy, fixation of the ends of the colon to the skin is in most instances advisable.

Specific Agglutinins for Pfeiffer's Bacillus in the Serum of Influenza Cases.—W. James Wilson (*Lancet*, October 4, 1919) finds that agglutinins for Pfeiffer's bacillus appear early in the blood in cases of influenza, the titre sometimes rising as high as one in 1,000. These agglutinins diminish rapidly as soon as the temperature falls and are absent by the end of a week's convalescence. Similar agglutinins are not found in the blood of normal persons and of convalescents from influenza, even when tested in a dilution of one in two. Early in the disease or at its height complement can be fixed by an immune body present in the serum of influenza patients. Finally, the intravenous injection of cultures of Pfeiffer's bacillus into a rabbit causes death in a few hours and the congestion and edema found in the lungs may account for the dyspnea and asthenia which precede the fatal issue.

Judgment of Distance.—Harvey J. Howard (*Archives of Ophthalmology*, September, 1919) says that the binocular parallax, even when acting alone, is capable of great depth perceiving power. The binocular parallactic angle is computed from the depth differences of objects looked at and the inter-pupillary distance. The minimal binocular parallactic angle varies greatly with individuals and seems to have a physical basis; from data collected it seems to be dependent upon visual acuity, visual symmetry, and muscle balance to a large extent. Subjects examined with the 100 metre apparatus showed binocular parallactic angles ranging from 3.37 to 7.53', with an average of 5.19". The findings with the outdoor test coincide closely with those of the six metre indoor test, but do not warrant its substitution for the latter. The size of the visual angle or the retinal image has nothing to do with the binocular parallactic angle; therefore it is wrong to associate the visual angle with binocular discrimination of distance. The visual angle threshold is often stated as being about one minute, whereas the binocular parallactic angle threshold has been found to be as small as 1.80". Our fusion sense, or our binocular depth perceiving ability, theoretically is of value up to a distance of several thousand metres; practically it is less, because we are limited by our visual acuity.

Proceedings of National and Local Societies

BRITISH NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

Seventh Annual Conference Held in London, October 16th, 17th and 18th.

This very important conference was held in the Central Hall, Westminster, London. A large number of delegates from Europe and from across the Atlantic were present and all the sessions were very well attended. Among those who took part in the proceedings were Dr. Christopher Addison, M. P., Minister of Health; Professor Leon Bernard, Paris; Dr. Cunningham Brown, representing the Ministry of Pensions; Dr. G. Lissant Cox, central tuberculosis officer, Lancashire County Council; Dr. H. E. Dixey, member of council, National Association for the Prevention of Consumption; Countess Ferrers; Dr. Charles J. Hatfield, National Tuberculosis Association, New York; Dr. David Lyman, Wallingford, U. S. A.; Dr. T. G. Maitland, resident physician, Brompton Hospital for Consumptives, London; Dr. F. N. K. Menzies, London County Council; Prof. Sir Robert Philip, M. D., F. R. S. E., vice-chairman, National Association for the Prevention of Tuberculosis; Lieut. Col. Nathan Raw, M. D., M. P., Professor Rist, Paris; Dr. John Robertson, C. M. G., Birmingham; Hon. Sir Arthur Stanley, chairman joint war committee, British Red Cross Society and Order of St. John; Prof. William C. White, Pittsburgh; Dr. Linsly R. Williams, Rockefeller Commission, Paris.

The program was as follows: After an opening address by Dr. Christopher Addison and some introductory remarks by Sir Robert Philip, the completion of tuberculosis schemes throughout the country was discussed in relation to: 1, the Ministry of Health; 2, local authorities and insurance committees; 3, pension boards and committees, discharged sailors and soldiers; 4, general practitioners; 5, Red Cross and other voluntary activities; 6, training of doctors and nurses; 7, training of voluntary workers.

At the first session Lord GLENCONNER, honorary treasurer of the association, was in the chair. He said in part that the British Red Cross Society was coming into cooperation with the National Association, and with their assistance and that of other voluntary organizations they looked forward to the future with confidence. They anticipated also guidance without undue interference from the Ministry of Health, whose object was to promote uniformity of action throughout the country and to coordinate the activities of all the various responsible bodies.

Dr. Christopher Addison, minister of health, made the opening address and assured the conference that they would receive from him and the Ministry the best help they could give. The war had added a vast number of men to the ranks of patients. He was sorry to say that in consequence of the necessary suspension of many of our activities, with the absence of many skilled men from the tuberculosis

service in the ranks of the Army Medical Service, and the entrance of a large number of women into industrial service, there had been an increase in tuberculosis in some directions, notably among women. It was one of the functions of the Ministry of Health to try to secure that their efforts to deal with these great problems were not disjointed or fragmentary. One of the chief purposes of conferences like this was to help them to arrive at a satisfactory policy. Propaganda of methods of a preventive type was needed. Unless they undertook a big program of rehousing and the clearing of slums their efforts would be largely in vain. By the end of October the ministry hoped, under the terms of the act, to receive from the different authorities a program of operations in connection with housing, and that the program would include gradual provision of alternative accommodation which would lead to the clearing away or the reconstruction of slum areas. Unless the housing program, which would take a long time to carry out, had as an ingredient of it clearing unsanitary dwellings or rendering them sanitary, we should not be able to cope with the problem either of tuberculosis or of many other diseases. To deal adequately with the problem would cost a great amount of money. The great costs which the war had brought upon us had intensified the difficulties of all concerned in dealing with disease in its various aspects. The cost of housing and of providing sanatoria and settlements for the tuberculous would be prodigious. Unless they were prepared to incur capital expenditure in fighting these plagues they would be spending their money in vain. In his view, the millions of money they were now spending on the manifold health services were largely wasted, because they had never had the foresight and courage to tackle the capital expenditure which was necessary to remove the cause. Research, properly arranged under responsible direction, was one of the things we must be prepared to spend money upon. Many of the men who had been in sanatoria ought never to return to their former occupation.

The committee of which Sir Montague Barlow was chairman, had prepared a valuable and helpful report pointing out the necessity for securing facilities for industrial training, linked on to the sanatorium system. The Ministry of Health, in conjunction with the Ministry of Pensions, was now arranging for the provision of 1,000 training places in connection with sanatoria. In addition they would have the places of settlement or the colony system linked up with the sanatoria, so that men would be able to earn a living afterwards in healthy surroundings as ordinary citizens. Any attempt to establish any sort of tuberculosis colony was doomed to failure. Persons who had tuberculosis were much the same as those who had the mumps, they liked to live among their fellow citizens and not to be marked out as people who had to live in separate places. Dr. Addison asserted with much emphasis that he was not going to be a

party to branding the tuberculous person as a leper. Arising out of the report of Sir Montagu Barlow, they recognized that materially increased contributions would certainly have to be made in order to provide colonies and settlements in appropriate places. Pleading for a broad conception of the problem of the health of the community, Dr. Addison said that in the provision of dispensary, clinic, and laboratory facilities the question must not be approached purely in terms of tuberculosis. They had to make those facilities common for other purposes.

Sir ROBERT PHILIP, vice-chairman of the council, said in part that the sixth annual conference was held at Leeds in July, 1914, two weeks after the war began. Although the association had held annual meetings from year to year, it had been impossible to convene the seventh annual conference until the present time. Throughout the horrible parenthesis of the war, the energy of the nation, the energy of the allied nations, had been diverted in other directions. The report of the departmental committee, 1912-13, focused floating opinion and resulted in the establishment throughout Great Britain of systematized activities against tuberculosis. Beyond endeavor on general preventive lines, local authorities were urged to prepare anti-tuberculosis schemes on a model presented to them by the local government board on the lines of the departmental committee's report. The model proposed a number of institutions each with a definite purpose, linked one with the other, and a special group of officers to operate in connection therewith. The institutions included:

1. The tuberculosis dispensary, to serve as a "reception and clearing house," and generally a centre of operations for the area served.
2. The sanatorium, for the treatment of early cases with a view to effective arrest of the disease.
3. The hospital, for the care of persons in more advanced stages, for segregation and education, and for the treatment of emergencies in the course of the disease.
4. The farm colony, supplementary to the sanatorium for the more prolonged treatment of certain cases of tuberculosis and for training in various branches of work.
5. The open air school, for the medical care and education of children in the earlier stages of tuberculous disease.
6. The care committee, for the consideration of economic and other conditions in so far as these may influence the course of tuberculosis in households. The various institutions forming the coordinated scheme were primarily part of the machinery of national health insurance. They soon came to have wider relationships. The problem of tuberculosis could not be dealt with effectively in compartments bounded by limits of age or income. Larger considerations governed the situation. The eradication of tuberculosis meant the placing of health on a higher plane all around. The realization of this was the outlook of the Ministry of Health. Towards its attainment every available method, every suitable weapon, must be used. The scattered fighting forces must be recognized and grouped. The significance of each must be appraised. Whether voluntary or official they must act in combination.

Their activities must be coordinated. The command of the whole must as far as possible be unified. For this we look to the Ministry of Health. The council had selected as the main subject for discussion at the meeting for this year the completion of the tuberculosis schemes which have been outlined, with the additional demands which the war had entailed.

Tuberculosis and the Ministry of Health.—

Dr. JOHN ROBERTSON, of Birmingham, England, dealt with the first part of the discussion, tuberculosis in relation to the Ministry of Health. The gist of his address was as follows: He welcomed with open arms the inception of the Ministry of Health because he felt very strongly that there must be one central control and one local control, and because for the first time they had one central body capable not only of coordinating all these qualities from the centre, but of laying down lines of policy for its control by one responsible local body. There was no better stimulus to good work than that of responsibility, and he was quite certain that both with the central authority and with the local authority if responsibility could be placed on one body they would in the future have progress where they had not had it in the past. The military situation had influenced adversely normal conditions. Doubtless a good many men and women whose tuberculosis might have passed unrecognized had had their disease stimulated into action and resultant death. But he did not believe there was any evidence of an increase of new infections. On the contrary he found that there was a definite and satisfactory diminution in new cases among young adults, and that the number of cases of tuberculosis other than pulmonary tuberculosis, mainly among children, was continuing to decline. That is to say, the spread of infection was being arrested, and what had happened had been the resurgence of old cases. His object, however, was not to give the data for his belief that gloomy views concerning tuberculosis were unsound, but rather to indicate, how in his opinion the Ministry of Health might usefully promote the objects which they all had at heart, the substantial reduction in the death rate and invalidism from tuberculosis.

In the first place human tuberculosis was either of human or bovine origin, and, personally, he trusted that there might be no division, either centrally or locally, in the control of tuberculosis because the infection might be derived in one case from human beings and in the other case from animals. He, therefore, sincerely hoped that the Ministry of Health would not let slip the control of human tuberculosis from the milk supply. There was at present a strong move to put the responsibility for preventing the sale of infected milk on the Board of Agriculture and Fisheries. He was certain that the steps already taken to reduce the amount of infectivity from milk had been of great value to the children of England. Still there was much to be done, and he was sure that the agricultural community and their officers did not realize the amount of harm done to the child population. His experience as a local authority in Birmingham indicated that tuberculosis among dairy herds could

be reduced almost to the vanishing point without the enormous expenditure that some people imagined to be necessary if care were taken to do it gradually and economically. In the case of Birmingham, but for the war, he thought they ought to have had from fifty to 100 herds of cattle freed from tuberculosis.

Doctor Robertson drew attention to the fact that there had been in recent years a tendency to divide cases of pulmonary tuberculosis into open and closed cases. Many of the open cases were so far advanced as not likely in more than a small percentage to respond to present methods of treatment. On the other hand, a great many of the closed cases would do extremely well, but the tuberculosis physician seemed to have hesitation in calling them tuberculosis because they did not eject tubercle bacilli. He was prepared to accept the diagnosis of any honest and capable physician, whether tubercle bacilli were found or not, and having accepted that diagnosis, he felt the more inclined to concentrate on the cases without tubercle bacilli, because he believed that by this method they should in course of time reduce their death rate more quickly than by concentrating on those having actually active infection. The whole question of treatment might very well be put in charge of a departmental committee of experts at the ministry, with a view of bringing the amount of treatment in different parts of the country to some more uniform standard than at the present time, and of doing this as economically as possible.

In a recent report on the treatment of discharged tuberculous patients, the nation was threatened with great expenditure if the same plan was applied to the civil population. He believed that the officials who were responsible for advising the ministry should not be men who had to retire in rotation, but should know that they would be responsible for their views for a long period. It made for care. A great deal of useful information could be issued by a central tuberculosis department. One heard frequently of the failure of the sanatorium. He felt that the phrase should be expressed as their failure in making proper use of the sanatorium. His own experience was that from fifty to sixty per cent. of the cases which were diagnosed as pulmonary tuberculosis by competent physicians recovered sufficiently to require no attention and disappeared from their register. For many years now they had had in Birmingham about 3,000 new cases reported annually and about 1,000 deaths. This had gone on sufficiently long on a uniform basis to make it certain that a far greater proportion of recognized cases recovered than was usually supposed to be the case. He believed it was unfair and unwise to doubt the diagnosis in these days of recovery. That some of them were nontuberculous was certain, but the number in his judgment was not large because they had an opportunity for reviewing the diagnosis of nearly all of them. He thought, therefore, that they were on sound ground in dealing with tuberculosis on hygienic lines in sanatoria and in isolating the dangerously ill in hospitals, but there was a doubt abroad, and this doubt could best be removed by information from accred-

ited experts who had a wide knowledge of tuberculosis. Far too often physicians had given opinions as to treatment who had had little opportunity for studying the disease other than in outpatient departments of a hospital, where the "bottle of medicine treatment" is carried out or in luxurious private practice, where the conditions were entirely abnormal if applied to the general population.

Doctor Robertson concluded by remarking that he had said nothing about the environment of the tuberculous, because he felt that statements had recently been made which required very careful investigation. Such a statement, for instance, that housing was the main cause of tuberculosis in England was, he believed, quite unfounded. Evidence could be given that the women of England suffered far less from tuberculosis than men, yet it was on the women that one would expect the influence of bad housing to have more effect, and similarly, in many other aspects, statements had been made which were misleading.

Lieutenant Colonel NATHAN RAW, M. D., M. P., stated that he had succeeded in obtaining the appointment of a committee to inquire into the cases where soldiers or sailors were incapacitated by tuberculosis contracted in the country's service and to recommend the form that help should take. The committee found that 35,000 to 40,000 men were sufferers, and though much had been done the means of treatment were inadequate. It was hoped that a large number of extra beds would be forthcoming, as, from the beginning of the year, the exchequer had assumed what was in effect an unlimited liability in regard to the cost of treatment over the period considered necessary by competent medical opinion. Finance being assured, what was the best means of help to adopt? The association of the sanatorium with the training colony associated with a permanent village settlement was the suggestion he made. At the training colony, gardening, farming, pig and poultry raising, forestry, flower and fruit growing, etc., would be taught. The committee recommended the government to appropriate £1,000,000 (\$5,000,000) for the provision of permanent village settlements and £250,000 (\$1,250,000) for the immediate provision of training colonies.

Dr. DAVID LYMAN, Wallingford, Conn., said in the first instance, although he was down on the program to speak regarding the completion of tuberculous schemes in relation to the Ministry of Health, of course he must disclaim any special knowledge of the subject. But he was glad of the opportunity to take part in the British Conference on Tuberculosis because he was enabled to express his firm conviction that as the British and Americans had worked shoulder to shoulder in the battle for civilization so they should work shoulder to shoulder in the no less important task of reconstruction. He thought that tuberculosis work contributed most to the health of a nation. In the rearing of children good and adequate housing was an essential factor. Taking into consideration the fact that the hours of work were becoming less and less, it behooved those concerned with public health to devise schemes whereby the workers

might spend their abundant hours of leisure in healthy amusements or occupations. Dr. Lyman pointed out that the question of tuberculosis was an international rather than a national one.

Tuberculosis in Relation to Insurance Committees.—Dr. F. N. KAY MENZIES discussed the completion of tuberculosis schemes in relation to local authorities and insurance committees. He said in part, that he believed that bad housing was the most important individual factor associated with the prevalence of tuberculosis in the community. Great Britain was committed quite definitely to a very large new housing program which would ultimately involve an expenditure running into some hundreds of millions of pounds. Bearing in mind, therefore, the serious economic situation which had arisen as a result of the war, and the obligation which such a situation placed upon each one to revise carefully in the mind all schemes for the expenditure of public money, more especially any scheme which involved large capital expenditure upon buildings, such as new sanatoria, hospitals for advanced cases, colonies and permanent village settlements, how far were the people justified at the present moment in pressing for this kind of expenditure for the treatment of tuberculosis? It was certain that the country could afford to spend only a certain amount of money and produce a certain amount of material annually for the provision of new buildings or adaptation of existing buildings for any purpose. The question therefore arose: Was it better for the present to concentrate all the money and material upon additional new and improved dwelling accommodation for the working classes or to divert at least some portion of them for the provision of new sanatoria, hospitals for advanced cases, etc., for the treatment of the tuberculous section of the community? Personally, he was inclined to favor at the moment concentration upon additional new or improved dwelling house accommodation, provided that, first, a certain definite portion of the new accommodation, when provided by the local authorities, was reserved for the better housing of the tuberculous section of the community, and secondly, that such accommodation was specially designed, as regards thorough ventilation, etc., for the needs of the tuberculous patients. That is, Doctor Menzies would rather spend the money on improved homes for tuberculous patients than on colonies.

Notification of Tuberculosis.—Dr. C. LISSANT Cox took as the subject of his address the notification of tuberculosis and concluded that all measures dealing with tuberculosis had the prevention and eradication of the disease as their aim. It was now known that, during the later stages of tuberculosis of the lungs, the largest number of the infective agent, the tubercle bacilli, were set free, so that each advanced case was more dangerous as a source of infection than an early one. If, therefore, as was the case at present, hundreds of persons suffering from pulmonary tuberculosis were never reported and died from the disease, and if, as was also the case, notification was often only made in the last stages of tuberculosis, the attempts to combat the disease could only be partial and in-

complete. These cases provided a serious reservoir of infection uncontrolled by any public health measures, and no rapid decline could be expected while it continued.

Local Authorities and Insurance Committees.—Dr. H. HYSLOP THOMSON pointed out that the formation of a University of Health had provided the basis for a new and effective plan of campaign, as it seemed at the centre of administration the unification of action and effort. This plan of campaign, if it was to secure adequate and sustained success, must embrace simultaneous action along three definite lines: There must be a vigorous and sustained effort to abolish those conditions of life which were directly responsible for the existence of tuberculosis; there must be adequate and immediate provision of treatment suitable for each and every type of the disease, and lastly there must be an organized scheme for improving and maintaining the working capacity and the economic value of each individual who, attacked by the disease responded successfully to treatment. Doctor Cox stated that in some districts, and he had in mind the county of Hertfordshire which he represented, the relationship between county council and insurance committee was such that no difficulty with regard to the administrative control and institutional treatment of tuberculosis was experienced, but this was probably not the case in all districts. It would appear desirable, therefore, in order to secure that complete unification of effort which was so essential, that the problem of tuberculosis and other public health measures should be dealt with by a public health committee on which the various authorities and bodies which had to do with the prevention and treatment of disease would be represented. It was also desirable in the light of past experience that the general system to be adopted with regard to the prevention and treatment of tuberculosis should be clearly defined so as to secure a greater uniformity throughout the country and to obviate what was so prejudicial to ultimate and sustained success, namely, diversity of practice and procedure in the carrying out of preventive measures and institutional treatment.

Prevention and Treatment of Tuberculosis in France.—Professor LEON BERNARD, of Paris, read a paper in French describing the methods of prevention and treatment of tuberculosis which were initiated and developed in France during the war. Professor RIST, also of Paris, read a translation of Professor Bernard's paper followed by some remarks of his own. Some of the salient points of these were: After the war had been in progress for some little time public opinion in France became impressed with the gravity of the situation as regards tuberculosis and every means known to prevent and treat the disease were put into action. Private organizations worked hand in hand with the State. The State provided substantial subsidies. When war was begun there was no definite policy. There were no criteria as to diagnosis. When war broke out men were required so urgently that the medical authorities erred on the side of severity. If men infected were not obviously sick, they were passed into the army. After the battle of

the Marne when they had had time to draw breath, the sanitary organization of the army was proceeded with. Tuberculous soldiers were discharged in great numbers. The appalling figures of 85,000 men discharged from the French Army for tuberculosis were given. Many cases of mistaken diagnosis occurred and many were discharged who might have been retained. A reexamination of those who had been discharged revealed the fact that forty per cent. of these were found to be earning their living by very hard work. Every man who was discharged was entitled to full pension for one year and was then reexamined. If not cured he was put back for another year and reexamined at the end of that period and so on until four years had elapsed, when, if not cured at the expiration of that time, he received full pension. When absolutely cured, of course, he was discharged, but assisted until he could earn his own livelihood.

Dr. CHARLES HATFIELD, of New York, expressed his great appreciation of the reception tendered his American colleagues and himself. He said that most of what America knew concerning tuberculosis was due to British influence. He pointed out that conditions as regards tuberculosis differed somewhat widely in America and Great Britain, the population was largely drawn from diverse stocks and the people generally were not so conscious of tradition. There was no central authority. Tuberculosis work was begun in the United States by private enterprise in 1900. Dr. Hatfield described in detail these methods of organization. He emphasized the value of research declaring that research was the vital underlying foundation upon which alone constructive work could be done. He ended by insisting that now was the time the lessons of the war could be put to a thorough practical test.

(To be concluded.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Control of Hookworm Disease by the Intensive Method. By H. H. HOWARD, M.D., Director for the West Indies. Publication No. 8. New York: The Rockefeller Foundation International Health Board, 1919. Pp. vii-189.

This report, which is the new and enlarged edition of a former publication of the International Health Board on *The Eradication of Ankylostomiasis*, describes the methods used by that organization in campaigns against hookworm disease in the West Indies. The report deals with the administrative rather than with the purely scientific aspects of the question and gives in detail the organization of working units, publicity campaign for the stimulation of popular support, census taking, method of examination and treatment, keeping of records, and the duties of every person in the unit

from the medical director to the boy who washes up. The entire procedure has been simplified and standardized to such an extent that the work can be carried on, under competent medical supervision, by a staff of persons recruited locally, who have had no previous scientific training. An amazing efficiency has been shown in the preparation of the various forms for the keeping of records, which are shown in the appendix. The material contained here will be of interest chiefly to public health officials or other campaigners in tropical regions.

The Science and Art of Deep Breathing as a Prophylactic and Therapeutic Agent in Consumption. By SHOZABURO OTABE, M.B., M.D., Assistant Medical Officer, Kensington Infirmary, London; Formerly Assistant Medical Superintendent, National Sanatorium, Kent; Assistant Medical Officer, Baguley Sanatorium, Cheshire; Assistant, the Bacteriological Institution of Tokio Charity Hospital Medical College, Tokio. Illustrated. New York: William Wood & Co., 1919. Pp. vi-114.

Deep breathing, according to this author, will do everything for the person who practises it, from helping him climb mountains to giving him presence of mind at needed moments. He recommends it as a preventive measure in the case of those who have a tendency to tuberculosis, stating that his own experiments have been along the line of prophylaxis and that his experience in the treatment of tuberculosis by deep breathing has been limited. There are certain stages of the disease in which it is contraindicated. The theme is clearly presented and the author supports his case with experimental evidence.

Births, Marriages, and Deaths.

Died.

ALEXANDER.—In Union City, Tenn., on Saturday, November 1st, Dr. J. W. Alexander, aged sixty-five years.

BISSELL.—In Buffalo, N. Y., on Friday, November 14th, Dr. William Grosvenor Bissell, aged forty-nine years.

BRINKERHOFF.—In Miami, Fla., on Saturday, November 8th, Dr. Abraham S. Brinkerhoff, aged sixty-three years.

CALLENDER.—In Middletown, Conn., on Saturday, November 1st, Dr. May E. Callender, aged eighty-three years.

CHILDS.—In Brooklyn, N. Y., on Saturday, November 8th, Dr. Samuel Belash Childs, aged seventy-six years.

GARNETT.—In Hot Springs, Ark., on Friday, November 31st, Dr. Algernon S. Garnett, aged ninety years.

GILDERSLEEVE.—In Philadelphia, Pa., on Tuesday, November 11th, Dr. Nathaniel Gildersleeve, aged forty-eight years.

HOERR.—In Mamaroneck, N. Y., on Wednesday, November 12th, Dr. Adolph Hoerr, aged fifty years.

LEGGETT.—In Babylon, L. I., on Thursday, November 6th, Dr. Alexander Bleeker Leggett, aged eighty-four years.

LUCE.—In Napa, Cal., on Tuesday, November 4th, Dr. Douglas Luce, aged eighty-nine years.

MACFARLANE.—In St. Louis, Mo., on Thursday, November 6th, Dr. William Wallace Macfarlane, aged eighty-seven years.

MCCOMBER.—In Neuilly, France, on Wednesday, November 5th, Dr. Stewart Alfred McComber, aged forty-eight years.

NEWTON.—In Montclair, N. J., on Thursday, November 13th, Dr. Richard Cole Newton, aged sixty-eight years.

SCOTT.—In Jamestown, N. Y., on Wednesday, November 5th, Dr. John W. Scott, aged eighty years.

STEPHEN.—In Reading, Pa., on Sunday, November 9th, Dr. John Michael Stephen, aged sixty-four years.

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Original Communications

OBSERVATIONS ON THE TREATMENT OF BLADDER GROWTHS BY ELECTRICITY.*

By B. A. THOMAS, A. M., M. D., F. A. C. S.,
Philadelphia,

Professor of Urology, Graduate School of Medicine, University of Pennsylvania; Genitourinary Surgeon to the Presbyterian Hospital.

The modalities of electricity in their application to the treatment of bladder growths during the past decade, have caused a complete revolution in the surgery, at least, of certain types of these grave and formerly discouraging affections. The primary, fundamental and all important decision, relative to the adoption of the proper treatment of the various benign and malignant intravesical growths, whether electrical or surgical, obviously rests with the experienced cystoscopist. A consideration of this important phase of the subject, however, lies outside the jurisdiction of this paper at this time.

Due to the proclivity of benign growths or papillomata to recurrence or surface implantation even in the cystotomy wound itself, the end results of any incisional form of treatment formerly were uniformly so bad as to make the bladder tumor cases unwelcome in the practise of surgeons and not infrequently altogether precluded conscientious surgical intervention. It will, therefore, be appreciated that the work of Beer in 1910 in directing attention to what he called fulguration, and since defined and interpreted as desiccation, electrocoagulation, etc., marked a new epoch in the management of these troublesome bladder growths. The results of the high frequency treatment of papillomata have easily measured up to expectations, and although recurrences are not uncommon, they are far less frequent than after incisional treatment, and should recurrence occur, the condition is amenable to a repetition of similar treatment, whereas the number of major surgical operations to which a patient can be subjected is distinctly limited.

On the other hand, if the tumor is carcinoma or sarcoma, and discovered early and located favorably, any form of treatment other than radical operation, if the organic condition of the patient otherwise does not contraindicate, should not be tolerated. Assuredly supplementary treatment by the röntgen ray or radium should be employed. The fundamental thought, therefore, in the proper

treatment of bladder tumors is the importance of correctness in the differential diagnosis of the particular kind of tumor in each case. Thereafter, the management of the case is a simple matter and treatment should be as follows:

First, if the tumor is a papilloma, single or multiple, and is destroyed by the high frequency, Oudin or d'Arsonval current, the effect may be called electrocoagulation, desiccation, or what not. The thought has arisen that in multiple and recurrent cases it may be wise to supplement the high frequency treatment with radium in the belief that the deeper penetration of the rays would prove more effective in the prevention of recurrence. I have done this in a number of cases, although sufficient time has not elapsed to judge of superior results.

Secondly, in selected cases of early, small, malignant tumors, it may be permissible, after cystotomy, to remove the growth with the electrocautery or to destroy it by desiccation and then insure the best result by the implantation of radium in the tumor bed.

Thirdly, if the tumor is malignant and favorably situated, and not far advanced, the first thought should be extraperitoneal or combined intraperitoneal resection of that portion of the bladder occupied by the carcinoma, with transplantation of the ureters, if necessary. If the internal vesical sphincter is involved by the growth and the general organic condition and age of the patient warrants a very radical operation, total cystectomy, preceded by bilateral nephrostomy, may be contemplated and indeed successfully performed. The technic of these operative procedures has been described and illustrated by the author elsewhere (1). With the bladder, as is the case in carcinoma of any other organ of the body, it is advisable to follow the surgical procedure by x ray crossfire.

Fourthly, in that unfortunate group beyond the hope of cure by radical surgical intervention, electricity and radium deserve much commendation for relief of distressing symptoms, and prolongation of life, if not cure in a few rare instances. There are two classes of patients in this deplorable group; one in which there is no evidence of metastasis and cystotomy or cystostomy is permissible, supplemented by the implantation of multiple radium needles of 12.5 milligrams each, or better, if possible, the destruction of the growth by desiccation followed by the application of radium and x ray. In the other group the organic condition of the pa-

*Read by invitation before the twenty-ninth annual meeting of the American Association of Electrotherapeutics and Radiology, held in Philadelphia, September 16 to 19, 1919.

tient precludes the thought of advisability of even a cystotomy, except to deviate the urinary stream as a preliminary measure to death. In these cases, pain and hemorrhage may be relieved by a combination of crossfire with the x ray and radium applied with carriers per urethram and rectum.

My experience with the treatment of bladder tumors comprises fifty-four cases, divided as follows: Carcinomata, twenty-five; papillomata, twenty-three; polypi, four; hemangioma, one, and leiomyoma, one. In many instances the growths were multiple, so that the number of tumors treated easily doubled the cases represented. This analysis does not include three cases of gumma of the bladder, nor a large number of tumors of the prostate involving the bladder. Males were afflicted three and a half times as often as females. Carcinoma occurred at all ages from forty-four to seventy-two; papilloma from thirty-three to seventy; polypi from thirty-eight to seventy-two; leiomyoma at forty-seven, and hemangioma at seventy. Thus it is seen that age is of no importance as a factor in differential diagnosis. The duration of symptoms of the various growths varied from five weeks to twenty-five years. This is of importance only in its relation to the time the majority of these patients were treated medically, hence deprived of the all important and urgent information to be obtained from competent cystoscopy and, therefore, the proper treatment that in many instances, if resorted to early, would prove to be curative. Such negligence or incompetence on the part of either patient or physician, frequently seals the fate of the misguided patient and leads him to a cancer death. Blood, pus, urinary frequency and dysuria constitute the quartet of danger signals from the urological tract, and that physician who lightly and wilfully ignores those signals, unless he is convinced that the trouble is solely urethral and is satisfied to prescribe some urinary antiseptic for a few days and fails to have his patient thoroughly investigated to learn the source of the blood and pus, is guilty of a medical misdemeanor no less reprehensible than the crime of manslaughter. In this series, thirty-six patients, or 66.6 per cent., received nothing but medical treatment previously for months and years; only eleven patients had been cystoscoped before, and seven of these had had some form of surgical treatment, usually a cystotomy with attempted removal of the growth. Recurrence invariably occurred and not in a single instance was the procedure followed by permanent cure.

In nineteen cases of papilloma (including one of papillary carcinoma), four of carcinoma, three of polypi and one of hemangioma the patients were treated cystoscopically by the high frequency method (electrocoagulation, desiccation). The number of treatments (ninety per cent. Oudin and ten per cent. d'Arsonval) required to destroy the growths varied from one to nineteen. In this connection it should be stated that in many cases the growths were multiple—in one case no less than twenty-four papillomata were present, and in another case the bladder was literally filled with the papillomatous growth. In approximately one half of the cases of

papilloma there was recurrence, varying from two to ten times. In not one of the four cases of carcinoma thus treated was the patient benefited. As was to be expected the cases of polypi and hemangioma have been apparently cured without recurrence. In two cases of inoperable carcinoma electrocoagulation was supplemented by radium *per urethram*, but apparently without appreciable value. Recently, in cases of multiple papillomata, following their destruction by the high frequency current, I have placed fifty mgm. of radium in the bladder *per urethram* over the affected area for twenty-four hours, entertaining the hope and belief that by virtue of greater penetration of the radium rays recurrence might be prevented. Sufficient time has not yet elapsed to judge of these results.

Cystotomy was done in seven cases—by compulsion in two cases of papillomata because of blood clots filling the bladder. In both these cases preceding and following the operation, transfusions were necessary. In the five cases of carcinomata, the cystotomy was associated with removal of the tumor mass by the electrocautery or desiccation and supplemented in two of the cases with radium. Although one of these patients, in whom the carcinoma was removed by the electrocautery followed by radium, has been well and free from symptoms for five and a quarter years, I believe the rational procedure today with such growths to be destruction of the tumor mass by desiccation through the cystotomy wound, supplemented by the implantation of radium for twenty-four to forty-eight hours, preceded and followed by intensive x ray crossfire. I refer here, obviously, to those cases of carcinoma in which resection of the bladder is not practicable. The implantation of multiple needles of radium of small amounts (12.5 mgm.) throughout the carcinomatous mass, instead of its removal or destruction by the high frequency spark, followed by the imbedment of large amounts of radium (fifty to one hundred mgm.) has been employed so recently that comparative statements of superiority in treatment at this time are premature.

The cases in which resection of the bladder, with or without transplantation of the ureter, is practical and advisable, are comparatively few. My experience has been a mortality rate of fifty per cent., which is doubtless too high. When successfully accomplished it offers the patient the best hope of permanent cure. Total cystectomy is likewise a hazardous procedure, yet it has been successfully performed once in this series of cases.

Simple cystostomy or combined with the x ray or radium, like Coolidge tube crossfire and radium suprapubically, perineally, *per urethram* and rectum, and purely symptomatic measures, from which in advanced, inoperable cases little need be expected and will be realized, nevertheless serves as a parting Æsculapian effort prior to death's victorious toll.

Disregarding the inoperable cases in living patients, also the nontraceable incurable carcinoma in patients most of whom are dead, and those at present undergoing treatment, I find there are fifteen known deaths, all due to carcinoma, save two who died from intercurrent disease years after cure of

their papillomata. In the entire series of fifty-four patients thirty are known to have been cured, either temporarily or permanently—eighteen with recurrences, and ten without recurrences (two patients cured of papillomata subsequently died of intercurrent disease). Of these so-called cured cases, twenty-one were of papillomata (one papillary carcinoma), four were polypi and one each of carcinoma, leiomyoma and hemangioma. Of fourteen patients subjected to operative procedures supplemented or not with electricity or radium, eight, or 57.7 per cent. died in the natural course of their disease, excepting two operative deaths, a mortality of 14.3 per cent. Of the six living patients who had been operated upon, two had carcinomata, two had papillomata and one each leiomyoma and multiple polypi. It is of interest to note that in three fatal cases of carcinoma the patients had been operated upon elsewhere a few years previously for papillomata.

The period of observation of the living and apparently cured patients has extended from a few months to eight years. There have been about a dozen inoperable, rebellious, or thus far nontraceable cases of carcinomata, in which the patients have died without any treatment, and whose longevity has not yet been determined. In a later report I shall compare the life expectancy of these unfortunates with those victims of radically inoperable carcinoma who have had their dying days interrupted by operations, desiccations, and radium implantations.

In conclusion I must reiterate and reassert that the all important utility of the cystoscope is in differentiating the various vesical tumors, their nature, location and extent, in order to determine the most appropriate and best form of treatment, and not the least as a periodical follow up to detect and control as early as possible any evidence of recurrence.

REFERENCES.

I. THOMAS, B. A.: *Technic of Operative Treatment of Bladder Tumors, Surgery, Gynecology, and Obstetrics*, August, 1915, pp. 135-150.

116 SOUTH NINETEENTH STREET.

AMBULATORY TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.

By EDWARD H. BRADFORD, M. D.,
Boston.

The important nature of this fracture is well recognized, as the accident occurs frequently in elderly people and is ordinarily followed by a long period of bed treatment, with a resulting stiffness of the hip joint and a permanent disability with limitation of motion, if not complete stiffness. Furthermore, the weeks of enforced recumbency in bed are often debilitating and injurious to older and enfeebled patients, so that the remainder of their lives they are seriously handicapped as a result of the accident. It is for this reason that much has been written on the subject and many attempts have been made by various surgeons to diminish the crippling disability which usually follows the injury. It is unnecessary to recapitulate the various meas-

ures that have been attempted, as they have been well presented in surgical works and publications.

The following case is of interest for the reason that the method tried was new and the result surprisingly satisfactory. The advantages of the method of treatment presented would seem to be

the following: As the abduction splint which was used has provided efficient fixation, the patients were able to sit up without detriment, be removed from bed and allowed greater freedom than was possible either in a plaster spica bandage or in other methods of treatment where the patient is secured by the aid of a long side wooden splint accompanied by weight and pulley traction. The fixation of the fragments and the prevention of upward riding of the femur is secured by means of the traction furnished in the apparatus and a sufficient amount of abduction can also be secured. There is also the great advantage of prevention of cicatricial shortening of the periarticular ligaments which have been injured by the original trauma and which later cause a fibrous stiffening of the



FIG. 1.—Abduction hip splint.

joint which is overcome in convalescence with difficulty.

The abduction traction splint can also be used as a perineal crutch as soon as the bones are sufficiently united to prevent displacement. With this perineal crutch the patient is able to walk about without any danger of injury to the nearly united fragments of bone which, although partially united, are not so firmly solidified as to allow the whole body weight to fall upon them. Locomotion with this perineal crutch is possible at an early stage and aids in the reestablishment of proper motion. For proper fixation, the plaster of paris spica should be adjusted in such a way that it will include not only the whole pelvis but also the lower portion of the trunk. It must extend to hold the foot. Even if applied with the very best of skill, such a stiff bandage is extremely irksome and imprisons the patient in a way which is distressing to many patients. Although this form of treatment is borne by the strong and healthy, its continuous use for weeks and months in the elderly and feeble cannot help being injurious.

The abduction traction apparatus is a modification of the well known Thomas knee splint, to which is added a traction attachment and also a curved padded rod which gives bearing on the descending ramus of the unaffected side and is bent in such a way as to secure proper abduction. The splint was devised and has been long in use at the Boston Children's Hospital and the Massachusetts Hospital School at Canton as an ambulatory apparatus for the treatment of hip disease.

Experiments which have been made have shown

that as great or greater amount of fixation can be secured by this form of apparatus than by a plaster spica. The apparatus is fitted without difficulty and causes but little discomfort, permitting, if prop-

is reasonably secure. The apparatus is made with no greater difficulty than the ordinary Thomas knee splint. With properly applied traction the fragments can be kept in correct position and riding upward prevented. X ray pictures can be taken frequently and the position of fragments observed.



FIG. 2.—X ray taken two weeks after fracture.

erly shaped, the use of the bedpan without removing the splint. As there are no perineal straps which can be loosened, the apparatus when applied



FIG. 3.—X ray taken a little over a month after fracture.



FIG. 4.—Three months after fracture.

The results obtained in the cases treated with the abduction traction splint would seem to warrant the recommendation of this form of treatment in a large number of cases in this type of injury.

CASE.—On February 18, 1918, a woman employee at the Massachusetts Hospital School had the misfortune to fall and sustain a fracture of the neck of the right femur. Within a few minutes of



FIG. 5.—Three months after fracture.

the time of the injury, the medical superintendent and staff physicians examined the patient before she was moved from the place where she fell, and

although the diagnosis was clear other physicians who happened to be present at a meeting of the medical advisory board were invited to see the patient in consultation. The patient was a nervous, emotional woman sixty-five years of age and not in robust health.

children sent to the institution. When the patient's relatives were notified of the serious nature of the injury and the unfavorable result which would be likely to follow, they recalled a similar injury which had occurred in another member of the family and requested that the patient be kept as comfortable



FIG. 6.—Three months after fracture.

The diagnosis was confirmed by the x ray, and within an hour from the time of the injury the patient was placed upon a bed frame, traction was applied by means of weights and pulleys and sandbags placed in position to give lateral support.

The writer was then consulted by the superintendent of the school, who was anxious to employ

as possible, firmly convinced that she would never be able to walk again and that she would probably die from exhaustion.

With the writer's approval of the treatment recommended, a traction abduction splint was made at the institution apparatus shop and within forty-eight hours from the time of the injury bed traction



FIG. 8.—Three and one half months after fracture.



FIG. 7.—Three and one half months after fracture

the traction abduction splint the use of which the hospital staff had become familiar in the treatment of a large number of cases of hip joint disease in

was removed and abduction splint traction applied. The pain and discomfort which the patient experienced at first were quickly relieved when she realized that she could use the bedpan and change her



FIG. 9.—Three and one half months after fracture.

position in bed without special discomfort or danger of displacing the fragments.

On February 28th, ten days after the injury and eight days after the splint was applied, the patient sat up in bed and at no time afterwards suffered from any special discomfort. Twelve days later she was going about the ward in a walking frame and soon afterward became accustomed to the use of crutches. All traction was removed eight weeks after the injury and the splint worn to prevent full weight bearing until May 18th, exactly three months from the date of injury, when it was removed altogether and the patient discharged to complete her convalescence without further medical supervision. She had neither shortening nor deformity and soon afterward reentered the employ of the institution.

A second case may be mentioned through the courtesy of Dr. W. O. Faxon, of Stoughton, Massachusetts, who being present at the Hospital School at the time of the accident in the case mentioned above and observing the excellence of the result, applied the method to a patient of his own, a lady who sustained a similar fracture of the neck of the femur. The result was fully as satisfactory as that reported in the case at the hospital school.

As there is no doubt of the nature of the accident in these cases or of the excellence of the results following the methods of treatment employed, a method presenting no especial difficulty in application, the attention of the profession is called to its advantages.

133 NEWBURY STREET.

LARYNGEAL BOUGINAGE.*

BY HENRY LOWNDES LYNNAH, M. D.,
New York.

It is extremely difficult to cure chronic retained tracheal cannula cases. Laryngostomy has always been the operation selected and heretofore has offered the best results. Some less radical treatment than laryngostomy, which requires an endless amount of aftercare and which is not always followed by satisfactory results, seemed desirable to the writer. Prolonged intubation is required in all laryngostomy cases, even after the laryngo-tracheal lumen has been covered with a perfect skin lining, because the hyperplastic infiltration extends into the submucosa and perichondrium and may lead to an undetermined amount of contraction. So much contraction occurred in two of my laryngostomy cases that immediate tracheotomies were necessary. After the tracheotomy tube was introduced the lumen opened and dilatation with special soft rubber covered tubes was required for a year before the patients recovered. After laryngostomy the voice is never as good as it is after gradual dilatation by the author's latest method—laryngeal bouginage.

Bouginage in these cases requires great care lest undue force be employed in dilating the stenosed larynx and trachea. A small olive tipped bougie

should be passed from above through the endoscope avoiding a false passage into the tissues of the neck, or an injury into the esophagus. The first size or smallest bougie is placed against the stricture with the olive directed ventrally. If the small bougie does not pass readily forcible dilatation should not be attempted. After five minutes the trial should be discontinued and a second attempt made a day or so later. Usually after the third or fourth trial the small olive will pass through the tightest stricture. Forcible attempts should never be employed with a larger bougie until the smaller size has been passed with ease several times. When this occurs a larger and larger bougie may be used, but never more than three sizes at any single sitting. After endoscopic bouginage is successful, dilatation from below upward may be attempted. Finally, before the author's split cannula carrier and the rubber laryngeal tube are inserted bouginage should be performed three or four times so that the larynx is thoroughly opened.

The introduction of the rubber laryngeal tube furnishes two ways for breathing; the tracheal cannula and the mouth. This has proved invaluable in reeducating the children in mouth respiration. However, it is very difficult at times to teach them to breathe through the mouth even when the tracheal tube is tightly plugged while the laryngeal tube is in place. They have become so accustomed to breathing through the tracheal cannula that the function of the larynx is lost. Tracheotomy is frequently unsuccessful for cure even when performed early in patients with retained tubes in intubation cases, if the cicatricial subglottic and tracheal contraction forms a web. In some instances these children breathe fairly well through the small lumen in the web. However, the web has no tendency to disappear spontaneously, nor does the lumen tend to increase its size no matter how long the child may be able to breathe with the tracheal cannula partially occluded. The remarkable voices possessed by many of these children is surprising, even though there may be only a millimetre lumen in the web. A method which conserves the voice should be employed and is offered by laryngeal bouginage.

In treating these patients after the primary endoscopic introduction of a bougie, the writer introduces his very fine cautery knife to cut the lumen of the web in its anteroposterior diameter, and follows this by gradual endoscopic and retrograde bouginage, finally introducing the laryngeal rubber tube. After galvanocauterization the burned edges of the web may adhere firmly if they are not separated by an intubation or rubber laryngeal tube for at least a week.

In our experience at the Willard Parker, Riverside and Kingston Avenue Hospitals, chronic laryngeal stenosis has followed tracheotomy just as frequently as it has followed intubation. The extent of the pathological process seems to be the important determining factor; oversize tracheal cannulae and intubation tubes are also contributing causes. When performing intubation it should be remembered that the smallest intubation tube that will

* Communicated to the American Laryngeal Association at Atlantic City, June 16th, 1919.

give relief should be used; the age of the patient is not the sole guide. When tracheotomy is performed the same considerations hold for the selection of the tracheal cannula. Patients with tracheal cannulae entirely too large for the trachea are frequently admitted. When the cannula fits too snugly

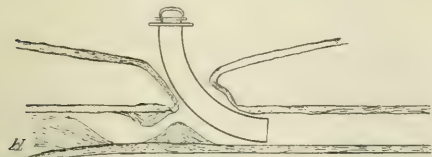


FIG. 1.—Schematic sketch to illustrate the changes which occur in the larynx and trachea when an oversize tracheal cannula is used. Note the anterior and posterior spur formations at the bend of the cannula, and the complete closure of the larynx above.

it is impossible for any air or secretion to pass along the side of the cannula. Marked anterior and posterior spur formation result. The laryngeal breathway may be completely sealed by the pathological lesion on this account. Proper fitting tracheal cannulae should never occupy more than half the lumen of the trachea. It is unnecessary to have an enormous lumen; the small size tubes are sufficient. Frequent cleansing of the inner tube keeps the lumen free and permits easy respiration.

If there has been an extensive cicatricial contraction at the cricoid level, tracheotomy will not prove successful in the cure of laryngeal stenosis. The contraction must be dilated gradually by bougies. By this means I have obtained gratifying results and ultimate decannulation of the patients.

The following patients were treated by laryngeal bouginage and rubber laryngeal tubes. All of them were unable to breathe through the larynx with comfort. Some of them had cicatricial web stenoses above the cannula, and polypoid granulations and tracheal spurs at the bend of the cannula.

CASE I.—A girl of eight, was admitted to the Willard Parker Hospital and intubation was performed shortly thereafter. She was in poor condition having been ill five days, and for two weeks after admission had suffered from a bilateral pneumonia. At the beginning of the third week the child who was unable to breathe without the tube began to cough it up. After her general condition had improved at the end of three months she was able to dispense with the tube. Three months later after an acute nondiphtheritic laryngitis, breathing became so difficult that reintubation was necessary. This was accomplished with some difficulty. She retained the tube for four months, and then remained without it for six, when its second reinsertion was necessitated by cicatricial contraction. The child at this time suffered from a second pneumonia induced by the retention of secretion. She was sent to Otisville, N. Y., where she was greatly benefited by the fresh air and life in the open. After she had been in Otisville a while Doctor Dickson removed the tube and she was able to remain without it for more than two years. When she was readmitted the third time to the hospital she was suffering from a moderate degree of dyspnea. There were many subcrepitant râles over

both lungs, and an x ray revealed a damming back of the secretion in both lungs as well as an enlarged thymus gland.

On attempting direct laryngeal examination the child became blue, and in all probability would have succumbed had it not been for an immediate tracheotomy. In performing low tracheotomy a large lobe of the thymus protruded into the wound. This was clamped and pulled aside by my assistant, Doctor Glover. The trachea was found so completely collapsed that a hook was inserted between the rings and the trachea pulled forward and incised in the median line, for the introduction of a long tracheal cannula. The child was restored by artificial respiration. To prevent recurrence of the trouble I decided to resect the thymus by gently pulling it out of its capsule. A large posterior lobe and two smaller lobes were rapidly removed. Hemorrhage was controlled, and infection of the mediastinum was prevented by packing the wound with gauze. At the end of four weeks the wound was healed, and the general condition of the child improved. I then decided to make a direct examination of the larynx for there was very little air passing through it, and she was unable to breathe with the cannula occluded. With each attempt to breathe through the larynx there was a loud whistling sound. The examination revealed a good pair of vocal cords, and on the introduction of a five mm. tracheoscope a cicatricial web was visible at and below the cricoid level. In this there was an opening apparently two millimetres in diameter and well to the right of the median line. Notwithstanding these conditions, the child had a very good voice and freely movable arytenoids. Three days later tracheoscopy was again performed and the web was cut laterally by the galvanocautery.

Great care must be taken in cutting these subglottic and tracheal cicatricial webs, and the eye should be constantly focussed on the cautery tip to avoid injury to the trachea. A short intubation tube was then introduced. Cauterization was repeated and by bouginage the stenosis was sufficiently divulsed to permit the introduction of the rubber laryngeal tube. The next summer the child was again sent to Otisville, and she breathed well

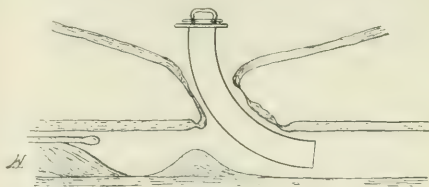


FIG. 2.—Schema showing the properly fitting undersize tracheal cannula which should be used in all cases. The oversize cannula has been removed, a smaller one taking its place. Note the introduction of the small endolaryngeal bougie passed through the laryngeal stricture above.

through the larynx without the rubber laryngeal tube, and with the tracheal cannula tightly closed. The voice was of good quality, though occasionally hoarse. The child was removed to Baltimore by the parents and placed under the charge of Doctor Crowe. She was breathing well through the larynx

when last heard from, but still wearing the tracheal cannula.

CASE II.—B. E., a girl aged fifteen; intubation had been done for laryngeal diphtheria at the age of four. She had been a severe cough case which rapidly became chronic. After two and a

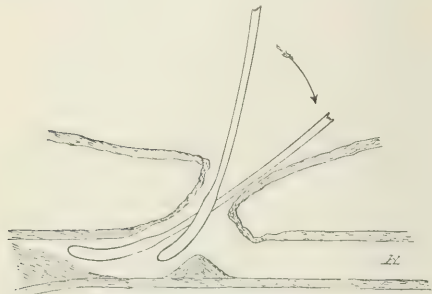


FIG. 3.—Schematic illustration of retrograde bouinage. The bougie is introduced into the tracheal fistula almost perpendicularly, the curved being used to lift the upper anterior tracheal wall for easy introduction. The anterior wall is the guide for all bouinage.

half years of gradual dilatation by my special intubation tubes she had apparently recovered completely. For seven and a half years she remained without the tube, then as the result of an attack of influenza the larynx became stenosed. During this interval she had a normal speaking voice. On February 6, 1917, she was admitted to the Kingston Avenue Hospital suffering from extreme dyspnea. The writer made a futile attempt to perform intubation and then performed tracheotomy. An enlarged thymus gland appeared in the wound. This was pulled to one side by Dr. Stanley Laub, and the trachea opened. The trachea was not compressed as in the younger child but there was definite flatness. After the trachea was opened the girl breathed easily, and the thymus was partly resected. X ray treatment was later employed. By direct endoscopic examination of the larynx, and by retrograde tracheoscopy a dense web was seen in the region of the cricoid cartilage. There was a minute opening in it. Doubtless the stenosing web had been present for some time, and the acute influenza made the tiny lumen edematous; this shut off respiration almost completely. Radiographic examination showed enlarged mediastinal glands as well as the thymus extending well downward. On physical examination of the chest little air entered the right lung. By tracheotomic bronchoscopy the right main bronchus was seen to be compressed, but when the bronchoscope was passed through the compression stenosis air entered the lung with ease. A perforated soft rubber tube was introduced into the right bronchus through the tracheal cannula. This greatly improved the aeration and drainage of the lung. An x ray picture showed the tube in the right bronchus. X ray treatment was given once each week, and the laryngeal lesion was treated by bouinage. The girl had a perfect speaking voice in spite of the extreme dyspnea before tracheotomy was performed, and after tracheotomy it had a tendency to become stronger. The vocal cords

were normal in appearance. The ventricular bands were normal, and there was free motion of the arytenoid cartilages. This condition existed in spite of the prolonged treatment performed in the past by dilating and narrow neck intubation tubes. In order to conserve this excellent voice endoscopic treatment was employed.

The lumen of the web which was very thick at its edges and thin in the centre, was gradually dilated with bougies until the galvanocautery knife could be introduced. The web was cut in its anteroposterior diameter and a small intubation tube introduced. In less than a week further galvanocautic applications were made, and a soft rubber covered intubation tube introduced after dilatation with bougies. A week later the larynx was again dilated and a No. 20 F, rubber tube, was passed from the tracheotomy wound through the web stricture to the base of the epiglottis and anchored in the trachea. The tracheal cannula was then reinserted. The girl was now able to breathe through the larynx with the tracheal cannula occluded. This treatment has been continued, and I am happy to report that the patient can now breathe normally through the larynx. There is no stridor and she has a normal speaking voice.

CASE III.—C. D., a girl of seven, was admitted to the Kingston Avenue Hospital for laryngeal diphtheria, and intubation was performed three hours later with a 4-5 O'Dwyer tube by Doctor Eberle. She had a moderately severe diphtheria and retained the tube for six weeks. Having done well for four months in the hospital without the intubation tube she was discharged as cured. The parents were instructed to return the child to the hospital once a month for observation. At the end of a year the child was apparently in perfect condition with a normal voice and easy respiration. The parents thereafter neglected to report to the hospital. A year and a half later, that is, two and a half years after she was discharged from the hospital as cured, she was readmitted with a new infection of diphtheria and with such extreme dyspnea that intubation was indicated. An attempt was made by Doctor Eberle which was unsuccessful, but an immediate tracheotomy gave prompt relief. Direct laryngeal examination was performed

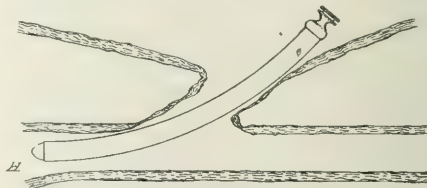


FIG. 4.—Schematic illustration showing the introduction of the author's split cannula carrier with obturator, for the introduction of the soft rubber laryngeal tube.

a few hours later, and revealed a very edematous larynx, but no visible membrane except on the epiglottis and in the laryngopharynx. In three weeks the child had completely recovered from the diphtheria but the laryngeal stenosis persisted and it was impossible to decannulate. The laryngeal

picture gradually returned to normal and the voice though hoarse was fairly good. A rather dense shining cicatrix with a posterior opening was visible in the cricoid region. This cicatrix was observed from time to time for any increase in size of the opening. By the end of the second month the voice

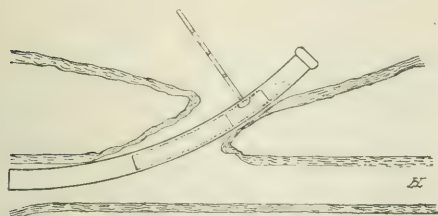


FIG. 5.—Scheme showing the introduction of the soft rubber laryngeal tube after the obturator has been removed. The cannula is removed as soon as the rubber tube enters the larynx.

was normal, and though the child could breathe through the larynx with the cannula partly occluded, because of the web obstruction, respiration was not easy. In order to preserve the voice we decided to gradually bougie and cauterize the stricture. Repeated tracheoscopic galvanocauterization and endoscopic and retrograde bouginage were performed with gratifying results. The opening in the web was gradually dilated until a small laryngeal rubber tube could be introduced. The child was treated for six months at intervals of one to two weeks. Then the opening was sufficiently large to admit a five mm. tracheoscope. Bouginage was continued for three months longer to prevent subsequent contraction. At the end of nine months the larynx was freely open and no tracheal spurs were visible. The child was decannulated and has remained well ever since, fifteen months. On my last direct examination there was no sign of recurrent stenosis. The child is able to breathe with ease, and has a normal speaking voice.

CASE IV.—P. Van H., a girl of eight, was referred by Dr. J. C. Jones, of Panama City, Fla. The child had been intubated for laryngeal diphtheria at the age of one, and because of persistent coughing up of the tube during the second week tracheotomy was performed. Several futile attempts to decannulate were made during the first two months. No air entered the larynx, and the tracheal fistula collapsed at each attempt to remove the tube.

In October, 1918, the child was brought to me for treatment. By direct laryngeal examination, the larynx was seen to be completely closed. The vocal cords were visible and tightly fused. The arytenoid cartilages were fixed. The tracheal fistula was now examined. The cannula was oversize and covered with concretions, for the nickel plating had worn off from the brass cannula. By retrograde tracheoscopy the trachea above the fistula was seen to be almost completely closed by an anterior and a posterior tracheal spur produced by the oversized cannula. An attempt to pass a bougie from above and from below was unsuccessful. After the third trial the smallest bougie was passed through the larynx from above, and a small curved bougie

passed from below. A small No. 10 F. rubber tube was introduced into the larynx from below and anchored to the tracheal cannula. This procedure was repeated weekly and the rubber tube increased in size. At the end of six weeks the larynx admitted a rubber tube 22 F., and for the first time since her illness the child was able to breathe through the larynx, and discovered that her mouth had another function besides chewing food. This child was in perfect physical condition though she had worn a tracheal cannula for seven years. Her intelligent mother taught the child to cough and breathe through the larynx which was kept open by the rubber tube. After three months' treatment a trial removal of the rubber tube was made. The trachea was smooth. There was no evidence of spur formation and the larynx was patent to a five millimetre bronchoscope. The child was able to breathe fairly well through the mouth, and could cough easily through the larynx with the tracheal cannula occluded two thirds by a rubber stopper. To avoid a northern winter the child returned to Florida. She was able to breathe through her larynx fairly well at the time she left. She will return shortly for further treatment. Doctor Jones states that her condition has not changed since she left my care.

CASE V.—J. P., a boy of six, was admitted to the Kingston Avenue Hospital suffering from laryngeal diphtheria for which he was intubated shortly after. His diphtheria was a severe type. There was no membrane below the intubation tube. During the second week, after the diphtheritic process had subsided the tube was coughed up on an average of twice daily and bronchopneumonia developed. He recovered from the pneumonia in a month, but except for short intervals he was unable to remain without the intubation tube. A direct laryngeal examination was made. The tube was removed and in a few minutes subglottic edema closed the larynx. A tracheoscope was introduced which gave prompt relief. As the tube continued to be coughed up, tracheotomy was performed two weeks later by Doctor Eberle. The tracheotomy relieved the lung of considerable secretion and the general condition of the child improved. The

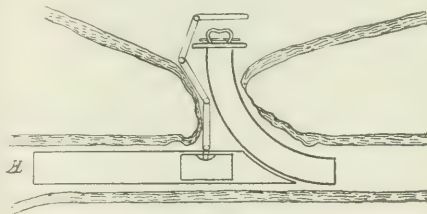


FIG. 6.—Sketch showing the rubber laryngeal, draining and drainage tube, which is in place. The tracheal tube has been reintroduced. Air easily passes through the laryngeal tube, and the child can be reeducated to mouth respiration.

laryngeal lesion had not improved since no air could pass through the larynx. In the region of the cricoid there was a marked change in the tissues which caused the coughing up of the tube. In the centre of a constricting web there was a slight dimpling through which the smallest endolaryngeal

bougie could be passed. By gradual weekly bouginage the opening was sufficiently dilated to admit the galvanocautery and the introduction of a No. 17 F. rubber tube. The tube was changed once a week and the larynx dilated. At the end of the second month the larynx was apparently well open admit-



FIG. 2.—Radiographic view of the rubber laryngeal tube and tracheal cannula in place; anterior view.

ting a five mm. tracheoscope, and a trial detubation was made. The tracheal canula was partly closed by a rubber stopper, and the boy instructed to cough and breathe through the mouth. For two months he did fairly well, but the stenosis gradually recurred and a repetition of the treatment was necessary. This was continued weekly for six months, when detubation was again attempted. This time the child was able to breathe well through the larynx without plugging the tracheal cannula, since the cannula was undersize for his age. Since then the larynx has remained open. He is able to breathe well through his mouth, though the voice is somewhat hoarse.

CASE VI.—C. McC., a boy of seven and a half years, was admitted to the Kingston Avenue Hospital and was immediately intubated for laryngeal diphtheria. He had been ill five days and was in an extremely toxic condition. A dose of 20,000 units of antitoxin was administered. By the seventh day the boy's condition had improved, he was extubated but required reintubation in less than five minutes.

A week later a second attempt to extubate was made. The boy remained without the tube this time for twelve hours, then he was reintubated, because of his progressive dyspnea, high temperature and damming back of secretion in the lung. On direct examination the ventricular bands and arytenoid cartilages were found to be swollen. A flat head tube was introduced and worn for a week. The supraglottic edema subsided, and at the next trial the patient remained without the tube for two weeks. This time gradual contraction in the subglottic region caused increasing dyspnea. An unsuccessful attempt to reintubate was made and an emergency tracheotomy was performed by one of the house staff. The operation was hurried and therefore, a stab emergency tracheotomy, and though it saved the life of the child, the tracheo-esophageal wall was severed and there resulted an annoying tracheoesophageal fistula. Swallowing either solid or liquid food was accompanied by leakage through the tracheal fistula. A rubber catheter was therefore introduced through the nose and all feeding was by gavage. By the end of three weeks the boy could swallow fairly well with very little leakage of fluid through the tracheal wound. At this time esophagoscopy revealed a small slit in the anterior esophageal wall which in healing produced a tracheal stenosis above the cannula. There was no stenosis of the esophagus at this level, though there was a depression into the tracheal lumen from cicatricial contraction. A seven millimetre esophagoscope was introduced with ease. Instead of the larynx opening above the cannula after tracheotomy, it gradually closed so firmly that the boy was unable to breathe by mouth. After waiting three months with the tracheal tube partly closed there was no improvement in mouth respiration. The tracheoesophageal fistula had healed completely.

At the first trial laryngeal and tracheal bouginage was unsuccessful, but finally a small bougie was passed through the larynx from above. Because of the tracheal stenosis bouginage from below was impossible. Persistent attempts were not made for fear of opening the old wound in the esophagus. After dilatation from above a short intubation tube was introduced to keep the larynx open. After thorough dilatation from above bouginage was successful from below. After more than six months' treatment the larynx was sufficiently dilated to admit of a large rubber laryngeal tube. The boy has worn the rubber laryngeal tube and tracheal cannula for two years. From time to time the larynx and trachea are bouginaged and larger rubber tubes introduced. At the present time the larynx and trachea are well open, and respiration is comparatively easy through the larynx with the tracheal cannula partly closed. Of course I do not present this boy as a cured patient.

CASE VII.—J. McQ., a boy aged seven and a half years, was admitted to the Willard Parker Hospital during his third year, suffering from laryngeal diphtheria and was immediately intubated. During the second week he coughed up the tube as frequently as ten times a day. An unfortunate unsuccessful attempt to stop coughing up was made

with oversize tubes. A Lynah three year non-coughup tube was introduced. The larynx now had a chance to rest since the tube was retained. Slight infiltration developed in the tissues of the neck, but soon disappeared after the application of poultices. At the end of a week the noncoughup tube was removed and the boy went without it for five days. Cicatricial contraction at the cricoid level had resulted from the repeated coughing up and necessitated reintubation, a three year non-coughup tube being used. For the first six months the boy could go without the tube for a week or two. Subglottic edema would then necessitate reintubation. Galvanocauterization was performed six times, and ultimately by the end of six months the boy remained without the tube. He breathed fairly well and his parents believing him cured refused further treatment. He remained four years without the tube, having a fair voice though an inspiratory crow which was loud especially when asleep, and some expiratory dyspnea on exertion. The boy was admitted to Riverside Hospital where Dr. John Crawford and myself studied his case. The thorax was markedly distorted from prolonged inspiratory effort against obstruction and the sternum was depressed. The loud inspiratory crow, especially marked during sleep, was due to bilateral ankylosis of the cricoarytenoid joints. The vocal cords were partly separated in the centre on expiration, while on inspiration they were sucked together to produce the crow. Respiration occurred through a small opening in a subglottic cicatricial web. The boy did not stand the direct laryngeal examination well by reason of the ankylosed arytenoids and subglottic stenosis. After the boy had quieted down from the examination and resumed his usual respiration Doctor Crawford assisted by me performed a low tracheotomy under novocaine anesthesia. The trachea was collapsed from the prolonged respiratory effort which was so violent that the suprasternal notch was sucked in with each inspiration. A hook was introduced between the rings to pull the trachea forward and the trachea was opened. Air escaped along the trachea before it was opened and caused marked emphysema in the tissues of the neck. This was obviously due to violent efforts at expiration against a tight obstruction. A special long tracheal cannula was required to make respiration easy. This was probably due to collapse of the trachea beyond the distal end of the usual short cannula. The inflammation in the subglottic region subsided after the tube had been worn for a week. Through the tracheoscope the web was freely cut by the cautery in an anteroposterior direction and a small short tube introduced. A second examination was made a week later and a slight amount of motion of the arytenoids was noted. A small mass of polypoid tissue was removed from the left ventricular band, and its base cauterized. The cicatricial web was again cauterized and dilated sufficiently to admit the introduction of a 17 F. soft rubber laryngeal tube. It was anchored in the tracheal fistula and remained in place for a week when it was changed for cleansing. After twelve weeks of treatment, and after a long anterior com-

missure was cut between the extremely shortened cords, the laryngeal tube was removed. The following week the arytenoids were found to be moving fairly well, and a five millimetre tracheoscope was readily introduced. Bouginage has been repeated once each week since then, and at the present time the boy is able to breathe easily through the larynx, and wears his tracheal cannula constantly occluded. The inspiratory crow has disappeared and the voice has improved greatly. At the end of the fifth month of bouginage the condition is so much improved that the writer awaits an ultimate successful outcome.

The author has under treatment at the present time six cases besides those reported. Two of these children have no difficulty with respiration and will be decannulated shortly. Two are wearing soft rubber laryngeal tubes, and two are able to breathe well through the larynx without plugging the tracheal tube. Three other recently admitted

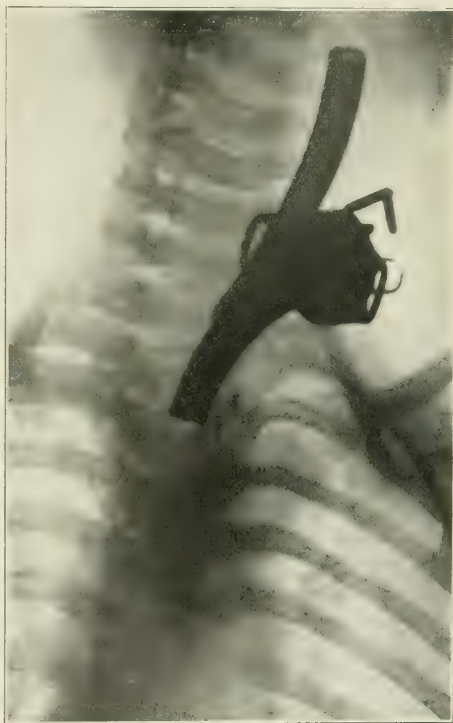


FIG. 8.—Lateral radiographic plate showing how the rubber laryngeal tube is anchored in the trachea. Note the relation of the slanting end of the rubber tube to the tracheal cannula. No recurrent spur formations are possible by this method.

patients from neighboring cities have been wearing tracheal cannulae for from five to nine months without improvement. All of them show cicatricial webs with a small central opening at the cricoid level.

127 WEST FIFTY-EIGHTH STREET.

THE DUTY OF THE STRONG TO THE WEAK POOR.

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The past has been desolated by destruction and suffering from wars and indifference but the future should be one of construction and relief. The strong are those having brains, energy and a capacity for making money. The weak are all those who are unable to take care of themselves, to provide the bare necessities of life. Roughly estimated about ten per cent. of human beings in civilized countries are weak and poor. In each state some energetic philanthropist should lead this crusade against poverty and suffering and see it through. Citizens should form an association for this assistance to the helpless poor. They should have a president, a secretary and a manager. They should start a campaign to educate the people on the subject. It should enlist the aid of the press, the medical men, the clergy, commercial bodies, and benevolent associations. The Legislature should obtain from the people by vote, the authority to raise a tax necessary to relieve the sufferings of the weak poor. Large sums of money will be required to carry out this humanitarian scheme. No money will ever be expended in a worthier cause.

There should be a central charity board to control and supervise. It should have one inspector at its service to follow the workings of the individual institutions and report to the central board. The central board should be appointed by the Governor and be responsible to him and to the Legislature. Each and every department of charity should have a separate board, appointed by the Governor to be responsible to him and the central board. All boards should submit their budget requisitions and regulations to the central board for its approval, correction or rejection. Charity should be dispensed with the strictest economy but without niggardliness.

The weak poor are: The sick poor, the old poor, neglected children and orphans; the apathetic and lazy, the unemployed, and poor families with children to be given food and clothing, but not money. The needs of the sick poor form a long and pitiful list and comprise an emergency hospital for accidents, a hospital for acute diseases, a hospital for curable chronic diseases, a hospital for incurable chronic diseases, an isolation hospital for contagious diseases, a lying-in hospital, a children's hospital, a hospital for curable tuberculous cases, a hospital for incurable tuberculous cases, a hospital for venereal diseases, a hospital for the insane, a hospital for the deaf and dumb, a hospital for the blind, a hospital for orthopedics and cripples, a dental hospital, an eye, nose, and throat hospital, a hospital for skin diseases, a diagnostic hospital, a Pasteur institute and hygienic institute, a research hospital, a hospital for drug addicts, a convalescent hospital, a board for the eradication of venereal diseases by the sanitation of immoral women, a board for the supervision of sanitation of locali-

ties, especially of the slums, reformatories for the youth, reformatories for immoral women, medical help to the poor at their homes and nursing, nurseries for the care day and night of the children of the sick, pure milk to the babies of the poor. The hospitals should be distributed over the state in or near the principal towns.

The hospitals and institutions now in existence may be left undisturbed. If they affiliate with the central board they should be assisted and improved. The afflicted who can do some work should be employed in raising supplies for their own use. There should be a board of day nurseries for children of the working mothers. Also a board should assist the unemployed (food, shelter, no money) and work should be found for them. Also a board to assist the poor; a board to look after the apathetic; a board to assist the poor with children (food, clothing, no money). A board should foster the formation of benevolent associations among the poor, as well as a board for the establishment of cooperative stores for the poor. Finally, a board should be created to standardize the articles of food and clothing most used by the poor so as to make them as cheap and accessible to them at fixed prices.

For the strong opportunities for study should be given and vocational institutes established, the primary education to consist of reading, writing and elementary arithmetic, elementary geography, and elementary universal history. Public libraries should be established and stocked with selected books of elementary science, arts, literature, etc., for the improvement of the young. Vocational education should teach them a trade or occupation by which they can earn a living, especially on farms.

2403 ST. CHARLES STREET.

HYSTERIA SIMULATING BRAIN TUMOR.

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It is a well known fact that hysteria can simulate almost every organic disease of the nervous system. Indeed it does that not infrequently to such an extent that one has for a time great difficulty in making a correct diagnosis. But there is one thing hysteria almost never does; it does not assume a truly anatomical aspect. A hysterical paralysis will never truly correspond to a peripheral or radicular or central distribution; a hysterical anesthesia will not be limited to definite anatomical areas of sensory distribution. The functional paralysis is irregular, bizarre. As has been aptly remarked, hysteria paralyzes a function and not a part.

It is not the object of this paper to enumerate the points of diagnostic differentiation between hysteria and organic diseases of the nervous system, but merely to report a case which illustrates the great difficulty one occasionally encounters in attempting to make a diagnosis. The case is further of interest in that it was absolutely important to make a correct diagnosis very early (which was not done), as the life of the patient depended on

the proper treatment. If we were dealing with a brain tumor, surgical interference was obviously the urgent indication. That hysteria will simulate brain tumor has been frequently called attention to, but that it will give a picture of actual anatomical involvement and correspond to strict cerebral localization is such a great rarity that the following case is worthy of a detailed report.

CASE.—History.—S. L., aged twenty-three, single, female, stenographer, was first seen at her home on January 5, 1919. The physician who had seen her previously thought that a complete neurological examination was indicated in view of a possible cerebral involvement. Her chief complaint was that she suffered from spells, lasting a few seconds to one minute, during which she lost all power of speech and had weakness of the right hand and arm. The condition had come on suddenly, December 10, 1918, and had grown progressively worse. The first symptom was dizziness. She said that she felt she was turning about, her dizziness becoming worse on looking to the right. There was nausea but no vomiting and no falling or staggering to either side. Synchronously with the onset of the subjective vertigo there set in severe frontotemporal headache which was constant. This condition lasted for two weeks when both headache and dizziness stopped. December 26th the patient retired to bed, and, while speaking to somebody, suddenly found herself unable to move her tongue or utter a word. She knew what she wanted to say, understood what was spoken to her, but could not speak out. This lasted a few seconds then passed off. Since then these momentary losses of ability to speak came on with increasing frequency, now occurring scores of times daily. On January 2, 1919, three days before she was seen by the writer, she noticed a gradual weakness of the right upper extremity, more particularly the hand. She has become drowsy and sleeps a great deal.

So far, then, one is almost justified in making a diagnosis on the history alone, of organic involvement of the brain. The typical transient motor aphasia with involvement of the right hand speak for a lesion in the third left frontal convolution, impinging upon the adjacent motor area which controls the hand and arm centres of the pre-Rolandic cortex. Add to this the severe frontotemporal headache, the nausea, drowsiness and dizziness and one is tempted to say brain tumor, if, indeed, one is not justified. But to go back to the history.

Previous history.—She is the second of five children. She was born at full term after a normal, noninstrumental delivery and was normal in all respects. The mother states that the patient was breast fed, of good health, first teeth at six months, began to stand at nine months, walk at eleven months, talk at one year. Entered school at six, was graduated at fourteen and a half, went to high school for two years, then to business school and had worked as stenographer up to the onset of her illness. She never had had any injury to the head, was operated upon for congenital right internal strabismus in 1913. She had had measles at three months of age, scarlet fever at eight years and influenza in October, 1918.

Her habits are good, she drinks coffee and tea in moderation, take a little wine with her meals, has fair appetite and sleeps excessively. Her bowels move regularly, she has not lost any weight, has no difficulty or pain or frequency in urination and no incontinence or nocturia. Her menses began at fourteen and a half, have always been regular, of the four week type, lasting four to five days, moderate in quantity, no dysmenorrhea, the last period having come on January 5, 1919. She denies masturbation and lays claim to little sexual desire. She has always been sociable and has a number of boy and girl friends. She never had double vision, has no disturbance of hearing, no pains, no cough or dyspnea. She is not afraid of anything, has no mental or emotional disturbances, although she is worried over her present condition, and her memory is good. She denies sexual relation and she never miscarried.

Family history.—She is the second of five children, the first having died soon after birth. Her mother miscarried the fifth pregnancy. Father died of some liver disease, mother is living and well. The patient lives at home with mother and step father with whom she gets along well, though not intimately. There is no history of insanity, epilepsy, alcoholism, cancer or tuberculosis in ascendants and collaterals. In view of the importance of the case a detailed outline of the physical findings may not be out of place.

PHYSICAL EXAMINATION.

Voluntary motor system.—No abnormal attitudes or deformities. The gait is normal to all tests. Equilibratory coordination normal; no Romberg. Nonequilibratory, finger to nose, heel to knee, etc., normal. No dysmetria or adiadochokinesis. Skilled acts—some dyspraxia in the right hand and possibly also in the left. Handwriting is poor, irregular and shows unsteadiness. Speech is normal and there is no aphasia, but during the spells she is unable to utter a word or protrude her tongue, though she understands everything and knows what she wants to say. There are no abnormal involuntary movements, such as tremors, twitches, choreiform movements, athetoses, spasms or convulsions.

Of the deep reflexes, the jaw jerks are present, lively and equal, the pectorals, biceps, triceps, radials and ulnars are hard to elicit, but probably present, the suprapatellars and patellars are present and lively with a suspicion that the right are more active than the left; the achilles are present and equal. All the superficial reflexes are lively and equal; there is no Babinski, Oppenheim or Chaddock. Muscle strength is normal throughout the body, except for possible diminution of gross power in the right hand and forearm, though not to any measurable degree. There are no atrophies, the tone and irritability are unaltered. There are no abnormal associated movements.

General sensory examination shows normal response to touch and its localization, to pain and temperature. There is no disturbance of the vibratory, muscle tendon and stereognostic senses.

Cranial nerves.—Smell normal, both objectively and subjectively. Vision normal. Fields show

concentric contraction to five mm. test object. Fundi normal. The pupils are normal in size, equal, regular in shape and position, react promptly to light and convergence. There is slight congenital strabismus of the right eye, the voluntary movements showing limitation of the right internal rectus. There is no nystagmus. Palpebral fissures normal and equal, no von Graefe. Slight conjunctivitis. Hearing normal, objectively and subjectively. Vestibular apparatus normal although the Hitzig test gave a rather hyperactive response. Motor and sensory fifth normal, conjunctival reflex present, mouth and teeth normal. Facial normal, taste normal. The uvula is in normal position, the palatal and pharyngeal reflexes are present. The tongue is normal in position and movement.

Mental status normal as to intelligence, emotions, attention and memory. No phobias (?) or compulsions, delusions, or hallucinations. Systemic: Tegumentary normal except for marked dermatographia and facial hirsuties. The thyroid is evenly enlarged but shows no marked vascularity; other glands not palpable. Heart normal, pulse 80, regular; blood pressure 110 S. 70 D. Lungs normal, abdomen nothing abnormal. Skeletal normal except for tenderness on percussion of the left parietal region of the skull. Laboratory tests negative.

To summarize, then, the physical examination added little to the positive side of the picture, but enough to entertain seriously the diagnosis of brain tumor. The slight right apraxia, interference with the handwriting, the motor aphasia, slight diminution of strength in the right hand and concentric contraction of the fields of vision almost gave conviction. There are, of course, a number of symptoms of brain tumor which were absent in the present case but when one finds projectile vomiting, choked disc, etc., beside the symptoms found in our case, then there is no doubt at all. It should be noted that aside from the contracted fields, which may be looked upon equally as a hysterical sign, there were no physical stigmata of that disease. (One need not add that there may be a fullfledged hysteria without physical stigmata.) The diagnosis, therefore, was beginning subcortical brain tumor involving the third left frontal convolution and the adjacent arm area. Hysteria was considered for a moment, but quickly dismissed.

Six days later the patient returned with the following additional history. The spells have increased in frequency. Weakness of the right hand is more marked, particularly on trying to do something. The arm also seems a little weak. On walking and when the spells come on she has to drag the right leg. She feels sleepy all the time and yawns a good deal. She is inclined to lie down all the time. Mother says that she noticed twitching of the right fingers during the spells. On two or three occasions the whole body shook and stiffened for a few minutes. She feels doxy, complains of bitter taste in the back of the tongue. She has sharp pain in the left side of the head, the eye and back of the head. During the spells she has great difficulty in picking up things, say, hairpins, combs or buttons. Physical examination showed no change.

It will be noticed that the diagnosis of brain tumor has now become fairly certain. The yawning, sleepiness, dopiness, severe pain in the head, twitching of the right hand, dragging of the right leg are certainly pathognomonic. It seems that a right hemiplegia is developing, as it should if there is something growing in the left motor cortex or subcortex which commences with an aphasia.

January 18, 1919. The spells are just as frequent. She cannot walk during the attacks, totters, but does not drag the right leg. There is a tendency of the right eye to close. No vomiting and no headache, but pain in the left side of the head. Sleep is more disturbed than usual. Complains that she has no sense of direction in either hand during the spells. Physical status unchanged.

February 2, 1919. Attacks more frequent and last longer. During the spells head tends to fall back, she must hold on to something lest she should fall, the legs become stiff and heavy. On February 25th she was examined by an eminent neurologist who was convinced of the organic nature of the condition and suggested consultation with a brain surgeon. This was done on March 3d and the unanimous decision was—brain tumor, no doubt about it. Operation, however, was deferred for the time being.

I did not see the patient for two months. May 3d she walked into my office with the glad news that she was cured. She had been to a physician who gave her some herbs. The spells had gradually become less severe, more infrequent, and finally disappeared. Physical examination was perfectly negative. Obviously our diagnosis had to be altered, although the *amour propre* hung on tenaciously to the hope (?) of a remission. Nevertheless one had to consider the curative power of herbs—but of hysteria, not brain tumor.

July 10th she returned with the information that she had worked at her old job for two weeks, but she had to give it up because she couldn't concentrate, she didn't feel right. The spells had disappeared for good but she was "just miserable," she couldn't apply herself to anything. I began seriously to entertain the idea of hysteria and a little delving beneath the surface brought out the following information.

At the age of seven a cousin of hers, aged six, attempted intercourse with her. She had forgotten about the experience but one day, while riding in the car, her father made a casual remark, "we will have to find out about it" and he looked at her, at least so she thought. At once the idea flashed through her mind that he knew of her experience and he wanted to find out whether she was a virgin. Since then, she was still a little girl at the time, this thought has kept on plaguing her. She wants to find out the truth but is too modest to submit to an examination. She visualizes possible dreadful consequences should the prospective husband find out about her "deforation."

She was very fond of and greatly attached to her father who died when she was sixteen. She is also "terribly" attached to her youngest brother (incest motives). She wants affection but does not get it. There seems to be no sympathy between her and

her mother. She has occasional periods of great sexual longing when she is very miserable. She recalls very vividly that at the age of eight she witnessed her parents in sexual embrace, and it left an indelible impression on her mind.

Seeing that there is a tremendously unexplored field which is worthy of deeper investigation, I referred her to a psychoanalyst. It is to be hoped that he will be able to unravel the conflicts which have played such havoc with her mind and so shamefully confounded the neurologists. I need not add, of course, that I referred my patient to a woman physician for a vaginal inspection or examination. This revealed a socially respectable hymen, but unfortunately, mere statements of fact have no influence on obsessional hysterics.

CONCLUSIONS.

One might use the present case as a text for a sermon on the diagnosis of hysteria and brain tumor, but I wish merely to draw attention to one point, namely, that hysteria may even simulate anatomy. That hysteria is versatile, protean and histrionic has long been known, but we have always been taught to believe that there are certain things which it cannot do, one of those things being the simulation of pure anatomy, unless, and even then not correctly, the exact picture has been suggested by an examiner. This was certainly not the case with our patient, and it would tax our credulity to assume that besides the symptoms of brain tumor which she gave she knew that a left sided cortical lesion which causes aphasia will also give a right handed paralysis. One may perhaps find fault with the original want of insight into and interpretation of the patient's psyche but in extenuation one may urge the typical organic picture which her first complaints unfolded. Besides, the attitude of considering every case organic until it is definitely proved functional is a very healthy one, even though it occasionally leads to the glorification of herbs and Christian science to the confusion of the organic neurologist. And while one's vanity is hurt by the discovery that a hysteria has been called brain tumor, the heart ache is not nearly so great as when a brain tumor is treated as hysteria and the mistake is discovered only at a hopeless operation or scientific autopsy.

The object of this report, however, is not so much to avow a mistake (which, by the way, ought to be done as frequently as the reporting of clever diagnoses) as to point out how hysteria can deceive even experienced neurologists, and at the same time to call attention to the purely anatomical form which that disease may assume. Just why an obsessional neurosis and hysteria should have appeared in the garb of a brain tumor is not yet clear; nor does a discussion of the theme come within the scope of this paper.

Unusual Case of Gunshot Wound.—Fortunato Quesada (*La Cronica Medica*, of Lima, Peru, May, 1919) reports a case of a bullet in the anterior atlantoaxial ligament whose position was established by radiography, and which was impossible to remove by operation. It was left *in situ*, and the patient recovered.

THE SUBMUCOUS RESECTION OPERATION.

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The beneficial results that the patient hopes and the surgeon expects to be derived from a submucous resection operation, are far from being attained in a goodly number of cases, while some patients are worse off than they were before the operation. At a meeting of the Eastern Medical Society in 1918, a paper was presented containing a report of 500 cases of submucous resection. The author admitted that as far as the patient was concerned, fifty per cent. of the operations in cases of high deflections resulted badly. According to Doctor Jacobi, who considered results not upon percentage basis, but separately upon each individual, and each individual represented 100 per cent. to him, the fifty per cent. of bad results reported would lead to an overwhelming figure. But even to the ordinary physicians, the proportion of failures is so alarming that if submucous resection operations were performed for humanitarian reasons, a committee would surely be appointed to investigate the justification of such an operation. Apropos of the number reported, it would be worth while to call to your attention a similar report by Dr. George Mackenzie. In his report Doctor Mackenzie states that in eight years he was able to collect only 386 cases, a comparatively small number for so long a space of time, but each case was a successful one. Evidently Doctor Mackenzie studied his cases before he submitted them for operation.

On the other hand a deflected septum, where the deflection interferes with respiration as well as drainage, would anatomically, physiologically as well as logically, require correction, and if an operation was skillfully performed should yield 100 per cent. of good results. The question then arises, Why are the results not uniform? Why do some patients feel worse after the operation? What are the causes and underlying factors that mar the skill and dexterity of the surgeon?

The object of this paper is twofold: First, to disillusion the medical profession of the wrong impression that might have been conveyed to them of the results of a submucous operation. This will be evident from the article. Secondly, to expound the reasons for and the causes of the bad results obtained. The reason is as follows: Too many septi are sacrificed because they are not straight. Some surgeons are not familiar with nature, whose phenomena is to select preferably angles and curves of her own construction. She therefore models the interior of the nose so that it performs its function in spite of the deflection. It is actually surprising that a patient, in spite of a deflected and distorted septum, does not complain of obstructed breathing or give any objective symptoms to indicate obstructed drainage. One cannot emphasize too strongly that a deflected septum *per se* does not require any operative intervention so long as the patient does not complain or show symptoms of ob-

structed breathing and drainage. However, should he present symptoms of obstructed breathing and drainage, then it is essential to study the pathology of the deflected septum, analyzing the subjective and objective symptoms to discover the cause to which they are due. For any misinterpretation of the indication for an operation, and imperfect analysis of the subjective and objective symptoms, any neglect to examine the other intranasal structures, as to their size, shape and form, any disregard or misunderstanding of the pathology of a deflected septum, are the causes of the bad results obtained if an operation has been performed.

In a previous article (2), I remarked, "To treat a disease intelligently, two factors are essential, namely, etiology and pathology. The former treats of the causes of disease, while the latter of the modifications of functions and changes in the structure caused by disease. Once these two factors are established, the diagnosis is automatic, and the therapeutics a matter of routine." We will therefore begin with the etiology of a deflected septum.

Many theories have been advanced to explain this pathological condition. Some assert that it is due to asymmetrical development. Their theory is based upon the fact that modern man has as a rule more or less an asymmetrical skull. It is obvious that a thin plate of bone firmly fastened in the centre of the skull would be among the first structures to show asymmetry, and would be easily affected by irregularities of neighboring structures.

With the present advancement and enlightenment in the study of internal secretions, though no positive claim can be made that the etiological factor in septum deformity is a disturbance of the glands of internal secretion, still, from the study of Dr. J. C. Beck (3), in which he states that in the microscopic examination of deviated septi and excrescences, he found the same rarefying process as in the turbinate bones, the internal ear, osteomalacia. Since there is no definite etiological factor for deviation of the septum, may we not be permitted to theorize on the basis of true pathological conditions, in their analogy that the disturbance of internal secretion may have something to do with it. However, the consensus of opinion is that trauma is the principal cause whereby blows or falls upon the nose may by transmission cause displacements, local fractures or interference with the normal development.

Irrespective of what theory you may accept for its causation, the fact remains, that a deflected septum dates back to childhood. This is important for the surgeon to remember.

Pathology of a deflected septum.—A deflected septum may occupy its position either in the cartilaginous region, at the vomer, or at the perpendicular plate of the ethmoid. It may also have different combinations. With a deflected septum in the cartilaginous region, the convex side will encroach upon the inferior turbinate on the same side, preventing the entrance of air into the nasal chambers. The blood supply of the inferior turbinate will be interfered with on account of the pressure, causing degenerative changes in its cellular structures. The anterior obstruction of air entrance will cause a

negative pressure in the postnasal space resulting in atrophic changes. On the concave side the inferior turbinate will be found to be in a hypertrophic condition. This hypertrophy is due either to the law of nature to occupy space, or as some think the hypertrophy is due to a compensatory activity. This hypertrophy is in contact with the septum, thus obstructing air entrance anteriorly, and producing negative pressure posteriorly resulting in atrophic changes in the postnasal space. The cellular structure of the hypertrophic inferior turbinate undergoes changes leading to a degenerative condition. If the deflection occurs in the region of the vomer, the same pathological condition occurs, with the exception that instead of involving the inferior turbinate in mass, it encroaches upon the posterior tip which becomes degenerated on the convex side with hypertrophy on the concave side. Such a deflection will also interfere with the ventilation of the eustachian tube, leading to the well known condition of tubotympanic catarrh. If the deflection occurs in the ethmoidal region the pathological sphere is much greater and more serious. The convex side which is bony in this region presses upon the middle turbinate on its inner surface and is likewise pressed upon its outer surface by the nasal bone. In other words, the middle turbinate is pressed upon on each side by bone. The circulation, naturally, is interfered with. The erectile tissue of the turbinate can and does compensate for a certain amount of irregularity of the septum enlarging opposite a concavity, and shrinking opposite a convexity. In other words, the entire interior of the nasal chambers in spite of its asymmetrical condition is adjusted to maintain what we call the respiratory slit. But as time goes on and no correction is instituted, compensation ceases and the middle turbinate undergoes degenerative changes in its structure, leading to polypoid formation. This interferes with respiration as well as with drainage from the anterior and posterior ethmoidal cells, and also from the frontal and sphenoidal sinuses. The antrum of Highmore is frequently secondarily affected through its natural opening, the ostium maxillaris, from the ethmoidal cells. If infection should occur in the middle meatus for which there is a predisposition, we are confronted with a serious condition of purulent ethmoiditis.

On the concave side, the middle turbinate becomes hypertrophied, undergoing cellular changes. By its hypertrophy it obstructs the breathing as well as drainage of all the sinuses. Having briefly outlined the pathology of a deflected septum, we can now study an illustrative case. A man at the age of twenty-five or thirty comes to the office. His subjective and objective symptoms indicate obstruction of breathing as well as of drainage. To the inquiry as to how long he has suffered, he will invariably reply six months, a year or at the most two years. We examine his nose and find a deflected septum. We are satisfied with the etiological factor found, and a diagnosis is easily made. We inform the patient that he must have his septum straightened. The patient acquiesces. The operation is skillfully performed, and a perfect result obtained. The wound heals nicely. The

surgeon is just about ready to discharge his patient as cured, but becomes greatly perplexed by the complaints of the patient to the effect that he does not feel better. He cannot breathe any better now than before. A very unenviable position for the surgeon, indeed. We are now confronted with the vexing issue. Why does the patient not feel better? The reply is self-evident. The pathology of the deflected septum was ignored, or not understood. The subjective and objective symptoms of the patient were wrongly interpreted. The diagnosis was made not upon the pathological condition existing in the nose, but by inspection only, while to the other structures in the nose, even an inspection was not given. The etiology was not taken into consideration. According to the etiology, the patient has had his deflected septum a number of years, still his complaints date back only to the last year or so, that is indication enough that the present symptoms of the patient are not due to the deflected septum, but to the pathological condition of the other structures in the nose caused by the deflected septum. In other words, his complaints are due to the pathological state of the turbinates. Is it surprising then, that the patient does not feel better when the septum was corrected, which was a mechanical obstruction, while diseased tissue, the real cause of the trouble, was left behind? The deflected septum which was so developed that it was bound to invade the turbinates, ought to have been corrected years ago. Then the result would be perfect, and it would also prevent the turbinates from becoming diseased; but when the turbinates are already diseased, a submucous operation alone will not cure the pathological condition, or relieve the patients of their complaints.

A great number of patients have an additional complaint after the operation, viz., dryness in the nose. This is due to atrophy of the glandular structures in the mucous membrane of the septum. As is well known the mucous membrane of the septum contains secreting glands to produce moisture in the nasal chambers. This moisture is of paramount value to the respiratory function for no air can be inhaled through the nasal chambers when the mucous membrane is in a dry or atrophic condition. Atrophic rhinitis is a very good illustration. Notwithstanding the roomy chambers, the absence of moisture prevents the patient from breathing. After a submucous operation, the two flaps of the septal mucous membrane are united by connective tissue to form the future septum. This connective tissue obliterates the small bloodvessels as well as the secreting glands resulting in a dry mucous membrane on each side of the septum. Atrophic conditions in the nose are always a contraindication for a submucous operation. This may be illustrated by the following case reported by Dr. W. Freudenthal (4).

CASE.—A. P. came into my clinic complaining that his nose was stopped up. On examination, the right side was found to be wide, almost atrophic and very dry. The left side was clogged up by the septum being deviated toward the left to such a degree that there was only a narrow opening. The mucous membrane here was in quite good condi-

tion. When the patient was asked through which side he could breathe the better, he promptly answered, "the left one," that is, the narrow side. The patient was operated upon and his septum straightened with excellent immediate results. Soon afterward he returned, however, complaining bitterly that while formerly he could breathe at least through the left side, now that side was gone too. Crusts were found there and the mucosa did not show the same healthy appearance as before the operation.

From this case and illustrations we may conclude the following:

First.—That not all deflected septi require correction.

Second.—A thorough study of the intranasal structure is absolutely required before submitting the patient to an operation.

Third.—In cases where a deflected septum is accompanied by ethmoiditis an operation upon the septum alone will not cure the patient. A much better result would be obtained by operating upon the ethmoid and leaving the septum untouched.

Fourth.—In atrophic conditions of the nose operations should be avoided as far as possible.

Fifth.—Finally the patient who comes to us to be relieved of his sufferings and is willing to undergo an operation and all that may come with it is justly entitled to our due consideration to an honest and thorough examination and to an operative interference which should be based upon scientific data. In this way only can we reduce failures to a minimum.

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616 MADISON AVENUE.

ACUTE PULMONARY ABSCESS.*

Report of Fourteen Cases Treated With Artificial Pneumothorax.

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Nontuberculous pulmonary abscess, contrary to the general belief, is not a particularly rare condition. Forchheimer reports 133 cases treated medically and 471 treated surgically, a total of 604 cases. Personally I have seen twenty-seven cases of lung abscess during the past three years in Washington, D. C. Many of these cases, after they pass the acute stage, are diagnosed as tuberculous and drift into tuberculosis sanatoria and hospitals. The great majority of these cases can be cured promptly and permanently while the abscess is in the acute stage; after they reach the chronic stage the prognosis for cure is bad.

Etiology.—Acute pulmonary abscess is due to

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the ordinary pyogenic bacteria, is of sudden onset, of definite etiology, has a characteristic set of symptoms, and should be diagnosed by all of us without difficulty. It may follow pneumonia, either lobar or lobular. It may follow aspiration of foreign bodies into the lungs, such as bits of carious teeth, small dental instruments, or pieces of chewing tobacco. The most frequent cause, however, seems to be aspiration of blood and pus into the lungs during operation on the nose and throat, particularly tonsillectomy. Dr. Charles W. Richardson, of Washington, in two papers read in 1912, called attention to lung abscess following tonsillectomy and since then cases have been frequently reported by operators from all over the country. The cases reported in this paper are all abscesses following operations on nose and throat.

Symptoms.—The symptoms appear from four to seven days following operation and consist of sharp pains in the affected side, a sudden rise of temperature, profuse night sweats, and a dry cough. In a short time the patient begins coughing up sputum which has a foul taste and putrid odor and the diagnosis is confirmed. The cough is paroxysmal in character and the loss of weight and strength usually very rapid. Blood examination reveals a leucocytosis of fifteen to 30,000 and sputum examination shows mixed pyogenic bacteria.

Prognosis.—Under medical treatment the prognosis is unfavorable. Occasionally there will be spontaneous recovery, but if this occurs, it is usually very prompt. A patient who continues coughing up pus for a week or more should not be treated medically in the hope of spontaneous recovery. I have seen two cases in which the patients recovered on medical treatment but both stopped coughing pus in three or four days. Statistics show from sixty-five to eighty per cent. mortality on medical treatment and less than ten per cent. cures in all forms of abscess. With surgical treatment, that is, rib resection and drainage, the mortality is about thirty-five per cent. and the percentage of cure is sixty-five per cent. in all forms of abscess. There has been very little surgical work done with the acute abscess, however.

In July, 1916, I treated a case of acute lung abscess with artificial pneumothorax, which, I believe, was the first case so treated. The patient made a prompt recovery although his condition had seemed to us absolutely hopeless. Since that time I have treated fourteen cases, with eleven cures and three deaths, that is, seventy-three per cent. cures and twenty-seven per cent. mortality. Several men have reported similar cases with excellent results and the treatment will undoubtedly be generally adopted in acute lung abscess.

CASE I.—Mr. H. G. P., mining engineer, aged thirty-two, seen in consultation with Dr. Reginald Walker, Dr. Charles White and Dr. Sterling Ruffin. Nasal sinus operation was done on June 17th, 1916. The patient developed an abscess of the right lung, June 26th, and was becoming progressively worse until August 12th, about six weeks after onset of the symptoms, when pneumothorax treatment was started. The lung was gradually compressed by a small and frequent injection of

air into the pleural sac, and later, large and less frequent injections were used. Ten treatments were given from August 12th to October 15th, on which date the patient was discharged as cured. Röntgenograms taken several months after the discharge showed the lung as normal, with practically no evidence of the abscess scar. The patient is in perfect health, now, over three years after treatment.

CASE II.—Mrs. O. B., aged twenty-seven, seen in consultation with Dr. Charles W. Richardson, was operated upon, September 9, 1916. On September 16th, an abscess of the left lung developed. The patient was extremely septic, becoming rapidly worse. On October 15th, four weeks after the development of the abscess, pneumothorax was started and six treatments were given, the date of the last being November 20, 1916, when the patient was discharged as cured. She was well nearly three years after treatment.

CASE III.—Mr. A. C. N., seen in consultation with Dr. D. E. Mulcahy and Dr. Reginald Walker. Was subjected to a double frontal sinus operation, about November 1, 1916, and an abscess of the right lung developed November 7th. Pneumothorax was started November 24th, and eight treatments were given, the date of the last being January 21st. The patient had a rather slow convalescence, but the lung was healed by March 1, 1917, and he remained well over two years after treatment.

CASE IV.—Anna J., aged thirteen, seen in consultation with Dr. Claytor. Was operated on about October 15th, abscess of the left lung developing one week later. The patient became progressively worse, and pneumothorax was started November 27th. Five treatments were given, the last one, on December 30th, when the patient was discharged as cured. So far as I am able to learn, she has remained well.

CASE V.—Mrs. L. H., aged twenty-four, seen in consultation with Dr. Charles White. Was operated upon about January 15, 1917, and an abscess of the right lung developed one week later. I was called in, February 22d, one month after the development of the abscess. The patient gave a history of having suffered from asthma and epileptic attacks for a number of years. Examination revealed a probable five months' pregnancy, although there was no fetal motion or fetal heart sounds. The patient was desperately sick. Two treatments were given, producing a partial compression of the lung. The patient coughed up a large amount of pus and seemed somewhat better for twenty-four hours. She went into labor, however, on March 1st, and delivered a five months' fetus, which had apparently been dead several weeks. No more injections of gas were attempted. She died on March 4th, two days after the delivery of the fetus. In this patient, the history of asthma and epilepsy showed a poor general condition, and the additional complication of pregnancy, with miscarriage, made the case hopeless.

CASE VI.—Miss K. S., stenographer, aged twenty-four, seen in consultation with Dr. C. W. Richardson and Dr. G. N. Acker, was operated upon March 15, 1917. An abscess of the right lung developed, March 20th. The patient was very septic,

becoming progressively worse. Pneumothorax was started March 29th, nine days after the onset of the abscess. Seven treatments were given, the date of the last being May 7th, when the patient was discharged as cured. She remains perfectly well at the present time, over two years after treatment.

CASE VII.—Miss K. K., aged twenty, seen in consultation with Dr. C. B. Conklin and Dr. Charles White, was operated upon May 9, 1917, and an abscess of the right lung developed one week later. Pneumothorax was started on June 4th, nineteen days after the development of the abscess. It was noticed at the first treatment that there was a little fluid in the pleural sac. Three injections of gas were given at intervals during the period from June 4th to 10th. The lower portion of the lung collapsed, but there were adhesions over the upper half of the lung which prevented collapse. The patient had considerable pain and the signs of pleural effusion increased rapidly. A rupture of the abscess into the pleural sac was suspected and aspiration confirmed our suspicion. We found the pleural sac to contain a thin, slightly turbid fluid of an extremely foul odor. The patient was immediately taken to the hospital, where Dr. Charles White did a rib resection and put in a drainage tube. The infection was extremely virulent showing chiefly streptococci. The patient showed no improvement after the operation, and died on June 23d. This case was a great disappointment, for while the patient was desperately ill before pneumothorax was begun her symptoms seemed no worse than those of several patients who were cured. The presence of pleural adhesions was probably the cause of the rupture of the abscess into the pleural sac. This fact impressed on us the importance of prompt collapse in these cases. The longer we wait the more probable it is that we shall find pleural adhesions.

CASE VIII.—Hazel H., aged thirteen, seen in consultation with Dr. J. D. Rogers, was operated upon early in June, 1917, and an abscess in the right lung developed about June 15th. The patient appeared very septic and pneumothorax was started June 28th, two weeks after the development of the abscess. Five treatments were given during the period between June 28th and July 25th, when the patient was discharged as cured. She has remained well so far as I know, two year after treatment.

CASE IX.—Mr. R. O. J., secretary to a senator, aged thirty-one, seen in January, 1918, with Dr. William Wood. Abscess in right lung following tonsillectomy. Eight treatments were followed by complete recovery.

CASE X.—Miss M. B., school girl, aged nineteen years, seen March 13, 1918, with Doctor Richardson. This patient had right lung abscess following tonsillectomy and was extremely septic. Physical examination suggested the probability of pneumonia as well as abscess. Three treatments were given but patient continued to grow rapidly worse and died on March 24th, two weeks after the onset of the abscess. The sputum in this case had the most offensive odor of any case I had seen. It was probably a true gangrene.

CASE XI.—Mrs. R. S., housewife, aged twenty-

nine years, seen with Dr. Eugene Taylor, April 20, 1918. Had left lung abscess following tonsillectomy two weeks before. Pneumothorax started immediately. Six treatments were given followed by a complete recovery.

CASE XII.—Mr. W. H. C., representative in Congress, aged fifty-four, seen with Dr. Hiram Reed, May 15, 1918. Had abscess in right lung following removal of tonsils three weeks before. Patient not very septic, but x ray showed abscess remaining stationary in size. Six treatments were given followed by complete recovery. X ray plates showed only a small scar of abscess remaining.

CASE XIII.—Miss M. E., school teacher, aged twenty-six years, seen June 20, 1918, with Dr. S. L. Owen. Had abscess of right lung following tonsillectomy five weeks before. Patient extremely septic and having distressing paroxysms of coughing. Six treatments were given followed by complete recovery.

CASE XIV.—G. T. A., school boy, aged seven years, seen July 26, 1918, with Dr. H. R. Elliot. Had abscess of right lung following tonsillectomy eighteen days before. Five treatments were given, followed by complete recovery.

SUMMARY AND CONCLUSIONS.

1. Acute pulmonary abscess occurs more frequently in the right lung, eleven of this series being in right lung and only three in the left.
2. The proportion of cure with medical treatment is less than ten per cent.; with surgical treatment from fifty to sixty-five per cent.
3. Of the fourteen patients treated in this series of cases, eleven or seventy-three per cent. were cured; three or twenty-seven per cent. died.
4. Artificial pneumothorax used early is the most rational and successful treatment we have for acute lung abscess.

THE SPASMOPHILIC CHILD.

By J. EPSTEIN, M. D.,
New York.

The life of the child is closely linked with the life of its parents. In health or disease, in normal or abnormal development, the physical and mental state of the parents forms the background of the child. The past history of the child stretches back to the life history of the parents. Many ailments in infants and children are made evident only in the light of an unhappy inheritance or unhealthy surroundings. In the diagnosis and treatment of disease in the young, the health of the parents together with their social and economic pathology must be considered.

At birth, every child brings with it its own peculiar structural and functional characteristics. Some go through life from infancy to old age with little or no illness, while others are especially susceptible to disease. This peculiar disease susceptibility is known as diathesis. During childhood when the structures and functions of the body are in a raw state of development and moulding, inherited diatheses are frequently present as the sub-

stratum of various obscure diseases. And unless the predisposing or underlying anomalies of the child are diagnosed and treated, many physical and mental ailments will retard the child in its normal progression to adult life. One of the most important inherited abnormalities of childhood is the convulsive or spasmophilic diathesis.

The spasmophilic child is apparently healthy but has a tendency to local or general convulsive seizures. It is usually a disease of infancy and early childhood. There is no known basic organic lesion of the nervous system in spasmophilia. The spasms are either the result of a functional disorder of the nervous system itself or of some metabolic disturbance which keeps the nervous system in a state of hyperirritability or hypertonia. In the etiology of spasmophilia there are evidently three factors present: 1, A faulty nervous system which is readily susceptible to convulsive seizures; 2, a general systemic pathological process which keeps the nervous system in a hypertonic state; 3, a reflex irritant which when added to the other factors upsets the neuromuscular structure.

The first factor is always present and is the underlying nervous anomaly. The nature of the second factor is not definitely known. Disturbances of the functions of the endocrine system, especially of the parathyroids and the thymus gland may be of etiological importance. Metabolic disorders of various food elements and certain abnormalities of nutrition, especially rickets, seem to be present as a general systemic pathological process. But whether spasmophilia is the result of a metabolic or an endocrine dysfunction there is a deficiency of calcium salt in the body which may be the immediate cause of the excessive nervous irritability.

The third factor which when combined with the other two factors finally causes a general or a local convulsion is frequently present in childhood. Reflex irritations, gastrointestinal disorders, acute infections and intoxications may act as irritants to the brain and cause a spasmophilic convulsion. Any irritant which would have no effect on the nervous system of a normal child will cause a general or local convulsion in a spasmophilic child.

Clinically the spasmophilic manifestations may be divided into: 1, The spasmophilic state or the spasmophilic diathesis; 2, late, latent, or obscure spasmophilic disorders; 3, local or general spasmophilic convulsions.

A child who is a spasmophilic or has the spasmophilic diathesis shows an increase in all reflexes. He is usually irritable, sleepless, restless and bad tempered. There is an overexcitability of the peripheral nerves to mechanical and electrical stimulation. The Chvostek, Trousseau and Erb signs are present.

The late, latent or obscure spasmophilic disorders are of great clinical and therapeutic importance but are difficult of diagnosis. Many cases of latent or mild spasmophilic disturbances are wrongly diagnosed and wrongly treated. They are more common in older children than in infants or very young children. A variety of clinical symptoms may be induced by the spasmophilic tendency.

Mild cases of laryngospasm and cardiac irregularity may be the result of a subacute spasmophilic disorder. Pylorospasm, periodical vomiting, spastic constipation, peristaltic unrest, and repeated attacks of abdominal colic of obscure etiology are occasionally due to vagotonic spasmophilia. These cases are not infrequent and are usually improperly diagnosed and improperly treated. Bronchial spasm or asthma may be the pulmonary expression of the spasmophilic diathesis. Persistent enuresis and vasomotor pallor have their origin in the spasmophilic tendency.

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The general or local spasmophilic convulsions may be manifested as: 1, General spasms or eclampsia infantum; 2, tetany or carpopedal spasms; 3, laryngospasms or laryngismus stridulus. Eclampsia infantum, or general spasmophilic infantile convulsion, is a functional disorder. The child is usually seized with general tonic convulsions followed by clonic contractions. Consciousness is lost. The face, at first pale, later becomes cyanotic. After a few minutes the convulsions subside, the body relaxes, the face assumes the natural hue and consciousness is restored.

Tetany is a peculiar almost spectacular spasm of the extremities without loss of consciousness. The hands and feet are in a state of tonic convulsions and are forced to assume a characteristic position which when once seen can easily be diagnosed. These carpopedal spasms may last several hours or a few days.

Laryngospasm, laryngismus stridulus or laryngotetany is a spasmophilic disorder of the larynx. During excitement or crying there is a spasm of the glottis producing a crowing inspiration. Breath holding or rage spasms is probably a form of spasmophilic laryngospasm. It is occasionally seen in young children. When a breathholding child is in some way displeased it may go into a rage of excitement and stop breathing. The face becomes blue, consciousness is lost but there are no general convulsions. After a few seconds the child takes a deep breath and is as well as ever.

The diagnosis of spasmophilia is in some cases beset with difficulties. The obscure or latent spasmophilic disorders which are mostly characterized by spasms of the internal organs can only be diagnosed by a history of a spasmophilic diathesis, by the signs and symptoms of spasmophilic manifestations and by exclusion of other pathological processes. General spasmophilic convulsions must be differentiated from convulsions due to epilepsy, cerebral inflammations, severe toxemias and uremia. Spasmophilic convulsions are the most common in young children, they are frequently repeated and there are other evidences of spasmophilia. Epileptic attacks are usually not multiple, they are preceded by an aura and followed by sleep. The other types of convulsions must be diagnosed by their respec-

tive symptoms and signs and by the absence of spasmophilic manifestations.

The prognosis in marked cases of spasmophilia is very uncertain. In many cases of convulsion in children there is a history of convulsion in the other children of the same family and the parents show evidence of neuropathy or neuropsychopathy, thus pointing to a familial hereditary abnormality of the neuromuscular or neuropsychic system. The convulsions as a rule sooner or later stop, but the damage to the nervous system is done. Some spasmophilic children undoubtedly remain in a state of submentality, either because of the underlying nervous abnormality or as a result of the convulsive attacks.

The treatment of spasmophilia consists in prevention, proper diet, and medication. An infant with spasmophilic tendencies should, if possible, be breast fed. The irritable nervous system should be protected by plenty of rest, sleep, and quiet. Older children must have sufficient physical and mental rest, a proper nourishing diet, consisting chiefly of fats and carbohydrates. When there are active signs of spasmophilia calcium bromide, belladonna and phosphorus with codliver oil should be given. During an attack of general convulsion, more calm reason and less confusion is imperative. Chloroform by inhalation, chloral hydrate by rectum or magnesium sulphate subcutaneously will usually relieve the spasm. Later, the skin, the kidneys, and the intestinal tract must be made to functionate properly. In the obscure visceral spasmophilic disorders proper treatment is of the utmost importance. Spastic constipation, peristaltic unrest, and repeated attacks of abdominal colic are usually treated by all kinds of laxative drugs. Occasionally an appendectomy is done to cure the inextorable abdominal colic. A bland diet, bromides, belladonna, and phosphorus with codliver oil or malt and codliver oil will relieve the spasmophilic manifestations.

222 EAST BROADWAY.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

MALARIAL SPLENOMEGALIA.

In certain districts of Russia, the Caucasus in particular, malaria is rampant, and the Russian medical men have given this disease careful study. In what follows I desire to sum up their studies on malarial splenomegalia and the ultimate results they have obtained by splenectomy.

Enlarged spleen is an absolutely constant sign of malaria, both in the acute and chronic forms of the infection, and instances of absence of this enlargement are rare, not more than 1.1 per cent., according to Théodoroff's statistics.

The plasmodia collect in the spleen, sometimes in considerable quantities, and produce by their presence a marked degree of hyperemia of the viscus, giving rise at a later date to other pathological changes in the splenic parenchyma. As yet it is difficult to say whether or not the splenic hyperemia is a useful process as far as the organism is

concerned and whether it acts as a defense by the resulting exaggerated phagocytosis, as many writers seem inclined to admit, or, on the other hand, whether the parasites there find conditions particularly favorable for their development and whether the hyperemia is a reaction against this irritation, as Laveran and others have upheld. Jawein maintains that hypertrophy of the spleen in infectious diseases is due to the irritation of the splenic pulp from an accumulation of detritus of red blood corpuscles.

Melanin pigment in malarial subjects, by accumulating in large amounts in the splenic parenchyma, irritates it and sets up acute hyperemia and chronic hypertrophy of the organ. In most instances during the first paroxysms of malaria the spleen increases in size to such an extent that the gland can be readily felt by palpation and it is only in rare cases that its enlargement can be detected only by percussion. In the acute forms of malaria the weight of the spleen reaches from 300 to 500 grams, and it has been known to attain 950 grams. In neglected cases of chronic malaria with cachexia the gland may weigh from 900 to 1,500 grams; it has been known to attain the weight of 4,000 or even 5,000 grams.

The spleen changes its shape and becomes more rounded. It is painful on palpation, while spontaneous splenic pain arises in the area occupied by the organ. The Russian physicians refer to the distention of the capsule of the spleen, which becomes thin and may rupture following some slight traumatism or even spontaneously, on account of the extreme turgescence occurring in an acute paroxysm. The capillaries and venous spaces become dilated and are filled with blood rich in red corpuscles containing the plasmodium, leucocytes, and macrophages filled with detritus of red and white cells. The splenic pulp is soft, occasionally grumous; the follicles, being lighter in hue, stand out against a brick red background.

At the onset of the acute forms of malaria the spleen will usually return to its normal size at the end of the paroxysm, but if the affection drags on, and if the paroxysms recur frequently, the increase in size of the organ becomes more stabilized, profound pathological changes arise, and hypertrophy and sclerosis result. One of the very large spleens mentioned above, weighing from 1,500 to 4,000 or 5,000 grams, will fill the left half of the abdominal cavity, reaching down to the pelvis, and may extend several centimetres to the right of the linea alba.

Chronic hypertrophy of the spleen increases the density of the organ on account of a proliferation of its connective tissue frame. Malpighi's corpuscles, compressed by this newly formed tissue, slowly atrophy, while the extremely dilated veins assume the aspect of angiomata.

In order to nourish an organ so greatly hypertrophied the bloodvessels develop to unusual dimensions. In one case in which the operation was performed by Meerovitch, the splenic vein was the size of a large finger, while in another instance recorded by Nilsen it attained the size of the small intestine.

The walls of these, dilated vessels are thin and tear easily. Recurring attacks of perisplenitis cause a considerable thickening of the capsule which is more marked at certain areas. In some places the connective tissue may even be transformed into cartilaginous tissues. Mannabery once met with an ossification of the entire capsule (Afanassieff).

The spleen in time is surrounded by a fibrinous exudate which becomes organized and results in adhesions uniting the spleen with the surrounding viscera, such as the parietal peritoneum, diaphragm, intestine, liver or even the organs contained in the pelvis. The adhesions may be so numerous and tough that splenectomy is rendered impossible.

If there are no adhesions the spleen becomes distended and its supporting ligaments are stretched by its own weight, leaving it in a movable position. From the mobility of the organ in the abdominal cavity its pedicle becomes elongated and twisted, with the result that necrosis ensues. The latter process may also be caused by thrombosis of the vessels and the formation of infarcts.

In some rare cases amyloid degeneration of the spleen, resulting from cachexia, has been met with. The hypertrophied spleen is characterized by friability, so that when a trauma is inflicted the organ ruptures with ease, giving rise to fatal hemorrhage. Occasionally an insignificant blow may give rise to hematoma or to hemorrhagic cysts which easily suppurate.

The clinical picture of malarial splenomegalia varies greatly according to the dimensions of the organ, the extent of the adhesions, and the degree of cachexia. According to Sakaroff, the hypertrophy in itself, when not complicated by perisplenitis or cachexia, has little effect upon the patient and may remain unperceived even when the organ has reached great size. If there is no perisplenitis, the great sensibility of the spleen present at the onset of the disease eventually decreases or even disappears completely.

The condition of affairs is quite different in splenomegalia complicated by repeated attacks of perisplenitis and cachexia. In these circumstances the patient offers an earthy, yellow hue of the integuments, the mucosæ are pale, the swollen face expresses apathy and suffering, there is edema of the limbs, and the abdomen is prominent. The body is thrown backward, as in a case of pregnancy, the voice is weak, and the slightest effort gives rise to dyspnea. Respiration is short and superficial, and the subject carefully protects his abdomen from the slightest shock. He is unable to stand erect for any length of time and often is obliged to remain in bed. Other principal symptoms are the inability to work, pain, dyspnea, vomiting, diarrhea or constipation, a frequent desire to urinate, hemorrhage from the gums, epistaxis, hemoptysis, and renal hemorrhage. In women the menses become irregular, either being too abundant and accompanied by pain, or there being amenorrhea lasting several months.

Auscultation reveals anemic souffles, but the lungs are intact or present only some bronchial râles. The temperature is normal or even some-

what below normal, this being the result of reduced nutrition. On the contrary, irregular rises are noted in some cases, provoked either by repeated paroxysms of malaria or by complications arising in various organs.

The abdomen is enormous, and if there is no ascites the spleen can be readily perceived by palpation; it is hypertrophied, hard, and directly against the anterior abdominal parietes. Its general shape is preserved and the anterior border retains its deep sulci. The organ is usually more or less mobile, the extent of its mobility depending on the brevity of its ligaments as well as the extent and arrangement of the adhesions in relation to the surrounding viscera. If perisplenitis is pronounced, a distinct peritoneal friction sound may sometimes be heard during displacement of the organ.

The tumor is uniformly dull over its entire extent. The intestinal coils, pushed upward and to the right, are almost invariably absent between the abdominal parietes and the spleen.

Two types of pain can be distinguished. One is sharp and intermittent, depending upon the exacerbations of the perisplenitis. These pains recall neuralgic pains and oblige the patient to keep to his bed. They extend from the left hypochondrium to the shoulder, abdomen, lumbar region, and pelvis. After a few days the symptoms of acute perisplenitis gradually subside, but it may happen that the inflammation, extending from the capsule to the peritoneum, provokes a peritonitis.

The other type of pain, which is less sharp but continuous, is produced by adhesions of the spleen to the surrounding structures. The slightest movement on the patient's part stretches the adhesions, thus irritating the adherent viscera and disturbing their functions. Adhesions with the diaphragm are the commonest and are particularly disagreeable for the patient. Perpetual tugging on the diaphragm by the adhesions increases the dyspnea which already exists on account of the pushing upward of the diaphragm by the enlarged spleen. Both pressure and adhesions on the stomach give rise to gastralgia and obstinate vomiting, while adherent coils of gut may result in the production of intestinal occlusion. There is not a single abdominal or pelvic organ which may not become functionally disturbed by such adhesions, but the symptomatology would be too long to describe.

The differential diagnosis of simple splenomegalia is simple, as the spleen retains its shape and is rather superficially located. Some difficulty in the diagnosis may be encountered when there is considerable ascites, but this will be removed after withdrawing the fluid.

Let me now briefly refer to the ultimate post-operative results of splenectomy in Russia for malarial splenomegalia. If the subject survives the operation, which is usual, recovery is rapid and the cachexia quickly disappears. Frequently complete health is restored, all the functions of the organism remaining normal. Splenectomy has no influence upon the growth and development of young subjects, and in women labor and pregnancy are normal after removal of the spleen.

After splenectomy blood changes occur, there are temporary tumefaction of the lymph nodes, hyperemia of the bone marrow, a decrease of the urotoxins, and, in exceptional cases, hypertrophy of the thyroid gland. The blood changes consist in an increase of the white cells and the percentage of hemoglobin. These changes last for several weeks or even years. The number of red cells decreases from fifteen to seventeen per cent. and later on rapidly increases until it is not more than one per cent. below normal. After the lapse of a year their percentage is greater than before the splenectomy. The number of white cells falls during the first few days following the operation and then goes up from thirty to sixty per cent. above the normal count. This hyperleucocytosis disappears in two or three years and usually involves all types of cells. Toward the end of the second year Kourloff has occasionally observed a late eosinophilia. After splenectomy the hemoglobin falls to seventeen to twenty per cent. and then gradually increases during the first year.

Hypertrophy of the lymph nodes is not constant, the most commonly involved being those in the axilla and groin. The enlargement appears about the fifth or sixth week after the operation, retrogression commencing in a few weeks.

The cause of a decrease of the urinary toxicity following removal of the spleen is not known. Emelianoff is of the opinion that after splenectomy the lymph nodes and bone marrow take the place of Malpighi's corpuscles in their hemopoietic function.

LONDON LETTER.

(From Our Own Correspondent.)

Declining Fertility in Great Britain and the Death Rate of Infants.—Reclassification and Treatment of Pensioners in Great Britain.—Helping the Disabled.—Cases of Plague in London.

LONDON, November 8, 1919.

The question of the waste of infant life combined with declining fertility is arousing much apprehension in Great Britain. Sir George Newman, chief medical officer of the Ministry of Health, has dealt with the subject at some length in an able memorandum which he has addressed recently to the Minister of Health. At the Church Congress which was held a few weeks ago in London the matter was fully considered and discussed both by clergymen and medical men. The British people used to be termed prudish and hypocritical in that they evaded public discussion of all sexual matters. Now, however, they cannot be reproached with being averse to almost shouting such subjects from the housetops. The reason is that the stationary birth rate is recognized to be a menace to the country and according to some authorities it is due to a large extent to artificial means of preventing conception. A bishop at the meeting referred to, set forth the present condition in Great Britain as follows: 1. A large number of our men in the prime of life, when we were expecting them to be the fathers of many fine healthy children, have been killed. 2. Numerous hasty, ill considered marriages have taken place, with the result either

of there being disillusionment on the part of the contracting parties now that they meet in the humdrum life of daily routine, or that they will be the people most likely to exercise birth control in undesirable ways. 3. The knowledge of the means of preventing conception has grown enormously, and it is not unfair to say that a very considerable proportion of the population now knows more than did their parents or grandfathers throughout the whole of their lives. 4. The conditions of existence are terribly trying at the present time. The cost of living has enormously increased; parents desire to do more for their children in the way of giving good environment, education, and general wellbeing. The sooner this feeling comes the more inclined are people to restrict the number of their children. This is now a very strong motive power in intelligent skilled workers. There are many people to-day who have become in more or less comfortable circumstances during the last few years and wish so to provide for their boys that they may be lifted entirely out of the atmosphere in which the parents were born and brought up. They feel they can do this for one or two, but that for more it would be impossible. 5. The national need of a healthy population, and especially male population, is every day being borne in upon us. We hear an immense deal about production at the present moment, but the most important production from a national point of view is the bearing and bringing up of healthy children.

Dr. Amand Routh, a well known London physician, followed the bishop in a paper dealing with the same question from a medical as well as from the religious and moral points of view. He said in part that in England and Wales about 150 potential children died for every 1,000 live births during the period of gestation. In 1917 there were 25,044 newborn children; nearly half of those children died within four weeks of birth mainly from causes connected with childbirth. Illegitimate offspring both before and after birth died at twice that rate for want of care which the State should provide. Among the causes of these antenatal and neonatal deaths were two socially important conditions which could only be dealt with efficiently by the pressure of public opinion, parental syphilis and alcoholism. So far as the treatment of syphilis was concerned Doctor Routh thought it should be free and confidential and adopted at the earliest possible moment after exposure to infection. He expressed himself in strong terms against "prophylactic packets." He hoped that the State would never agree to supply individuals with so-called prophylactic packets before exposure, for they did not necessarily prevent infection, but weakened moral resistance, lowered the moral tone of all who yielded, and encouraged prostitution. These packets already formed part of the stock in trade of prostitutes, and as a result venereal disease would increase rather than diminish.

As for declining fertility, Doctor Routh said that the natural increase of the population had for the first time in the statistical history of the country ceased during the six months ending March

31st last. The deaths in England and Wales exceeded the births by 126,445. The superintendent of statistics had informed him that though the deaths from influenza were heavy, the more permanent and effective cause of the natural decrease of population had been the decline in fertility, which even without influenza would have practically wiped out the whole normal excess of births over deaths for the six months. The decline in the nation's fertility could be due only to fewer or later marriages, sterility, and voluntary restriction of conception. The prevalent methods of preventing conception led to nervous exhaustion and inability to concentrate mentally. The ideal would be that no methods of conception control except abstinence should be used without previously obtaining the advice of a suitable medical practitioner. He was convinced that young persons should not marry if they did not wish to have children. The State should encourage fit parenthood and healthy offspring in all classes of the population, and should devote all its energies to insure a happy, healthy environment for all its potential citizens.

It seems that prevention of conception is practised not only in Great Britain but in all countries, and it also appears that the more highly civilized the country, the more are such methods practised. Moreover the skilled working classes are using such means to restrict the number of their children, so that it is, generally speaking, the ignorant and those least able to bring up a family decently who have the largest number of children. It is said that in America the native-born Americans, as a rule, have quite small families and are consequently in danger of being "swamped" by the foreign born, who usually have many children. France, Great Britain, and America, to a less extent, are faced with the problem of a decreasing birth rate, partly owing to declining fertility. With regard to prophylactic packets opinions of the medical profession are greatly divided in Great Britain. Statistics as to their value appear to be confusing. According to Australian army figures they were a great success, but on the other hand it is now stated that the British troops who did not use these preventive measures were more free from venereal infection than the Australians who used them. This is a matter which surely might be cleared up. The opponents of the proposal to supply the civil population with these packets, have a strong argument when they say that although such methods might have been applicable to soldiers under discipline it does not follow that they would be suitable for civilians.

* * *

A comprehensive scheme for the treatment and reeducation of disabled soldiers is under way in Great Britain and the opening of Enham Place by the Minister of Pensions marks the furthest stage of this scheme as yet reached. Enham Place is the first establishment of the kind that the Village Centers Council has brought into being with the view of assisting the State in the acceleration of recovery, especially of men who have lost limbs and who are suffering from the aftereffects of shell shock and gas poisoning. The introduction of

country homes for treating and retraining sufferers of the war was the outcome of a report made by a small group of medical men who visited France and Italy some two years ago to find out what was being done in this direction in these countries. The estate at Enham Place consists of about a thousand acres and there are three good houses on the property, one of which is Enham Place itself, a big house with dining room, billiard room and other living rooms, and space enough upstairs to provide dormitories for one hundred men. This house is the centre of an organization which supplies the latest methods of treatment for shell shock and nervous affections; convalescent orthopedic cases; unhealed wounds; stiff or crippled joints; amputations, and the aftereffects of malaria. Dr. Fortescue Fox is the medical director. The medical wing of the building was equipped at the cost of £15,000 (\$75,000) by the British Red Cross Society and comprises baths of every description, all the latest appliances for electrical and manipulative treatment, and there are two trained V. A. D. masseuses on the staff. There is also a gymnasium. The guiding principle of the centre is treatment and training, and in a large proportion of cases it is found that it is best given in the form of light horticultural work. Agriculture is taught to those who wish to take it up and one farm of 210 acres is being retained for the purpose. There are also workshops in which men receive instruction in electrical fitting, carpentry, and chair making, boot repairing and basket and hurdle making. Other crafts will be added as time goes on. This enterprise has been worked out upon a basis of 1,000 men who will become wage earners. At the date of the armistice it was calculated that there were 493,000 men discharged as disabled, and of these 104,000 were handicapped by the loss or helplessness of legs or arms. It must be borne in mind too that a very large percentage of men invalided as unfit for further service will be unable to do themselves full justice under ordinary factory or outdoor conditions. The scheme of the village centre, of which it is intended to found many, is to provide cottages and homesteads in which the disabled may settle with a prospect of comfort and healthy surroundings while engaged in some calling of general usefulness. The scheme, moreover, includes means for healthy recreation.

* * *

The Ministry of Health has been notified of the occurrence of cases of plague on board the steamship Nagoya. The ship arrived in the port of London on October 25, and the assistant medical officer of health, when he boarded her, found that several cases of illness had occurred in the native crew which he diagnosed as plague. One man died and was buried at sea on October 23d. Another man fell ill on October 22d, and was removed on the arrival of the ship in a moribund condition to the isolation hospital of the Port of London Sanitary Authority. Six other cases have been landed and taken to the isolation hospital. The diagnosis of plague has been confirmed by the bacteriologist of the Ministry of Health from material obtained from the second case.

Editorial Notes and Comments

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OUR DUTY TO OURSELVES AND FUTURE GENERATIONS.

An estimate of the losses in men killed during the war from figures recently published is some ten millions. About four men were wounded for every one killed, but three fourths of these, thanks to modern surgery, were so thoroughly healed that they will be able to go on with the work they were doing before and many of them actually went back to the firing line after treatment. About seven millions, however, were wounded so badly that they will not be able to resume their prewar occupations. It has been calculated that at least seven millions of civilians died as a result of the hardships of war. These consisted largely of the young and the old. When it is recalled that Poland was fought over by the contending armies some six times and Serbia three times; that portions of Austria were overrun three times, and Belgium and northern France were occupied by an enemy army for four years, it is easy to understand that these figures are conservative.

Civilization's losses by the war is twenty millions of persons killed and a third as many maimed. How soon will these immense losses be made up? Sir George Newman, chief officer of the recently established ministry of health in England, emphasized in his inaugural address certain phases of the problem that are very interesting. Before the war there was a steadily falling birth rate which reached a climax toward the end of the war. In 1917 the birth rate in England was slightly above seventeen

to the thousand. The death rate was higher than this less than a score of years ago. There has been a constant decline for years in the death rate until that has reached 13.5, but in spite of the unfavorable progress it is evident that the margin between these two ultimate factors of humanity is entirely too small to hope for the repair of war losses for a long time. It is on this margin, however, that the regeneration of the nations of Europe depends. There is a great increase in the expectancy of life from birth upward but Sir George Newman pointed out that nearly half of the deaths occur under fifty years of age. The question of sufficient gain in the mature population then to make up for the war's losses is dubious enough.

Unfortunately, in addition to this unpromising outlook the conditions in the war countries is distinctly unfavorable at the present moment to the preservation of the rising generation, such as they are, in anything like the good health that would make them a valuable addition to the population. The Peace Treaty as signed at Paris required for reparation purposes that Germany should make over to France 140,000 milch cows and 10,000 goats in order that not only the devastated areas but practically all of France should have enough milk for their children. The German occupation of northern France had inflicted much more injury to the milk supply of the country than was indicated even by these figures. There has been a protest on the part of Germany and her friends among the neutral nations that this provision of the Peace Treaty will cause great suffering, probably also great loss of life among German children, for of course there is a great deficiency in the milk supply in the Teutonic countries.

In response to the protest that has been voiced in the matter, a memorandum was recently signed by the leading public men of England including Cardinal Bourne, the Archbishops of Canterbury and York, Sir William Osler, and many others, pointing out that in spite of the sufferings that would be thus inflicted on innocent women and children in Germany, it is only just that this reparation should be made to France since Germany precipitated the war which brought about the serious conditions both nations are now facing, and the children of France have therefore a preferential claim above those of Germany. They point out what an immense amount of suffering and hardship has been inflicted upon French children by the war.

In spite of all our advance in sanitation with the reduction of the mortality rate among all classes

and especially among infants, the outlook for re-population of the war stricken countries is not encouraging. So many more workers of all kinds are needed than are now available that every effort must be made to preserve the living and foster future population. Sir George Newman does not hesitate to suggest that the next step that will have to be made to secure these aims is an improvement in the housing conditions of the poor especially in the large cities. At the present time these are not only a source of greatly increased death rates among the poor themselves, but because slum life fosters infections of various kinds which then are transferred, sometimes with serious virulence to the classes of the population living in better conditions. Preventive medicine cannot secure further triumphs without such social improvement. Great advances have been made in this direction during the past generation. Great corporations have attempted to secure better living conditions for employees because this produced greater efficiency on the part of employees and necessitated less sick leave. Housing conditions still remain a disgrace in many large cities and in some of our industrial centres and even smaller towns where the foreign population crowds together. The physician during the war becomes, to use Virchow's words, "an attorney for the poor," to secure for them their rights to health, not only for their own sake, but particularly for the benefit of the rising generation and the community.

SLEEP AND SLEEPLESSNESS.

Sleep is not always the "sweet restorer" that it should be. Abnormal sleep is frequently a symptom of disease and sleep that is disturbed and not sound is often an evidence, if not of disease, at least, of some bodily or mental disorder. From the time of Aristotle, the first scientific delver into the mysteries of human organism, some of the greatest intellects of ancient and modern ages have been concerned with the problems of sleep. The true nature of sleep has not been discovered, yet many instructive facts have been revealed. Mr. E. H. C. Allen, writing in the *Dublin Journal of Medical Sciences* for August-September, 1919, says that the poet's description of sleep as the twin brother of death cannot be justified from the outlook of the pathologist, "for death implies the complete arrest of all the psychic and organic functions of the body, whereas in sleep the latter are operative and only a few of the psychic functions are suspended, the rest continuing to act with more or less modification." Schopenhauer's description is

more in accordance with facts that "Sleep is to a man what winding up is to a clock."

The changes in the vascular system during sleep are of peculiar interest. Dr. Leonard Hill once said that, "The vasomotor centre is the hub around which turns the wheel of a man's active mental life." There is no space in a brief article such as this to record or even refer to the various views expressed by physiologists on this phase of the subject. It may be mentioned, however, that, in regard to temperature, less heat is produced during sleep, on account of the passivity of the voluntary muscles and the diminished glandular activity, while heat loss is increased by sweat evaporation and the distribution of the blood near the body surface. Consequently the temperature may fall from a half to one degree.

Some investigators have favored a chemical explanation of the causation of sleep. One of the most interesting of these is that of Preyer who holds that sleep is due to the accumulation of fatigue products in the blood, and that these being easily oxidizable substances, absorb the oxygen required by the brain for its continued activity. He found that the injection of lactic acid, a normal fatigue product, caused sleep.

Errera, of Brussels, defines sleep as "a physiological intoxication" due to the accumulation of leucomaines or poisonous alkaloids in the tissues. Work necessarily involves chemical breaking down, and, he argues, that the products, including leucomaines, are carried by the blood to the brain, where they at length produce sleep. During activity more leucomaines are formed by the breaking down than oxidation can destroy but during sleep they are destroyed and carried away. None of these theories is satisfactory.

As for insomnia it is too wide a subject by far to be discussed however briefly here. With respect to treatment of the highly dangerous condition, it is doubtful to how great extent artificially produced sleep is really conducive to the restoration of exhausted tissues. But, at the same time, it is obviously evident that in the treatment of mental disorder or pain, just as in the treatment of bodily pain, rest must be obtained. There is a limit to human endurance, so if sleep cannot be obtained naturally resort must be had to artificial means. Therefore, in dealing with obstinately persistent sleeplessness, rational treatment should be first employed, and only when this fails should drugs be used.

Excessive sleep is unhealthy. Hippocrates said that it prevented the aliment from being digested and generated crude humors. How much time

should be devoted to sleep? Allen says that usually the amount required is in inverse proportion to the strength and development of consciousness. Infants need a great deal of sleep, because a brief period of waking suffices to fatigue their feeble consciousness. With increase of years less sleep becomes necessary until middle age is reached when consciousness is at the zenith of its development. In old age the amount required depends upon the state of preservation of the intellectual powers and varies much in individual cases. The old English adage says, six hours for a man, seven for a woman, and eight for a fool; which is perhaps, near enough to the mark. The time given up to sleep by healthy adults, as a rule, is eight hours but some, indeed many great brain workers, have been satisfied with much less. Humboldt is said to have spent but four hours out of the twenty-four in sleep, while Jeremy Taylor allowed himself only three hours. As Allen states further persons of very marked personality and highly developed consciousness seem to require little sleep, their consciousness not being readily fatigued. Napoleon rarely slept for more than four or five hours. Wellington slept but a short time, and is said to have reposed in so narrow a bed that if he turned over he fell out and knew it was time to get up. Doctor Johnson complained of somnolency.

Position in sleep is a matter of importance. According to Allen, the sleeper should lie as nearly horizontal as possible, and should accustom himself to sleep with equal ease on either side or in the supine position. Doctor Osborne, in the *Dublin Quarterly Journal of Medical Science*, in 1859, stated that children up to the age of fourteen sleep equally well in any of these positions, but between fourteen and twenty a preference is exhibited for the right side. Change of position prevents venous congestion and advantage should be taken of every awakening to vary the position, indeed this is generally done almost unconsciously.

Concerning the hours of rising and retiring, there is a good deal of disagreement. Evidence was afforded of this by the varying views of persons living under different conditions in reference to the daylight saving law. Those living in towns generally speaking were in favor of it. The majority of urban dwellers do not retire or rise early and the difference of an hour in the time of going to bed and getting up was agreeable. They had more sunlight and experienced none of the discomforts undergone by those who, by reason of their occupation, must rise at an early hour. In the country, for instance, where they are in the habit of arising at five or before in the summer and six in

the winter, it is an uncomfortable if not unhealthy change to get up at four and five respectively, as Allen puts it. It is doubtless healthful, provided the hour of retirement is not too late to rise early in the summer, and it confers a pleasant sense of moral superiority over one's lie-a-bed neighbors, but the "early to rise" enthusiasts are not convincing when they acclaim the virtues of the extreme psychic depression consequent on a winter's morning toilet made by the light of a spluttering candle.

It might be, and in many instances no doubt would be good for the health to conform more closely to natural conditions than is habitual among civilized people. But circumstances must be considered and the old maxim of early to bed and early to rise must be interpreted judiciously and not laid down as a law of the Medes and Persians. A certain amount of sleep is essential to good health and sleeplessness is opposed to good health. Therefore the modicum of refreshing sleep should be obtained in the best manner possible, while sleeplessness should be overcome by natural means whenever this can be done.

EXTRAHEPATIC NONMALIGNANT TUMORS OF THE BILE DUCTS.

Extrahepatic nonmalignant neoplasms of the bile ducts are relatively rare. They are prone to develop in the fundus of the gallbladder or in the choledochus and occasionally are found in the cystic or hepatic ducts.

Pathologically, they can be divided into two groups, viz., adenomata and papillomata. The adenomata are formed by a hyperplasia of the glands of the mucosa in the form of a circumscribed nodule situated in the wall of the gallbladder or a duct and covered by an epithelium which has not undergone any morbid change. These glandular neoformations may undergo an exaggerated dilatation, resulting in true glandular cysts—cystic adenoma.

Papillomata, which are more frequently met with, are formed by a thick stroma and an epithelium whose characters are those of normal biliary epithelium. They offer vegetations assuming the form of villousities into which vasculoconnective tissue axes penetrate. Glandular culdesac ramifications penetrate the connective tissue of the neoplasm. To this group unquestionably belong certain neoplasms which have been described as fibromata, myxomata and lipomata, but without microscopic control.

Beside these two well defined types of neoplasm, certain nonmalignant growths are found to be adenoma in their depth and papilloma on the surface.

These neoformations in which villus productions become associated with glandular hyperplasia may be termed adenopapilloma or papilliferous adenoma.

These typical nonmalignant growths, which are limited to the mucosa, may from these characters be differentiated from malignant processes, but when a cancerous production is still in its early stages a differential diagnosis offers certain difficulties, because the malignant growth in this developmental phase may be typical. On the other hand, a nonmalignant tumor may undergo malignant transformation. Nonmalignant growths of the gallbladder or bile ducts are probably caused by biliary lithiasis and seem to be more frequent in the female. An inflammatory process due to an infection of the biliary tracts, as well as certain parasites, are also supposed by some writers to be etiological factors. The symptomatology is often confounded with that of the biliary lithiasis which accompanies the neoplasm so that the diagnosis of the latter is never made. The commonest clinical symptomatology is retention icterus combined with dilatation of the biliary tracts, in that a tumor formed by the gallbladder can be detected by palpation. Given the possibility of malignant transformation and the difficulty in making a differential diagnosis with a cancerous growth cholecystectomy should be done if the tumor is in the gallbladder. When the tumor is in the ducts, these should be resected, choledochectomy being the proper procedure to select.

TRAINING MEDICAL MEN FOR THE ARMY.

The physicians in the United States responded to the call for volunteers in military service with a promptitude which reflected a great deal of credit on the profession at large. Training schools were organized where the medical officers were sent for instruction in military medicine. The results were excellent, but the men who made the plans for the training schools apparently undertook to fit every civilian doctor to become a regimental surgeon. This involved a waste of time, both on the part of the instructors and on the part of the pupils. The better method would have been to have the curriculum in the medical officers' training schools adjusted so that the students would specialize from the moment that they entered the training schools. The younger men who had not developed a particular capacity in any special line would be put into the course to prepare for work as regimental surgeons. The men who had made some progress in any specialty should have been trained in the military aspects of that specialty and relieved from the duty of studying military maneuvers and military administration.

The development of the surgical units on the fighting front showed what was possible by special-

ization. In commenting on the future training of the officers' reserve corps Dr. Robert T. Frank, in *THE NEW YORK MEDICAL JOURNAL* for October 11th, points out the desirability of relieving the reserve officer who is a specialist from the obligation to receive instruction in routine and administrative duties and the desirability of confining his instruction to his own specialty. The time to plan this work is now, when we have teachers who can teach war surgery based upon personal experience. It is true that each war produces modifications in practice and treatment, but these can not be foreseen, and every effort should be made to give our reserve medical officers the full benefit of the experience gained in the World War. Medicine has come to be so highly specialized that this specialization must be recognized in the army, and to get the best results from the use of civilians they must be trained along special lines rather than along general military lines. The army must be in a position to get the best and most immediate results from the material available in civil life. It would be a great mistake to endeavor to make administrative and military officers of specialists, and indeed medical officers should be entirely relieved of this, and we might well turn to pharmacy where an abundance of excellent material exists for the making of administrative officers to perform nonmedical duties in the medical department.

The pharmacists of the better class would not only be able to act as adjutants of hospitals and as medical supply officers, but could, after a brief course of medical training, serve as bacteriologists and analysts of water and foods. The pharmacist will be better fitted to act as medical supply officer than the physician by reason of his experience in commercial life, while his contact with the medical profession in civil life will enable him to cooperate with the military surgeons most efficiently. In planning the instruction of the medical officers' reserve corps the fact must never be lost sight of that the training is not primarily intended to supply medical officers for duty in the regular army, but is intended to fit the civilian doctor as speedily as possible to serve in the emergency of war.

News Items.

Doctor Sobel Appointed to Fordham Faculty.—Dr. Jacob Sobel, of New York, has been appointed professor of hygiene at Fordham University Medical School.

Dr. Carrel Returns to United States.—Dr. Alexis Carrel has returned to his work in the research laboratory of the Rockefeller Institute after and absence of four months in France.

Bubonic Plague in Paraguay.—The recent appearance of bubonic plague is reported in Paraguay. The government health department has announced that several new cases have developed.

Vienna Gives Sex Hygiene Instruction.—Instruction in sex hygiene for children of both sexes over thirteen years of age has been decided upon by the Vienna Board of Education, according to a press dispatch.

Woman Physician Elected to Legislature.—A woman physician, Dr. Elizabeth Van Rensselaer Gillette, was elected to the New York State legislature from the Second Assembly District of Schenectady. Doctor Gillette was elected on a platform indorsing the eight hour day and minimum wage.

Occupational Therapy for Civilian Hospitals. The trustees of Bellevue Hospital, New York, have invited the Committee on Occupation of the New York City Visiting Committee to send an occupational aid to certain wards, particularly the neurological wards, where the patients are much benefited by light work.

Influenza in Steel Mills.—Influenza has broken out in Youngstown, Ohio, among workmen who were living at steel plants during the strike, according to press dispatches. Six cases were taken to the hospital from the Carnegie Steel Company and three from the Brier Hill Steel Company. Several hundred men have been living at the plants.

American Urological Association.—The next meeting of the New York Society of the American Urological Association will be held Wednesday, December 10th, at 8:30 p. m. in Du Bois Hall, New York Academy of Medicine. Dr. Herman O. Mosenthal, recently of Johns Hopkins University, will read a paper on Kidney Insufficiency in Nephritis.

Professor Whipple Appointed Sanitary Director of Red Cross League.—Professor George C. Whipple, secretary of the Harvard School of Public Health and professor of sanitary engineering, has been appointed director of the Division of Sanitation in the League of Red Cross Societies. Doctor Whipple will continue at his present duties until next February.

French Fourragère Conferred on U. S. Sanitary Unit.—The fourragère of the Médaille Militaire has been awarded to Sanitary Section Unit No. 646. This unit, also known as Le Formation Harjes, saw continuous service from 1914 to 1919, having been attached successively to the French army, the American Ambulance Service, and, after the signing of the armistice, to the Second Polish Division.

Mental Hygiene Survey in Baltimore.—A survey of three public schools in Baltimore made by the Mental Hygiene Society of Maryland showed that in two of the schools three per cent. of the children were feeble-minded, and in one school seven per cent. had to be put into the slow or retarded class. To improve the situation the society has recommended that the feeble-minded children be segregated and that the slow children be put in special classes.

Medical Cooperatives in Belgium.—The cooperative activities of Belgian medical men, already well established, have taken a new turn. A cooperative medical printing office has been established at Brussels which centralizes the printing of the reviews and journals and the printing work necessary to the profession. A physician's home has also been established at Brussels. Antwerp, in addition to a physicians' home, has a cooperative purchasing bureau for the purchase of medicines, instruments, wine, coal, and—when the scope of the bureau has widened—shoes, linen, and so on.

Clinics Given by Doctor Wolbarst.—Physicians are invited to attend and bring interesting cases for diagnosis and conference to the genitourinary clinics given by Dr. Abr. A. Wolbarst, Thursday evenings at 8:30 at the West Side Dispensary and Hospital, 328 West Forty-second street. The clinics will be held from November to March inclusive.

Low Death Rate in New York State.—The New York State death rate in 1,000 of population for September was 10.3, according to figures given out by the State Department of Health. This is less by 0.1 than the rate for August and less by 3.4 than the average for September, 1913-1917 (13.7) and is the lowest crude death rate ever recorded for New York State. The New York City rate was 9.1 for September, which is the lowest ever recorded in this city.

New York Occupational Therapy Society.—A branch of the national Society for the Promotion of Occupational Therapy has been organized in New York State, with the object of stimulating occupational therapy in institutions and outside and improving standards in the work. Dr. William L. Russell, superintendent of Bloomingdale Hospital, was chairman of the committee on organization. Officers will be elected soon.

Hospital Teaching Units.—St. Bartholomew's Hospital, London, is making experimental application of the hospital teaching unit. A medical and a surgical unit have been established under the direction of full time officers, debarred from private practice. Each director will have the help of an assistant director, a first and second assistant, and two house physicians or house surgeons. The units will be provided with wards, clinical laboratories, and outpatient departments and will take their share in the treatment of patients and in the clinical teaching of the hospital.

Hospital Consolidation Fund Sought.—A plan for consolidating the interests of hospitals, including those controlled by the city, with a view to extending general medical education has been evolved by physicians of New York, with a proposal to raise a fund of \$12,000,000 to \$15,000,000 to finance the enterprise. The movement emanates from the newly incorporated New York Association for Medical Education, of which Dr. Wendell C. Phillips is president. The Long Island College Hospital, with one exception the largest general hospital in the city, is expected to form an integral part in the medical centre plan.

New Typhus Wave in Galicia.—Galicia has been swept during the past two months by a new wave of typhus which reached greater proportions than anything ever known even in that unfortunate country where typhus has always been more or less endemic. Hundreds of people are reported to have died without medical attention in villages that could not be reached by physicians. After more than five years of continual warfare in which one army after another has occupied the country, Galicia is almost without the elemental hospital necessities. The best equipped hospitals have been completely ruined. The American Red Cross has established headquarters at Lemberg.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 819).

In a considerable proportion of cases of joint disturbance, evidence of the presence of infection as an etiological factor is much less definite than is the case in rheumatic fever or joint involvements complicating syphilis, tuberculosis, gonorrhea, scarlet fever, meningitis, etc. These cases constitute in part the group to which the terms arthritis deformans, rheumatoid arthritis, and more recently osteoarthritis with its two varieties, atrophic and hypertrophic, have been applied. While these conditions are essentially chronic, running a gradually progressive course for many years, there occur during their progression manifest exacerbations in which the structures affected exhibit signs of more or less acute inflammation, with accompanying constitutional disturbance and fever. Indeed, an acute stage of progressive polyarticular disease, met with especially at the onset of the condition and constituting an "initial attack", has been clearly recognized. During such an attack the joints swell and become tender and painful upon movement; fever, anemia, and rapidly increasing weakness and loss of weight are attendant features. Whereas in some cases pain is persistent even during intervals between attacks, in others there is pain only at the time of the attacks—a circumstance tending to promote confusion with true rheumatic fever, especially at a relatively early period in the case, before distinct joint deformities have arisen. According to Martinet, 1919, progressive deforming multiple arthritis may sometimes be a consequence of acute articular rheumatism or of gonococcal or tuberculous infection. In many cases, however, the evidences of infection as an underlying factor are less distinct, or absent, and the etiological theory usually invoked is that of a metabolic disturbance or disorder of nutrition. According to some, disease of trophic nerves is a primary cause. Traumatism and exposure to cold and damp are also considered possible factors. Foci of infection as a cause of some cases of chronic arthritis have been emphasized by Billings, Hastings, and others.

In general there should be no difficulty in differentiating the more acute attacks of arthritis deformans from rheumatic fever where repeated inflammations have already occurred and where definite, symmetrical deformities, with relaxation of the ligaments and atrophy of the muscles, have become established. In the initial attack, on the other hand, before these characteristic signs exist, the differential diagnosis is admittedly impossible in some instances. There are certain features, however, which in the majority of cases constitute prob-

able indications. In the first place, sex incidence is different, arthritis deformans being more frequent in the female than the male. The affection often first appears about the time of the climacteric and is more frequent in women with diseases of the reproductive organs than in others not so afflicted. Exposure seems to be a factor common to both disorders, but mental shock and depressing emotions are frequently elicited in the previous history of arthritis deformans cases, while in the etiology of rheumatic fever they have little or no influence. As regards clinical manifestations, early and preeminent involvement of the small joints of the hands and feet is typical in arthritis deformans, whereas in rheumatic fever the larger joints are usually affected. A monarticular form of arthritis deformans in which large joints such as the knee, hip, and shoulder are commonly involved, is recognized; but this form occurs usually in elderly persons, while initial attacks of rheumatic fever are rare after the fortieth year. Other distinguishing features which may be of considerable service are the failure of salicyl treatment to act in arthritis deformans; persistence of the joint lesions in this disease as against the migratory tendency in rheumatic fever; the symmetry of the joint involvement in arthritis deformans, and the infrequency of endocardial or pericardial complications.

In the treatment of arthritis deformans many measures have been recommended, in accordance with the varying conceptions of the origin of the disease. As a matter of fact, it seems more clearly indicated that the disorder is due to one of several causes than that its cause is always the same. Hastings, 1913, obtained positive complement fixation reactions to streptococcus viridans in six out of twenty-four typical cases and to the gonococcus in four additional cases. He recommends, as did also Hughes, 1913, the use of autogenous vaccines and likewise the elimination of any infectious foci, such as diseased tooth sockets, that can be found. Silver, 1916, holds that viscerotaxis acts as a predisposing or determining factor by inducing stasis and thereby favoring bacterial absorption from the alimentary tract. In accordance with or apart from these considerations, the treatment recommended for arthritis deformans comprises free purgation or colonic lavage; elimination of saccharine and farinaceous articles of diet (Barr); thyroid, thymus, or ovarian extracts; buttermilk or lactic acid bacilli (Crane); intestinal antiseptic drugs; guaiacol and potassium iodide (Luff); dry warm climates; sulphur waters (Schawlow), etc. Measures advised for local treatment include "baking" followed by massage; rest of affected joints, with or without fixation by means of splints or plaster dressings; passive movements; static or high frequency treatments; chloroform liniment or hot alkaline dressings; fibrolysin injections; mesothorium (Zueblin), and surgery to remove obstacles to joint motion.

(To be continued).

Treatment of Chronic Empyema.—Martin B. Tinker and John Wattenberg (*Annals of Surgery*, November, 1919) give the two main objects to be kept in mind in the treatment of chronic empyema: 1, To heal the discharging cavities and sinuses, and, 2, to develop the lung and general health to as near normal as possible. Open air treatment is advantageous. Tonics of iron and bitters are used. Carrel-Dakin treatment is used locally and when the maximum recovery has been reached by this method bismuth paste is injected into the sinuses. A record is given of eighty cases of empyema in which all but six of the patients had been previously operated upon. Ninety per cent. presented discharging sinuses. In eight cases the wound had healed; three wounds reopened spontaneously ten days after arrival. Sixty-nine cases followed influenza pneumonia, eight followed gunshot wounds, three acute pleurisy, eight had pleurobronchial communications. In sixty cases one rib was resected; in seventeen two ribs; in one case four, and in two cases there was no rib resection. It required an average of 122 days for permanent closure of the wound. The average time of healing after arrival at the hospital was thirty-four days. In single resections the eighth rib was chosen in thirty-six cases; the seventh rib in twenty cases, and the ninth rib in six cases. Where two ribs were resected the seventh and eighth were selected in ten cases, the eighth and ninth in five cases, and the second, third, fourth and fifth in one case. The site chosen for operation was as follows: Posterior axillary line, forty cases; mid-infrascapular line, thirty cases; anterior axillary line, ten cases. The longest time of suppuration prior to admission was twelve months; shortest time of suppuration prior to admission, three weeks; average time of suppuration, four months.

In no case was a cure effected by aspiration alone. In a number of cases the chest was aspirated every day or every other day for from two to three weeks prior to operation. The condition did not improve. Only three patients were reoperated upon. In eight cases there were pleurobronchial communications. In four of these the fistula soon closed and routine instillation of Dakin's solution was used. These healed as rapidly as an average case. Where the communications persisted Dakin's solution could not be used, and these proved to be very discouraging cases. The size of the cavities varied from ten c.c. to 2,800 c.c., with an average of 150 c.c. Dakin's treatment was carried out as follows: The external surface was cleansed with neutral soap. A smear for bacterial count and culture was made from the pus. The cavity was irrigated once daily with enough Dakin's solution to fill the cavity. This was repeated until the fluid returned clear. Then a liberal amount of Dakin's solution was given as an instillation every two hours for the rest of the day. Several tubes were placed in different directions in the cavity so that when the solution was used as much of the cavity as possible was sprayed. When the cavity had diminished to two or three ounces in size and showed disinclination toward further closure, bismuth paste was used. Bismuth

poisoning may arise from this treatment. This was noted in three cases, but it was not grave. In addition to this treatment, unless there was some contraindication, the patient was given daily lung expansion exercises. Properly graduated exercises proved universally beneficial. Even the most chronic cases, when observed under the fluoroscope, showed marked improvement in filling out the thoracic cavity lung tissue with air. As the lung capacity increased the endurance of the patient also increased. The contour of the affected chest showed obvious changes after a month of systematic physical culture. A record was kept by the use of a malleable tape made of a strip of lead two feet long, two inches wide, and an eighth of an inch thick. The tape was moulded about the affected side of the chest, the same level being used each time.

Treatment of Blackwater Fever.—J. P. Williams (*Journal of Tropical Medicine and Hygiene*, August 1, 1919) describes the treatment applied by him in ten cases. He sums up the measures used as follows: Careful nursing; drugs; vigorous hydrotherapy; precautions against heart failure, particularly during convalescence; invaliding to a temperate climate. The urine should be accurately measured and kept out of the patient's sight, as a blackwater is always in marked mental anxiety. Changing of clothing and bedding should be done with as little disturbance as possible. Williams's practice as regards drug treatment was to give the patient on admission a concentrated intravenous injection of 0.2 gram of galy and an intramuscular injection of nine grains of quinine bihydrochloride. The galy injection was repeated on the third day and the quinine every twelve hours until the graver symptoms subsided, oral use of five grains three times a day being then substituted. In most cases Sternberg's mixture, consisting of sodium bicarbonate, 150 grains, and mercury bichloride, one third grain, in one quart of water, afforded great relief in persistent vomiting, abdominal discomfort, or hiccough; one and one half ounce was given every hour. A hot pack was applied for three hours upon admission, and sometimes repeated. By rectum, four ounces of warm saline solution were given, and repeated every four hours, with the amount increased to eight ounces. In grave cases half an ounce of brandy was added to each dose of saline. Oral use of sweetened lime drinks, barley water, or even plain warm water, was encouraged up to the point of compulsion, profuse diaphoresis and diuresis resulting. For at least seven days after cessation of hemoglobinuria, patients were kept strictly recumbent or semirecumbent. Invaliding to a temperate climate was required as soon as the patient was fit to travel, and he was advised to take quinine hydrochloride in five grain doses thrice daily for at least a month, together with an iron and arsenic tonic. Of the ten patients treated, eight recovered. Of the two others, one was almost hopeless on admission and the other had recently contracted syphilis. No person who has had blackwater fever should return to an endemic area for at least four months, and upon doing so should faithfully carry out quinine prophylaxis.

An Operation for Restoration of the Recto-vaginal Septum.—H. Koster (*American Journal of Obstetrics*, August, 1919) recommends the following procedure, already carried out in over two thousand cases, with gratifying results: Traction sutures are placed at the lower margins of the caruncles, and an incision made between them to the inner side of the mucocutaneous junction, forming the base of a triangle, the sides of which are constituted of a curved incision with its convexity upward beginning in the midline well up above the apex of the rectocele. The convexity of the lateral incisions depends directly upon the amount of rectocele. The triangular area of mucous membrane is now dissected free, care being taken to avoid opening into the rectum by keeping the line of cleavage between the vaginal mucosa and the underlying layer of veins. Beginning at the upper angle of the denuded area a running looped suture of No. 0 chromicized, forty day gut is placed. The mucous flap is then entirely removed and the loop suture continued until the separated edges of the recto-vaginal fascia appear as two parallel margins, brought into relief by firm traction on the slack of the suture already placed. The approximated edges of this fascia are then united by a suture of chromicized twenty day No. 00 gut begun at the upper end. This suture builds up a wall in front of the rectum entirely obliterating the rectocele, and continuation of the first suture brings into view the margins of the puborectalis portions of the levator ani muscles. A third suture is then used interruptedly to approximate the edges of the levator ani, and the first suture continued until the vaginal mucosa has been entirely reunited. Finally a few interrupted sutures uniting the separated margins of the perineal body and occluding the dead space, are introduced and the skin wound is closed with horse hair. Thus a complete restoration of the recto-vaginal septum is effected and the rectocele obliterated.

Treatment of Burns.—Fauntleroy Flinn (*Virginia Medical Monthly*, September, 1919) reports on the results of treatment of burns of all degrees during two years at the Dupont Hospital, City Point, Va. There were one or two new cases each day. The treatment at the scene of accident consisted of a thorough washing with plain water by a fellow workman, an application of sodium bicarbonate in the case of acid burns, and boric acid ointment. On admission to the hospital the parts were again thoroughly cleansed, washed with bicarbonate solution, and a thick layer of boric ointment applied. The dressing was changed every twenty-four hours until the pain ceased—usually on the second or third day. The burned area and surrounding skin were then cleansed with some mildly antiseptic solution, dried by an electric hot air blower or simple exposure to the air, and paraffin, meanwhile melted in a double boiler, applied with a soft brush or atomizer in a thin layer, extending well over onto normal skin. A thin layer of absorbent cotton was then applied and covered with a thick layer of paraffin, going well over the edges of the cotton and making the whole as airtight as possible. A gauze bandage completed the

dressing. In second degree burns, with but little sloughing and discharge, the dressing was changed once a day. Such burns usually showed little or no infection and healed readily in two to six months. Third degree burns with deep sloughs and abundant secretions usually became infected. After paraffin dressings until the beginning of the second or third week, the sloughs began to separate and the odor was foul. A continuous paraffin dressing, preventing escape of secretions, being then impossible, the following procedure was used: About 9 a. m. the paraffin dressing was removed, the area cleansed by irrigation with a mild antiseptic solution and mopping with cotton, as much as possible of the sloughing tissue trimmed away and a wet pad of cotton dipped in one in 6,000 to one in 2,000 potassium permanganate solution applied and kept warm with a hot water bag. After 3 or 4 p. m. the area was exposed to the air for several hours, or at least until it was dry, and the paraffin dressing then applied. After the burned area had become sufficiently clean the paraffin dressing once daily was resumed. The author does not believe medicated, antiseptic paraffins are of any special benefit. Commercial or ordinary surgical paraffin was found the toughest and most pliable. An important point is to sterilize the paraffin each day and employ enough paraffin to give complete protection. Paraffin probably has no inherent quality that prevents scar formation, but does so indirectly because it is the most aseptic and protective dressing at hand, and one is more careful in cleansing the burned area, there being consequently no infection or only a slight amount.

Meat Diet in Jaundice.—P. Chevallier (*Presse médicale*, August 28, 1919) refers to the relatively prolonged convalescence from acute jaundice, whether of infectious or toxic origin. Asthenia may persist for several weeks or even two months after disappearance of the jaundice. A meat diet completely reverses this sequence of events, the physical depression passing off before the jaundice, so that the patient is able to resume work while the skin and conjunctivæ still show a subicteric hue. A milk diet is customarily ordered in jaundice, but many authors deem it unnecessary. A vegetable bouillon, administered to the amount of one litre a day, is much to be preferred. The following combination is advised: Potatoes and carrots, of each sixty grams; turnips, twenty grams; dried peas, dried beans, and lentils, of each a handful—about twenty grams; water, one and a half litres. Heat to boiling for four to six hours in an earthen vessel, strain through a coarse towel, add water if necessary to make one litre, and add a little salt. Such a bouillon contains not only salts of sodium and potassium, as well as phosphates, but also carbohydrate and protein material. It is greatly relished by the patients, and should be taken even where milk is also being used. Just as soon as the patient can take a little solid food without nausea, he is given a little broiled or pounded meat, at first a mouthful or two, then increasing amounts up to 100 to 200 grams twice a day. The meat taken should be, not white meat, but red meat, e.g., beefsteak or roast, cooked just enough to acquire a pleasant taste. Soon a considerable degree of appetite will have

become established, and after taking the meat the patient will consume various vegetables. Bread and pastry are absolutely interdicted; at most a little very dry and toasted bread may be used. Under these conditions appetite is already marked, and good spirits and the ability to work restored while distinct jaundice still remains. In grave icterus and chronic hepatitis fresh, raw hog's liver has been recommended; a meat diet is being increasingly employed in chronic hepatitis. The meats best adapted for jaundice cases are beef and horse meat; lamb, and especially pork and veal, being inferior. The therapeutic properties of meat in jaundice are ascribed partly to the soluble and insoluble albumins it contains, particularly myosin; raw meat also contains some unknown constituent which facilitates its digestion. The meat maintains the urea producing function of the liver, and also excites the secretion of bile acids as actively as the chologogues.

Pathogenesis and Treatment of Seasickness.—

Pierre Cazamian (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 2, 1919), in a study of fifty cases of seasickness among French naval men, found that during the stage of active illness, with vomiting, the pulse rate is not slowed, as usually stated, but as the rule accelerated. In forty out of fifty instances the pulse rate was about eighty a minute. In forty-five cases the blood pressure, both systolic and diastolic, was raised, usually to a moderate extent only; where sickness is protracted, however, the blood pressure falls below normal. The oculocardiac reflex was inverted in thirty-eight cases; in one instance, in fact, the pulse rate was increased from seventy-two to ninety-five a minute by ocular pressure. The pupils were more often dilated than contracted. Pressure on the epigastrium usually caused acceleration, instead of slowing of the pulse. Thus during active seasickness the manifestations are those of sympathetic hyperexcitability, whereas in a later stage the overworked adrenal cortex fails, and sympathetic insufficiency with a fall in blood pressure and a condition resembling shock results. Persons with sympathetic hypertonus are predisposed to seasickness, while vagotonics—including children—are in some degree refractory to it. During the stage of sympathetic overactivity Cazamian found Naamé's procedure of giving six milligrams of adrenalin by the mouth in three doses half an hour apart useless and even prejudicial. Excellent and constant prophylactic as well as curative results were obtained, however, by giving atropine sulphate hypodermically in doses of from one to two milligrams. In the absence of a sympathetic sedative agent, the paralyzing action on the opposed vagal system seems to cause by *contre-coup* the desired effect on the sympathetic, just as, in Roger's experiment, stimulation of the peripheral end of the cut vagus promptly brings on hyperactivity of the sympathico-adrenal system. Clinically, the oculocardiac reflex should be used in order to distinguish the cases in which sympathetic overactivity exists, indicating the use of atropine, from the exceptional instances in which sympathetic deficiency exists and indicates adrenalin.

Flat Feet.—W. L. Powell (*Virginia Medical Monthly*, September, 1919) states that in infancy there is no longitudinal arch of the foot; as the bony, ligamentous and muscular structures gradually develop, however, one is formed. Where, as in some instances, the longitudinal arch is not formed, congenital flat foot is produced. Not infrequently, foot disability develops after an acute illness in a person who previously had serviceable feet. The early stage of flat foot, viz., foot strain, is often seen in those who have a high arch. The diagnosis is based on pain across the dorsum and the inner side of the foot, painful heel, and pain in the calves. Points of tenderness are found over the attachments of the astragaloscaphoid and plantar ligaments. The ligaments themselves have no sensory supply, but pain is experienced at their periosteal attachments. Occasionally, the treatment requires absolute rest at first. Usually, however, it can be corrected by proper shoes, the teaching of proper foot positions, exercises calculated to develop the intrinsic and extrinsic muscles, and a support of felt either strapped to the foot or placed permanently in the shoe beneath the inner sole. Metallic arch supports, if used at all, should be made to fit the individual foot; unless properly selected and fitted, they may do much harm. They may give temporary relief, but are not conducive to the required muscular development. Sending such a patient to a shoe store to get an arch support is to be deprecated. Where arthritic changes have taken place no effort should be made to correct the faulty position as long as the infection is active. Rest and elimination of foci of infection are the first requisites, and later, adhesions may be broken up and the foot put in an overcorrected position. The congenital flat foot should be put in such a position as early as possible and maintained there while walking until the bony, ligamentous, and muscular structures have sufficiently developed.

Ileopelvic Congestion as a Clinical Entity.—

F. Cathelin (*Paris médical*, August 2, 1919) groups under the term ileopelvic congestion a number of the clinical cases hitherto called urinary psychopaths, according to the suggestion of Guyon and Janet. The urine in these cases is clear, but the patient shows a tendency to varicocele, hemorrhoids, and varicose veins of the lower extremities. There are deep seated, dull, or lancinating pains in the perineum, testicles, or root of the penis, or there may be throbbing or tingling sensations, all due to pressure of dilated veins on neighboring nerves. Micturition may occur only after some delay; the stream may be weak and stop before the act is completed; the patient believes himself unable to urinate in the presence of others, and sometimes cannot urinate unless in a crouching posture. Frequent desire occurs only in the daytime, the patient not being troubled at all at night. Some patients complain of abnormalities as to erection or ejaculation. Often their painful sensations radiate throughout the pelvic region. Stigmata of nervous defect or degeneration are met with among these patients, viz., abnormal mobility of the eyeballs, strabismus, outstanding ears, high arched palate, insensitiveness

of the pharynx, narrowing of the visual fields, and more or less manifest signs of congenital or acquired syphilis. These patients gain ground but slowly under treatment. The measures indicated include regular living and eating; avoidance of stimulants and of a too sedentary existence; mental suggestion to the effect that the condition is not dangerous, urgent, surgical, nor organic; extract of valerian, 0.03 to 0.05 gram daily; some medicinal mixture for eliminatory purposes; a moderate dose of veronal, chloral, or sulphonal at night; fluid-extract of hamamelis, thirty drops a day in two doses, before the major meals; some diuretic infusion, freely used, to dilute the calculus-forming substances often present; faradic or galvanic treatment with electrodes over the perineum and above the pubis, twice weekly. As a special therapeutic measure, epidural injections may be given, sometimes resulting in complete and permanent cure. These cases must never be catheterized, lest they become transformed, either by infection or habit, into actual cases of urinary disease.

Combination of Surgical and X Ray Treatment in Fibromyoma Uteri.—H. J. Kreutzmann (*American Journal of Obstetrics*, August, 1919) maintains that surgery and x ray treatment are not antagonistic to each other but should work hand in hand. Most of the cases not complicated with degenerative changes or annexal affections are amenable to the x rays, while among those so complicated are a number in which there is no objection to the rays, e. g., cases of the edematous type of myoma, calcareous degeneration, serous ovarian cysts, and henatosalpinx. Probably a segregation of twenty-five per cent. of all cases for operation would be sufficient. About 200 of a series of 262 surgically treated cases recently reported by Leroy Broun could have been cured with the x rays. The majority of tumors, indeed, only shrink—do not disappear—under the x rays, but the symptoms, hemorrhage and pressure, are relieved. This result is attained without loss of life, without any morbidity or injury during treatment, and without any evil aftereffects, whereas in Broun's series there were four deaths, ten recoveries, and fourteen instances of aftersymptoms referable to the operation.

Therapeutic Injection of Air in the Pleural Cavity in Traumatic Hemothorax.—P. Emile-Weil and Loiseleur (*Bulletins et Mémoires de la Société médicale des hôpitaux de Paris*, May 29, 1919) report having utilized in two cases of traumatic hemothorax the procedure of pleural puncture and injection of air, with which they had already obtained excellent results in various forms of pleural effusion. In one case 1200 mls of hemorrhagic fluid were withdrawn and the same volume of air injected. The diaphragm contracted normally, the lung was clear, and the extravatation failed to recur. In the other, two litres of hemorrhagic fluid were removed and two litres of nitrogen gas injected. Diaphragmatic mobility of the normal type reappeared in six days, and the patient recovered without pleural adhesions—a result verified three months later by reexamination. The advantages of withdrawing the bloody fluid in such cases and injecting air or nitrogen before the blood has a

chance to irritate the serous membrane and provoke inflammatory adhesions are emphasized. In a case received only six weeks after injury and in which air was not injected, there was difficulty in thoroughly evacuating the chocolate colored purulent accumulation in the pleural cavity and the patient ultimately succumbed to pneumonia. Autopsy showed a flat, white clot weighing 700 grams in the pleura; this had prevented the evacuation of pus. Had the pleura been promptly emptied of bloody fluid and air injected, the organization of a white clot, as actually occurred, would have been prevented. Conservation of mobility on the part of the diaphragm is a favorable prognostic indication. Very careful aseptic precautions should be taken in injecting air in the pleura in traumatic hemothorax, and the air to be injected should be filtered.

General Principles of Therapeutics.—Robert Hutchison (*Practitioner*, September, 1919) thus outlines the methods of attack in carrying out a plan of treatment: 1. The general management, which involves the questions of whether the patient is to be kept in bed or not; whether a nurse should be obtained; how much exercise and how much rest the patient demands. The object is to put him in the best possible condition in which to fight the disease, and by judicious general management much can be done to economize and maintain his strength. 2. Diet. The individual must be considered first, the disease afterward, because idiosyncrasy, personal peculiarity, applies more to diet than to almost anything else. In acute disease it is well to state in writing what he is to eat; in chronic disease it is better to make a list of the things he is not to take and to leave the rest to his own choice. Before ordering any particular article of diet find out whether he likes it, and how it agrees with him. Never forbid an article without a very good reason. In chronic disease variety must be retained at all costs, so if an article disagrees it is better to reduce the amount than to forbid it. When changes in diet are necessary it is better to make them gradually rather than suddenly. 3. Drugs. In many cases drugs are not needed, but in many others they are. When they are needed we should know just what we can do with them and then use them boldly. As far as possible it is best to use one active drug at a time, but occasionally better results can be obtained from two, three or more drugs so combined as to secure team work. 4. The use of bacterial agents. 5. Physical methods, massage, baths, electricity, special exercises, including perhaps climatic effects, can be employed in the treatment of many diseases. 6. Psychical treatment, or psychotherapeutics, including the use of suggestion, persuasion, hypnotism, and psychoanalysis, plays a considerable part in all treatment. To quote Coleridge, "He is the best physician who is the best inspirer of hope." The men who succeed best in medicine have best the power of impressing on their patients a belief that they are going to get well, and that everything possible is being done for them. 7. Operative measures. The question of surgical intervention must be determined in each individual case after a proper consideration of all the circumstances.

Miscellany from Home and Foreign Journals

Oxygen and Carbon Dioxide Content of Arterial and Venous Blood in Normal Individuals and in Patients with Anemia and Heart Disease.

—George A. Harrop, Jr. (*Journal of Experimental Medicine*, September, 1919) found that the percentage saturation of the arterial blood in fifteen normal individuals varied from 100 to 94.3, and the oxygen consumption varied between 2.6 and 8.3 volumes per cent. Analyses of the blood gases of a normal individual after exercise showed a lowering of the percentage oxygen saturation of the arterial blood and a diminished carbon dioxide content. In three cases of severe anemia the oxygen consumption and saturation of the arterial blood were normal, and very low absolute values were found for the oxygen content of the venous blood. In ten normal people the carbon dioxide content of the arterial blood varied from 54.7 to 44.6 volumes per cent., and that of the venous blood was from 60.4 to 48.3 volumes per cent. Well compensated cardiac cases without arrhythmias, resting in bed, showed normal values for oxygen and carbon dioxide in venous and arterial blood. In seven of ten cases of cardiac decompensation the percentage oxygen saturation of the arterial blood was low on admission, but this returned to normal in four of these patients with a return to compensation, and a clearing up of pulmonary symptoms. The oxygen consumption was high in individuals with cardiac disease during the periods of marked decompensation and lower when compensation took place. The details of the histories and blood gas findings in the nine cardiac cases studied are given in full. These cases of heart disease indicate the importance of the effect of the primary condition of the lungs upon oxygen saturation of the arterial blood during periods of decompensation.

Disturbances of Fat Absorption from the Intestine in Bile Retention and Pancreatic Disorders.

—Lemierre, Brulé, Weill, and Laudat (*Presse Médicale*, August 7, 1919), conducting researches on the hemoconia, appearance of which in the blood indicates that fat is being absorbed, were surprised to note that obstruction of the common bile duct completely arrests the passage of hemoconia into the circulation, while obstruction of the pancreatic ducts has little effect on it. These results were later confirmed by chemical estimation of the fats in the blood. A marked advantage of the study of the hemoconia in tracing fat absorption is that samples of blood can be taken at frequent intervals, e.g., on an empty stomach, and two, four, six, and eight hours after ingestion of fats. The important thing to find out is the difference between the fat present in the blood during fasting and after eating. The author's investigations confirmed the conclusion of Terroine and J. Weill that the maximum degree of lipemia generally occurs in four to six hours after a test meal. Experimental observations in dogs subjected to resection of the bile duct or the institution of biliary fistula, as well as in man in various instances of biliary obstruction, showed that bile is an indispensable factor in the absorption of fats

from the intestine. In general, occlusion of both pancreatic ducts failed to hinder fat absorption, although in some instances this effect did not appear immediately after the operation, and in a few others absorption was more or less completely interfered with. Presumably, where absorption is not hindered, the action of the missing pancreatic lipase is made good by that of the gastric and intestinal lipases. The main point to be remembered is that the pancreatic secretion is not indispensable in fat absorption. Clinically, partial or complete failure of fat absorption should much oftener be looked upon as an indication of biliary insufficiency rather than of pancreatic insufficiency alone. Again, pronounced disease of the pancreas may exist without appreciably interfering with fat absorption. Observation of the hemoconia is an easy procedure for studying the fat in the blood, necessitating merely the inspection of a drop of blood between a slide and cover glass with the ultramicroscope.

Semeiological Significance of the Thrill in Arterial Disease.

—L. Bérard and C. Dunet (*Presse médicale*, August 25, 1919) report the case of a waiter aged eighteen who, while juggling with plates and a sharp pointed knife, was wounded in the middle third of the arm. Smart hemorrhage occurred at first, but this soon ceased. Subsequently the radial pulse disappeared, the forearm became edematous and cyanotic, and a thrill—continuous but increased at systole—was elicited over the wounded area. Arteriovenous communication was diagnosed, and a section of the artery and adjacent vein excised. Examination of the specimen revealed absolutely no communication between or injury of the apposed surfaces of the artery and vein, the only abnormality being a small longitudinal wound, two millimetres long, on the anterior aspect of the artery. From this observation and other facts the authors conclude that while an arterial thrill results from the passage of blood through a narrow opening between two cavities in which different pressures prevail, its origin is not entirely mechanical but involves in large part a vital process, viz., the active contractility of the arterial walls. There is not merely a passive vibration of the column of blood, but also a spasmodic contraction of the portions of the artery above and below the seat of stenosis. Such a stenosis may occur either in arteriovenous or in exclusively arterial lesions. Where, in an arteriovenous aneurysm, the narrowed point is eliminated by well directed pressure, the thrill promptly disappears. Exclusively arterial stenosis may be due either to extrinsic causes, such as compression by a tumor, enlarged lymph node, cicatricial band, kink, etc., or to a lesion of arterial wall itself, sometimes traumatic, giving rise to a sympathetic, spasm producing reflex. The arteriovenous thrill is continuous and always accompanied by a continuous murmur with systolic reinforcement. The arterial thrill is variable, and passes off upon disappearance of the compression or spasmodic factor; it may or may not be accompanied by a murmur with systolic reinforcement.

Lichen Scrofulosorum.—Albert J. Chalmers and Arthur Innes (*Journal of Tropical Medicine and Hygiene*, August 15, 1919) specify the following points as the essential diagnostic feature of lichen scrofulosorum: Minute size of the follicular papules, which as a rule remain purely papular; sudden appearance of the eruption, in which the papules are often in rings or segments of rings; distribution mainly on the trunk, usually less on the extremities, and not on the head; association with the presence or history of some tuberculous condition; the typical histology of the lesions, and the absence of any general ichthyosis. The diseases requiring differentiation from lichen scrofulosorum are corymbosum, syphilide, pityriasis rubra pilaris, the so-called papular eczema, keratosis pilalis, Crocker's lichen pilaris, and psoriasis punctata. The authors, who report a case of lichen scrofulosorum from the Egyptian Sudan, believe the affection to be brought on by an anaphylactic action. Hebra's classical treatment for the condition has seemed very successful. It consists in taking half an ounce of cod liver oil every day and rubbing some of the oil well into the eruption; it must be kept continually in contact with the latter.

Loss of Sight from Retrobulbar Neuritis Due to Posterior Accessory Sinus Disease.—Leon E. White (*Boston Medical and Surgical Journal*, October 16 and 23, 1919) reports seventeen cases, in two of which the patients were not operated upon. In one of these the eye remained permanently blind, while in the other the patient died of sarcoma. Of the fifteen patients operated upon, all but one improved. In this case the eye had been blind some months and the operation was undertaken to determine what effect, if any, the opening of the sphenoid would have on the dilated veins of the fundus. Although this is acknowledged to be the object of the operation, no mention is made of the result obtained, either in the detailed account of the case, or in the summary. Of the remaining fourteen patients, normal vision was obtained in seven, marked improvement of vision in three, in whom some optic atrophy remained, and only a slight improvement in four because of the chronic nature of the disease and the delay in operating. It is believed that in all of these an early operation would have saved much more of the vision.

The toxemia from the pus seemed to be the chief factor in seven cases, hyperplasia appeared to be the predominating lesion in eight, while in two pressure apparently played the leading rôle. In seven the nasal examination was negative, and in only six were the x ray findings positive, but negative findings by no means contraindicate an operation. The middle turbinate was removed in all the patients operated upon, and the sphenoid opened in all but one. The posterior ethmoid cell was opened as a matter of routine, but the other ethmoid cells were not disturbed unless suspected of infection. Complete exenteration does not seem necessary in most cases. The Sluder technic of removing the middle turbinate and opening the sphenoid was followed. In practically all cases Wassermann and neurological examinations were made and the teeth investigated.

Preparation of Protein Free from Water Soluble Vitamine.—Thomas B. Osborne, Alfred J. Wakeman, and Edna L. Ferry (*Journal of Biological Chemistry*, August, 1919) have carried out feeding experiments on rats in an attempt to determine the relative efficiency of the various methods employed for removing the water soluble vitamine from preparations of proteins of different kinds. Since the chemical nature of vitamins is unknown this is the only way in which the efficiency of chemical methods of purification can be ascertained. A comparison was made of the length of life, or rate of decline, of young rats fed on diets containing different proteins, together with a basal ration supposedly free from water soluble vitamine. Protein from the following sources was used: crude edestin, pure edestin, cottonseed globulin, ovovitellin, lactalbumin, gliadin, pure casein, very crude casein, and meat residue. On the diets containing lactalbumin, gliadin, ovovitellin, casein, or meat residue, nearly all the rats lost from thirty to forty per cent. in weight, and all but one died within fifty days, unless water soluble vitamine was supplied. The rats having crude edestin, or cottonseed globulin, lived for three months with no change in weight. The only other constituent of the diet which might contain water soluble vitamine was the starch, which probably contained only traces. These experiments show that rats begin to decline within a few days on a diet nearly, if not quite, free from water soluble vitamine and that in the experiments in the literature where animals did not lose weight for some weeks, water soluble vitamine must have been supplied from some unrecognized source.

Results of Gallbladder Surgery.—L. G. Bowers (*Ohio State Medical Journal*, November, 1919) collected statistics for a period of six years in Dayton, Ohio. The cases numbered 196 and represented the work of a number of operators. There were sixty-nine cases of cholecystotomy. In these thirty-three patients, or forty-eight per cent., reported themselves entirely well; twelve required a secondary operation, a cholecystectomy being done, followed by recovery. Most of the twelve cases suggested that the latter operation should have been done the first time. Nine patients reported themselves improved, but still had some tenderness and pain over the gallbladder region at intervals; eight reported that they were the same or worse than before and seven died in the hospital—a mortality of ten per cent. The average time in the hospital was 22.1 days and the reported time for complete recovery was ten weeks. In the cholecystectomy group there were 127 patients operated upon; 103, or eighty-one per cent., reported entirely well; two, or 1.5 per cent., required a second operation; six were improved and ten, or seven per cent., reported some improvement but still had some tenderness over the gallbladder region occasionally and some stomach disturbance. In a few of this last class a second letter indicated that probably adhesions accounted for the present trouble. They had been able to follow their vocations; six, or 4.9 per cent., died. The average time in the hospital was 16.6 days and complete recovery

in seven weeks. The higher mortality rate among the cholecystotomies is not a fair conclusion as the histories showed them to be bad primary risks. Most of the cases were acute. The end results, even after discounting the mortality shown for the severe type of cholecystotomies operated on, show the higher type of mortality in this type of case. The average length of time in the hospital is also longer. As a result of this study the author concludes that cholecystectomy is the operation of choice, cholecystotomy being indicated in a certain class of acute cases and in an occasional case in which there may be a chronic pancreatitis. In cases of jaundice due to obstruction of the common duct by cancer it is fortunate to have a gallbladder for temporary relief.

Parotid and Submaxillary Secretions in Mumps.—De la Prade and Loiret (*Bulletin de l'Académie de médecine*, July 8, 1919) report the results of 183 chemical and cytologic studies bearing on this question. No appreciable change in the amount or fluidity of the saliva was observed in mumps, even at the height of the disease. Tests of starch digestion showed that the parotid saliva acts more powerfully than the saliva, both in health and in the presence of mumps. This disease seemed to have no effect on the digestive activity of the parotid saliva, though slightly diminishing that of the submaxillary saliva. The number of cells in the saliva was proportionate with its digestive power and appeared unchanged in mumps. The mumps virus seems to act mainly on the peritubular cellular tissue and spare the glandular cells. This is in harmony with the pathology—as yet but little known—of the salivary glands in mumps.

Bronchiectasis: Its Differentiation from Pulmonary Tuberculosis.—B. Stivelman (*American Journal of the Medical Sciences*, October, 1919) says that a diagnosis of bronchiectasis may be arrived at only after a careful history of the case has been taken and painstaking physical examinations have been repeatedly made. Given a patient with a history of cough and profuse expectoration of many years' duration following pneumonia, yet well nourished, leading a moderately active life, especially when no history of such constitutional symptoms as tachycardia, chills, fever and sweats can be obtained, and the abundant sputum after repeated and careful examinations does not show the presence of tubercle bacilli, it is most probable that the disease in question is not tuberculous in character, although hemoptysis may have occurred. When this is supplemented by repeated physical explorations of the chest, which show that the lesion is to be found exclusively at either or both lower lobes, and that the apices are free from disease, a diagnosis of bronchiectasis may be justifiable. Guinea-pig inoculation of the sputum in question may rule out tuberculosis. Röntgenograms and at times bronchoscopy may be of assistance. Tuberculosis complement fixation is not as yet to be relied on. It must be emphasized that extensive basal tuberculosis is most frequently a terminal condition and is associated with bilateral upper lobe involvement and marked constitutional symptoms of toxemia.

Shell Shock.—Charles E. Kiely (*Ohio State Medical Journal*, November, 1919), summing up his experience based on the observation of 500 cases while acting as neurologist to the Cincinnati Base Hospital Unit, Allerey, France, is convinced that the syndrome of shell shock is hysteria produced by the terrors of warfare and the desire to avoid them in an ethical way. In only thirty-eight per cent. of the cases had the men been rendered actually unconscious by the detonations. The majority of their symptoms were produced at such distances that concussion was most unlikely. The familial and past personal history strongly pointed to a neurosis. The proportion of men who were rendered unconscious by detonations and did not present the syndrome of shell shock was much greater than those who did. The cardinal symptoms were typically those of fear. Physical examination constantly failed to show any evidence of organic lesions. The satisfactory results of psychotherapy are the most conclusive evidence of the psychic nature of the syndrome. Predisposition by family taint or neurotic personality are important factors.

Materials for Nerve Suture.—Percy Sargent and J. G. Greenfield (*British Medical Journal*, September 27, 1919) carried out an extensive series of experiments to determine the most suitable materials for use in the suture of nerves, paying special attention to the nature and extent of the reaction and ultimate fibrosis produced by each of the several materials experimented with. In all cases materials of the same size were employed and all experiments were conducted upon the sciatic nerves of rabbits. They conclude as follows. Plain thread or silk sutures cause no irritation but they have the disadvantage of being relatively unabsorbable. Plain sterilized or plain iodized gut are of value on account of their ready absorbability, but they are of low tensile strength and are slightly irritant to the nerve tissues. "Japanese silkworm gut" is of great tensile strength and it occupies an intermediate position between the two preceding types as regards absorbability and irritant property. All suture material treated with chemical antiseptics such as chromic acid should be avoided because of the great reaction they produce.

Gastric Cancer with Anasarca.—A. Gouget (*Presse médicale*, June 19, 1919) points out that there occur cases of gastric cancer characterized by anasarca throughout which little or no evidence of gastric disturbance may be noted. For a long period the anasarca may be accompanied only by anemia and moderate loss of weight—the latter difficult to estimate precisely because of the edema. The duration of the case may exceed one year, with remissions or even complete intermissions in which the patient may resume his accustomed occupation. Under these conditions, the physician is easily misled. The suspicion of cancer should not be abandoned, in spite of the intermissions, without exhausting the available diagnostic means such as blood examination and gastric analysis. In some cases x ray examination might be of greater service. The most important diagnostic indications, however, are afforded by repeated occult hemorrhage and Weber's reaction in the stools.

Tuberculosis in Childhood.—Matthew F. Urbanski (*Journal of the Medical Society of New Jersey*, November, 1919) concludes that there is no one method of making a diagnosis of tuberculosis in childhood. History of exposure, with nutrition far below par for the age and height of the individual, a positive tuberculin test and the röntgenogram showing enlarged hilus glands are sufficient factors to render treatment for tuberculosis justifiable. The complement test is positive in about fifty per cent. of the cases and is of value when considered along with the clinical side of the case. The röntgenogram shows the enlargement of the bronchial glands and peribronchial thickening chiefly of the first and second interspace trunks on the corresponding side. Infiltration of a parenchymatous type has been very infrequent in children under eleven to twelve years of age.

Hydrogen Ion Concentration of Cultures of Pneumococci of the Different Types in Carbohydrate Media.—O. T. Avery and Glenn E. Cullen (*Journal of Experimental Medicine*, October, 1919) state that the four specific types of pneumococcus produce acid to a final hydrogen ion concentration of pH 5.0 in media containing one per cent. maltose, saccharose, lactose, galactose, raffinose, dextrose, or inulin. Avery's and Dernby's statement that the optimum hydrogen ion concentration for growth of pneumococcus in plain broth is pH 7.8 is substantiated by the present work. It was impossible to make pneumococci grow in bacteria free filtrates of plain broth cultures, even when the filtrate was adjusted to the optimum reaction, unless small amounts of sugar were added. But if bacteria free filtrates of dextrose broth cultures in which growth had ceased (pH 5.0) are readjusted to the optimum reaction and reinoculated with pneumococcus, growth will again occur. Therefore a certain amount of fermentable carbohydrate (about 0.4 per cent.) appears to be essential to the growth of the pneumococcus.

Hyperkeratosis of the Hair Follicles in Scurvy.—Harold Wiltshire (*Lancet*, September 27, 1919) dealt with some 3,000 cases of scurvy in Serbian troops and noted in a large proportion of the cases that there was a condition of hyperkeratosis of many of the hair follicles, especially of those on the legs, pubes, and thighs. Each affected follicle showed a hard conical swelling about the size of a pin head, due to a collection of horny epithelial debris. In some of the follicles there was a thin atrophic hair, or a hair stump, while from others the hair was absent. When dirt was present it tended to be incorporated in the debris giving the mass the appearance of a comedo. The conical projection was also often found flattened down like a scale, beneath which a hand lens would reveal a new hair coiled up into a spiral. Later this scale would be shed, the new hair would erupt, and the follicle would appear pink and healthy. Follicles were found in all stages of development in each case, and the entire course of development required several weeks, so that it had evidently begun some time before the patients came under treatment. These follicles were wholly different from those showing localized hemorrhage, and the two

types were never closely associated. The hyperkeratosis was found in the vast majority of cases of clinical scurvy and was not found in other conditions, except among men living on the same dietaries as those in whom scurvy developed, that is, on diets proved to be deficient in the antiscorbutic vitamin. Since the condition develops some weeks before clinical scurvy appears it should prove of great diagnostic value and should aid in the prevention of clinical scurvy before many cases had developed among bodies of men. The condition appears to be due to some alteration in the nutrition of the hair follicle due to a simple deficiency in the antiscorbutic vitamin.

The Microdetermination of Nitrogen by Direct Nesslerization and of Total Solids, in Drop Quantities of Human Blood.—Amos W. Peters (*Journal of Biological Chemistry*, September, 1919) describes a method by which the total solids and nonprotein nitrogen of the blood can be determined in 15 to 30 drops of blood. A single fixed color standard is used for the measurement of the Nesslerized nitrogen solutions. A method of determining the dry weight of a few drops of blood is given which obviates incomplete or unequal drying. Very detailed instructions are set forth for the collection of the blood, its preparation for the determination of nonprotein nitrogen, the composition and use of the fixed color standard, etc.

A Case of Bilateral Glioma of the Retina Apparently Arrested in the Nonenucleated Eye by Radium Treatment.—Mark J. Schoenberg (*Archives of Ophthalmology*, September, 1919) reports a case in which tumor masses were observed in each eye of a child five years old. The left eye was enucleated over three years ago and microscopic examination proved the diagnosis of glioma correct. Radium treatment was applied to the other eye, first on April 10, 1916, second on September 22, 1916, third on June 7, 1918. Features now noteworthy are chorioretinal patches; lenticular changes that took place; the apparent arrest, recession, and degeneration of the gliomatous masses; and the good vision, good general condition, and absence of increase of tension three years after the discovery of the glioma.

Paronychia.—Douglas H. Stewart (*Western Medical Times*, October, 1919) says that the first question to be solved about any acute-inflammation involving any part of a distal phalanx is, Is it syphilitic, tuberculous, or focal? A good second question is whether it is superficial or deep, or both. If there is any tension an incision should be made and the pus excavated. No matter how slight the symptoms the entire phalanx should be carefully examined. Any patient suffering from paronychia needs either mercury or iron, or both combined, internally. Locally the writer uses a solution of one grain of calomel in two ounces each of tincture of iodine, glycerine, and alcohol. The application dries in a few minutes and then the infected part is bandaged or wrapped up in a salve containing equal parts of extract of belladonna and glycerite of tannic acid. The whole finger is then splinted as though fractured, using a wooden tongue depressor as a splint.

Proceedings of National and Local Societies

BRITISH NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

*Seventh Annual Conference Held in London,
October 16th, 17th and 18th.*

(Concluded from page 852.)

The Tuberculosis Campaign and the General Practitioner.—The most interesting phase of the problem of tuberculosis control is how and to what extent it will affect the general practitioner. Mr. E. B. Turner, F. R. C. S., read a paper on the part of the general practitioner in the campaign against tuberculosis in which he emphasized the point that to obtain the best results in any real national campaign against tuberculosis, it was absolutely essential to enlist the support and obtain the hearty co-operation of the general practitioners over the whole of Great Britain. Their duty in this never ending fight was to do their utmost to prevent the incidence of the disease, to detect it at the earliest possible time, and to take on a very large share in its successful treatment.

First of all, with regard to the early detection and accurate diagnosis of the disease at the earliest possible moment, it stood to reason that the man who knew or might have the opportunity of knowing the home life conditions, the surroundings, and the general history both of a potential patient and his family, must be the best man to come to an early conclusion whether slight and apparently trivial symptoms were really of no importance or whether they indicated the first signs of the onset of tuberculous disease. "The heirs of the ages" who had recently become qualified, or who were now preparing to take their degrees, entered upon this contest infinitely better prepared and equipped as far as scientific chemical and laboratory tests could go than those who donned their armor in the early seventies or eighties of the last century, but though this mechanical armament, if such an expression were permissible, was doubtless of the very greatest service in determining and frequently in confirming the existence of tuberculous infection, might he put in a plea that they should by no means exclude what for want of a better word he would call an "acutely clinical sense." It had happened in his own experience, and he knew from what he had heard from friends and colleagues, that frequently the clinical instinct, the stethoscope, and the knowledge of the patient's surroundings had beaten the test tube and the microscope in the race for the early detection of lung trouble. In this disease, as in most of those which depended upon infection by an organism, time was the prime factor in insuring a successful cure: In the case of tuberculosis the loss of a few hours was not of the same importance as the loss of the same time would be in commencing the earliest possible treatment in the case of syphilis; still, the patient who was taken in hand, properly treated, and put under proper hygienic surroundings at once, was much more likely to achieve a perfect and satisfactory recovery than the one in whose case commencement of treatment had

been delayed for several months or more. He recognized the fact that at the present day, when a very large number of persons in the working and industrial classes were treated wholesale and by contract, that it might in many cases be difficult, and in some practically impossible, for the practitioner to whose charge the care of their health was intrusted, to know of his own personal knowledge the conditions of the home and the history of the whole of the family, because in very many cases he saw the patients only in his surgery or consulting room. But even under these circumstances Mr. Turner held that any man who wished to do his work in the best possible way, and to achieve the best possible results, must make, whatever the inconvenience or pressure might be upon him, the opportunity to visit any patient in whom he suspected tuberculous infection, and get as far as he possibly could an accurate and detailed family history. If a physician should suspect that a person consulting him was tuberculous, if his clinical sense made him think that such was the case, even though at first it was uncorroborated by microscopical or laboratory tests, he should always give the patient "the benefit of the doubt" and treat him as if it were really a case of phthisis. It was essential under the existing state of affairs that the general practitioner must have a very large share in the domiciliary treatment of cases of this disease. There were not at present enough "first class hotels" to accommodate anywhere the number of those who wished to be there, and who should be admitted to them. The waiting lists were long, and even when the patient was admitted, in very few instances was the time he could be retained in a sanatorium sufficient really to effect a proper and permanent cure, but under such circumstances the general practitioner must not despair. The sanatorium located in the country under the best and most health giving surroundings was not "the be all and the end all here." It was within his knowledge that many cases of tuberculous lungs, as well as of tubercle in other parts of the body, were conducted to a successful issue in a London house. That was of course only possible when the house, the attendance, food, and treatment provided for the patient were ample and satisfactory in every way. But even under the worst and most unpromising circumstances an energetic doctor could do much to improve the conditions in which his patient was living before he could take his turn in a sanatorium.

Mr. Turner had this one last thing to say with regard to treatment. He thought that very frequently the more human element which must prevail when a person was treated in his own home among his own relations, and by a practitioner whom he probably may have known for years, had a very great effect, if he might use a slang expression, in "bucking up" the patient and in bringing his mental and physical resources into action to aid the physician in his work. The "human element" in treatment in a hospital or institution, howsoever we'll run, and howsoever great the kindness and at-

tention shown to the inmates might be, could never become so intimate, close and personal as when the patient was treated by his own doctor amid his home surroundings.

With regard to the prevention of the disease the general practitioner in most cases was all important. It was his duty to preach sanitation in season and out of season. It was his duty in case any of his patients became infected to warn definitely and decidedly as to the dangers of infection, to see that contacts were kept under proper observation, and that all material by which infection could be conveyed, such as sputum, was properly and efficiently disinfected; and he should also take the greatest possible care in any family the members of which he might consider a fruitful soil for the development of the germs of the disease, to do his best to build up and strengthen the physical condition of all the younger members whom he could in any way influence.

Dr. NOEL BARDSWELL, of London, in discussing the subject said that in his judgment in a comprehensive scheme for dealing with tuberculosis there was no unit of greater importance than the general practitioner. It was to him that we must look for the early recognition of tuberculous disease, and it was under his care that the great majority of tuberculous persons passed their lives. Beyond anyone else the practitioner had access to a patient in his own home, could learn of his social conditions, and note any difficulties which pressed on the household. This information was invaluable when advising a patient as to his best course of action. Obviously the practitioner was too busy a man to devote all the time he might wish to his tuberculous patients. He was well advised, then, to take advantage of the assistance offered by the staff of a dispensary, by local nursing and sanitary organizations, and by a care committee, if this body was a live organization. It had been suggested by some that the tuberculosis officer should be responsible for the treatment of all tuberculous persons within his area, to the exclusion of the practitioner. He did not think this possible or desirable. The strict retention of the consultative character of the tuberculosis officer was better calculated to make for harmony and efficiency in the administration of dispensary and domiciliary treatment. And it was obvious that the better the qualifications of the tuberculosis officer as an all round expert in tuberculosis, the greater the prospect of cooperation between the dispensary and the practitioner. The practitioner in London, so far as tuberculosis was concerned, worked against discouraging odds. Doctors of long experience in the poorer districts had told him that they had never seen within their own practices the cure of a frank case of consumption. The fatal issue was so inevitable that it was difficult for them to take great interest in the treatment, apart from the care of their patients. With respect to residential treatment in the reports from sanatoriums recording satisfactory progress, Doctor Bardswell agreed with many practitioners that not much could be expected of sanatoriums until the conditions under which domiciliary treatment was carried out was

greatly improved. So far as he could determine, the practitioner had no great faith in the utility of the present treatment of tuberculosis and would like to see more attempt made to cope with the social evils associated with chronic tuberculosis, such as poverty, overcrowding, etc., and the provision of suitable accommodation for the many disabled patients whom he could not pretend to deal with effectively in their own homes. In the promotion of after care and in the judicious carrying out of any methods of relief, voluntary or official, which might be instituted, the cooperation of the practitioner would be highly desirable.

VOLUNTARY AMBULANCE DRIVERS WORK FOR RED CROSS.

SIR ARTHUR STANLEY, chairman of the Joint War Committee of the British Red Cross Society, said in part, in reference to the work of the Red Cross workers, that the war had called forth not only in Great Britain but throughout the world the most extraordinary band of voluntary workers and the most extraordinary enthusiasm that had ever been seen. It would be a thousand pities if effort and enthusiasm of that kind were allowed to die down. When they considered the possible spheres of activities for Red Cross workers, it became obvious that there were several directions in which voluntary effort might be of assistance. He had always hoped that the Red Cross might be able to form a definite organization under which they would secure for everyone just that amount of skill and attention which was necessary in the early stages of any accident or disease, and so work on to a further stage where more skilled and trained assistance could be given in the great hospitals. The first step towards the realization of that hope came in quite an unexpected way. The Red Cross had a large army of motor ambulances in France and elsewhere; and they had determined to map out the whole of Great Britain and to place these ambulances at convenient distances in such a way that no village or town would be more than about fifteen miles from an ambulance station. In other words, anybody who through illness or accident required to be taken to a hospital should have the opportunity within his reach. He should like to see in every town and village efficiently trained voluntary aid detachments, able to render to sufferers the necessary help when they most wanted it and without loss of time. If all Red Cross and V. A. D. workers were educated and trained in those matters they could help enormously in the preventive part of the treatment of tuberculosis. One of the great features of the war had been the conception by Mr. Henry Davidson, chairman of the American Red Cross, of the idea of an international league of Red Cross Societies. That league had already come into existence. Its object was to coordinate the work of all the Red Cross Societies throughout the world, and to unite them in the great fight against sickness and suffering. For instance, when typhus broke out in the East and swept over the Balkans, the Ukraine, Poland, and across Europe, the Red Cross League was hardly formed when the British Government asked it to take up the matter. The

league at once appointed a strong commission to inquire into the outbreak, and he had received quite recently the report of the commission. If its recommendations were carried out by the Government and by the Red Cross Societies, as he had no doubt they would be, then the new league would have taken part in saving the people of Great Britain from this awful epidemic. It would have shown in the first months of its existence the value of co-ordinated effort. He was proud to think that the Red Cross and the V. A. D.'s were going to be allowed to take part in the campaign against tuberculosis, which, he was sure, would have as victorious an ending as the war which was just over. A discussion followed dealing with the completion of tuberculosis schemes in relation to the Red Cross and other voluntary activities.

International Standards of Public Health and Welfare Work.—Professor WILLIAM CHARLES WHITE, of Pittsburgh, Pa., medical director of the Tuberculosis League, read a paper on this subject which was perhaps the most interesting communication read before the conference regarding the completion of tuberculosis schemes in relation to the Red Cross and other voluntary activities.

Professor White began by comparing briefly the empire of Great Britain and the republic of America as regards their situation, physical characteristics, and modes of government. In attempting to establish a basis for international standards for public health and welfare work, these points must be determined: 1. Our essentials. 2. The relative value of these essentials. 3. On the basis of the available budget, determine where the greatest returns from expenditure will be gained. 4. Establish the building stone or working unit. 5. Undertake the correlation of these units in a complete whole. He pointed out that the great weakness in all the suggestions put forward for the treatment of tuberculosis was that if each were concentrated upon, it represented but a detail and was contrary to higher laws influencing the human family, e.g., infection with the tubercle bacillus could at no period be taken as a just ground for segregation. Infection with the tubercle bacilli would not make the lamb and the lion lie down together. If this were true, many of the difficulties of the world might be solved. If it were true it would be only necessary to infect the Italian and Jugo Slav, to infect President Wilson and the Senate, the Bolsheviks, the Irish and the labor unions to settle many difficulties between groups of the human family.

Every tuberculosis sanatorium provided for but one social group. If an attempt was made to inject another social group the troubles within the institution mounted steadily. It was this weakness that determined the limited powers of most of the equipment now possessed for handling the tuberculosis problem. The equipment must be fitted to the task to be done, and this equipment would be modified in each locality to be cared for.

This obviously suggested that, in order to adjust the equipment to the task, it was necessary to carefully take stock of each region to be handled and to find exactly what the task to be performed was.

He would place then, as the first essential in mapping out a program, a careful stocking examination and statistical record of each district in the kingdom. On the basis of this stock taking, he would determine on the basis of relative values of equipment, what the budget for that region could stand in successive periods, and in what direction its funds should be expended. Professor White went into details of this subject and then proceeded to consider the second necessity which might be described as co-ordinated effort.

However, the main feature of Professor White's paper was the relation of the various units involved in the tuberculosis problem to central government. On this point, he said that if he were to suggest to tuberculosis experts in Great Britain that there was any relation between the loss of the United States and the low death rate from tuberculosis in Great Britain, he would probably be laughed out of court, and yet as he studied the various speeches which had been made in the British Parliament since that loss recently published by Arthur Keith outlining colonial policy, he saw a different trend given to British statesmanship from that period. As he read also the story of Baron Stein's appreciation of British municipal and county autonomy which he carried back to Germany as the basis of its policy in forming the new empire after the peace of Tilsit under Frederick William III, he thought he could perceive a definite relation between the thought generated by the loss of American territory in all that had since happened to the British Empire. It might be summed up in this: That British statesmen had learned to release power and had been the fathers in the world of local autonomy; and this great principle, he believed, must be grasped by all those interested in the government of the world. The release of power by central authorities to localities, enabling them to adjust their equipment in health and welfare and educational matter to the task to be done in that locality, was the secret of control of most of our health and welfare problems. The position then of central authority was to correlate, to study, suggest, stimulate, and subsidize, and so secure equable and uniform establishment of standards throughout its kingdom. It would not do, however, to stop at Great Britain or the great republic on the other side of the Atlantic. To have these standards uniform throughout the world was the great privilege and duty of Great Britain, America, France, and Italy. These standards had a special significance for the British Dominions and for the people of the United States, for the people of the United States because they had opened their doors to all the nations under heaven. If they had taken steps to secure uniform methods of health and welfare, education and cooperation fifty years ago, they would not now be dealing with the serious problem of segregated foreign groups within the borders of nearly all their industrial communities. His chief suggestions to them then were careful analysis of each region, establishment of a building unit of public health nurse and her territory, the correlation of these on the basis of the Edinburgh prin-

ciple, and then the added superstructure of other equipment as budget and necessity permitted, but always on the basis of adaptation to the region to be handled. To push these standards throughout the world would require a large modification for Great Britain and America on the basis of language and knowledge of origin and former condition of peoples on the part of visiting nurses. In order to solve in part this difficulty, they had been able to begin in a small way a number of international scholarships on public health nursing. In this they hoped the British Empire would join, so that there might be traveling back and forth between the peoples of the world who differed in language and custom, those agents of public health and welfare who meant most in educating a populace, thus teaching them to carry out the physician's or other officer's suggestions for their betterment.

COMPLETION OF TUBERCULOSIS SCHEMES IN RELATION TO TRAINING OF DOCTORS AND NURSES.

Dr. T. GWYNNE MAITLAND said in part that the tuberculosis officer and the dispensary and tuberculosis nurses had not always been chosen with the long perspective necessary for the best development of their work, and in excuse it was difficult to see what facilities were provided to specialize in this direction. By acting as clinical assistant in the outpatient department for a few short hours weekly and by attending a course of about a dozen lectures, did the average prospective candidate think that he could qualify himself for the post of tuberculosis officer? If he had been a house physician in a chest hospital he might have gained a more thorough knowledge of the chest, but he with the others still lacked experience, as pertinent to his administrative work as his clinical ability. There had been two obstacles in the way of getting a really efficient service. What encouragement, for instance, had there been for the doctor to take up this vital work? Despite its ambitious inception, there had neither been qualification, status, nor an adequate remuneration. And so it was not to be expected that a great deal of time and money would be spent in preparation for it. Then, on the other hand, those few chest hospitals which had tried to develop schemes, had met with nothing but discouragement. So it came about that the average tuberculosis officer acquired most of his experience only after his appointment, and neglected altogether certain other essential duties through ignorance of their importance. The tuberculosis officer was exceptional who knew anything of matters relating to administrative work, such as the classification and registration of cases, the use of the card index system, and the method of cooperating with other charitable and philanthropic bodies through the medium of the almoner. He did not even know how to teach the public the way to live.

The fact, almost lost sight of today, was that the campaign against tuberculosis, so far as propaganda was concerned, was left almost entirely to societies such as the National Association for the Prevention of Tuberculosis. Surely this was one of the duties of the tuberculosis officer. He should, therefore, know all about the management of public meetings and should be able to lecture. But how

in the present condition of things could the tuberculosis officer teach when, for the most part, he had not been taught what to teach with regard to economic, social, and hygienic principles underlying reform nor how to do so.

Doctor Maitland was of the opinion that with regard to hospital nurses, the apparent opportunities for special experience seemed far more numerous, and there were, of course, the chest hospitals available for this experience, but the great majority of nurses so trained looked elsewhere for their life's work, turned their attention to general training, and took up general nursing. The chest hospital nurse, however, who decided to take up a post as a tuberculosis dispensary nurse was not always well qualified to do so, for her qualifications, though better than a general training for such work, did not vouch for that general knowledge and general training which most chest hospitals were doing very little to supply. Some of the tuberculosis specialists were indeed going out of their way to befit nurses for this avocation, but it was all so very inadequate. It was not their fault entirely. If the Local Government Board had insisted on some certification of qualification for these posts there would have been an intelligent response, but those few chest hospitals which were looking ahead were afraid to launch out into any elaborate courses of preparation without some guarantee that they were providing the actual conditions for qualifications for such posts with a reasonable livelihood.

Doctor Maitland went on to point out that at Brompton, the big London chest hospital, they were trying to instruct nurses in the care of tuberculous patients. Moreover, Maitland drew attention to the fact that the famous chest hospitals had the facilities for such instruction, but what was needed was the authority to initiate and develop a great unified scheme of education for increasing the efficiency of the nursing staff. Not only must the professional nurses be trained, but the district nurse, the woman health visitor, and that large band of voluntary women workers to which Sir Arthur Stanley referred. The entire curriculum of the tuberculosis nurse could be obtained at Brompton Hospital and at some other hospitals of a like nature. But in order to carry these plans into effect and to a successful consummation, they must have the sympathy of the Ministry of Health that such training was necessary.

MISS RUDL read a paper on the same subject in which she dwelt upon the objection of the would be nurse to enter any but the large general training schools. They all seemed to have a distaste for special hospitals. Her paper emphasized the great need at the present time for trained nurses in tuberculosis work. The greater attraction of the varied work in general hospitals tended to divert the supply, but although the work was monotonous, it was interesting. The nursing of the tuberculous not only demanded trained skill, it carried with it opportunities for preventive work, which was indispensable, and required a thorough insight into the social life of the poor. A training in hygiene, health visiting, and infant welfare should be acquired.

TUBERCULOSIS SCHEMES IN RELATION TO TRAINING OF VOLUNTEER WORKERS.

The third day of the conference was taken up with a consideration of the completion of tuberculosis schemes in relation to the training of voluntary workers. Sir Sims Woodhead, professor of pathology in the University of Cambridge, should have presided, but was prevented from attending by illness. In his absence his paper was read by title. In this paper Sir SIMS WOODHEAD called attention to the fact that during the last half century the medical staff of the Local Government Board, public health authorities, insurance commissions, and medical officers of health had been wrestling with the tuberculosis problem, collecting, classifying, collating, analyzing, and publishing facts and statistics concerning pulmonary and other forms of tuberculosis, resulting in the valuable reports written by Klein, Bulstrode, News-holme, and other members earlier and later of the Local Government Board. Admirable administrative work of medical officers of health all over the kingdom had also been done, but by far the most important and initiative work had been carried out by voluntary effort. The National Association for the Prevention of Tuberculosis, a purely voluntary association, had done great pioneer work in the survey of the tuberculosis field, in educating the community by exhibitions, lectures, public conferences, the distribution of information in terse and clear leaflets and other literature. It had created an atmosphere that had been of great value in pushing forward the formation and work of the Ministry of Health. Much experimental work was owed to voluntary effort: the observations made and recorded in large and well equipped sanatoria; the work of the Royal Commissions on Tuberculosis; the organized hospital, dispensary and colony treatment instituted by Sir R. W. Philip. The work done by Cobbett and Stanley Griffith, by Harris, Mitchell, and others on the different types of tubercle bacilli, with much of more recent date, had been done voluntarily and constituted a material contribution to present knowledge.

Sir Sims Woodhead felt that they were now looking forward with a feeling of great hopefulness to the organization of medical science, using the term in its broadest sense, but they recognized that the Ministry of Health, as any other government department, could act only as an organization. It would have and has inspiring leaders and able administrators, who should have as one of their functions initiation and not mere administration. It would have at its disposal enormous resources in money, material and personnel, but it must from the very nature of its constitution and aims, from time to time and even over considerable periods, be so engaged in administration and routine work that initiative must be left to those who were able to function as free lances.

The paper laid much emphasis on what amateurs had done for the advancement of science in Great Britain. The history of the Royal Society and of the British Association for the Advancement of Science was practically one long record of scientific investigation and discovery by amateur work-

ers. Organization, the working out of details, the reaping of practical results, had been left only too frequently to the official workers of other countries.

Sir Sims Woodhead's address throughout was a successful attempt to show what voluntary workers had done in the past, and to indicate what, with the cooperation of the Ministry of Health, the Ministry of Pensions, and other governmental bureaux, they might be expected to accomplish in the future.

Several women gave addresses on the training of voluntary workers, and they acquitted themselves splendidly of their self-imposed tasks. The excellent speaking of the women generally was an outstanding feature of the conference.

Father BERNARD VAUGHAN said in part that some people were depressed about the country. Any man who could be depressed about an empire like that of Great Britain was not fit to have a foothold in the empire at all. Tuberculosis ought to have been throttled long ago. It was terrible to think that at a time when the death rate was above the birth rate by 124,000, when our nurseries were silent, and our divorce courts were clamorous, tuberculosis was making such a heavy levy on the people.

A dinner at which the foreign delegates to the conference were entertained was given by the Tuberculosis Society on Oct. 15. Dr. Sir Robert Philip presided. Dr. Halliday Sutherland, the retiring President, gave a brief summary of the work of the society and sketched its future aims.

Dr. DAVID LYMAN, of Wallingford, Conn., in the course of a speech said that benefiting by Great Britain's recruiting experiences, America had rejected 63,000 tuberculous men before enlistment, and later had weeded out a further 25,000 men before drafting over to France. Dr Nathan Raw referred to the proposals made by the inter-departmental committee for the treatment and training of the discharged tuberculous soldier. No country had done more in this direction than Great Britain.

From this very successful conference a few facts of paramount importance may be gathered. The keynote of the entire meeting seemed to be that sanitary, adequate and comfortable housing constituted the chief factor in the solution of the tuberculosis problem. The value of the sanatorium appeared to be somewhat discounted. However, another argument ran through most of the speeches—the necessity for coordination. The sanatorium was only a link in the chain of treatment, but employed wisely might be a very useful link. Of course, as always where authorities on tuberculosis are gathered together, the inestimable value of early diagnosis was insisted upon. Upon early diagnosis and rational treatment the whole question of exterminating tuberculosis hinges. Another point which could not fail to impress the sophisticated listener, sophisticated so far as tuberculosis is concerned, was the confession that there was no organized training for either doctors or nurses in the treatment and care of tuberculosis in Great Britain. It appears that America is better off in this respect. The most gratifying feature of the meeting was the manner in which voluntary workers had offered

their services to aid in the crusade against tuberculosis.

In the speech of Dr. CHRISTOPHER ADDISON, the Minister of Health, it seemed when he so strongly deprecated the segregation of the tuberculous that he did not appreciate the reasons for so doing. When the consumptive is in that stage of the disease that he is liable to spread infection, he is isolated not for his own good but for that of the community and race. In such cases the comfort and wishes of the individual must be subordinated to the good of the many. It certainly appears to be incumbent upon health authorities to segregate all consumptives who are in such a condition that they may infect others. It was very pleasing to notice at the conference that the Americans seemed to be the readiest and most taking speakers; they had, as a rule, plenty of "ginger" and humor in their speeches and were popular with the audience.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Menders of the Maimed. By ARTHUR KEITH, M.D. (Abdn.), F.R.C.S. (Eng.), LL.D. (Abdn.), F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons, England. Illustrated. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1919. Pp. xii-335.

This book is written in a most interesting manner. The object is to interest the reader in the history of the growth and development of orthopedic surgery and the influence which has been exerted by the various pioneers in the different branches which have a bearing upon orthopedic surgery. The author boasts of having presented the subject from a nationalistic, a British point of view. This may be true, but he nevertheless gives credit to the extent of reproducing the photographs and giving short biographies of American, French and even German, creative orthopedic surgeons. Perhaps the boast should be better termed an apology for the apparent predominance of the British surgeons who are represented, when it is realized how farreaching the influence of the work done by the British surgeons has been on the orthopedic field. It might be called a medical history—a medical history of orthopedic surgery—but it is more, for the book has been written in so charming a fashion that it will stimulate wide interest in the field of physical therapy which on account of the service it rendered during the war has become a most important branch in the treatment of injury and disease. He has sought to indicate the therapeutic values of rest, exercise, electricity, thermotherapy, bone grafting, and the various other measures employed in the armamentarium of physiotherapy are given an interesting introduction. There are many advantages in presenting medical topics in this way, for it stimulates a more profound interest in the subject

and takes it out of the realm of cut and dried material presented in a formal didactic way. It also has a humanizing effect, as it serves to carry over the personality of the various men who did such painstaking work in trying to unravel and present before the medical profession the various means at their disposal for treatment. The book could be read with profit by anybody interested in medicine, and it will add a new aspect to certain phases of medicine which have, in the past, been slighted and taken as a matter of course.

A Textbook of Chemistry for Nurses. By FREDUS N. PETERS, A. M., Ph. D. St. Louis: C. V. Mosby Company, 1919.

The preface of this fairly large work states that it "has been prepared with the idea of more fully equipping those whose angelic visitations and watchful care must inevitably wield an ever increasing influence upon unfortunate humanity." A fairly thorough reading of the book does not reveal to the reader's eye the bearing of this work on the training of nurses, except as an aid to the passing of examinations in chemistry. While it is conceivable that it would add much to the general culture of a nurse to enjoy a practical knowledge of chemistry, it is not so easy to see how the knowledge imparted by the volume under review would be of any great usefulness to her in her professional duties. The book is well written and well put together, but the reviewer fails to see its especial value to members of the nursing profession. It is doubtful, he believes, whether nurses or nursing will be made better by the widespread perusal and study of this particular work, as compared with the numerous compends that have already made their appearance in the past. It is to be regretted that the author chose to dedicate his work to the use of nurses; the work would have been just as useful and commendable if it had been called simply a Brief Compend of Chemistry, and dedicated to all and sundry who desire to learn its mysteries quickly.

Births, Marriages, and Deaths.

Deaths.

BLODGETT.—In Tulare, Cal., on Monday, November 10th, Dr. Thomas De Haven Blodgett, aged fifty-one years.

BRADNER.—At Bradley Beach, N. J., on Thursday, November 20th, Dr. Wesley K. Bradner, aged sixty-seven years.

BUSHEY.—In Camden, N. J., on Sunday, November 16th, Dr. Sylvan Graham Bushey, aged fifty-three years.

CHURCH.—In Churchville, N. Y., on Sunday, November 16th, Dr. Dennis Church, aged seventy years.

HAYES.—In Boston, Mass., on Tuesday, November 18th, Dr. John Joseph Hayes, aged sixty-nine years.

NOBLE.—In Montclair, N. J., on Friday, November 21st, Dr. Willis Clark Noble, aged sixty-five years.

REICHARD.—In Brownsville, Pa., on Monday, November 17th, Dr. Cyrus Clay Reichard, aged seventy-five years.

SIDEBOTHAM.—In Philadelphia, Pa., on Saturday, November 15th, Dr. Henry Larned Sidebotham, aged fifty-six years.

WERDER.—In Pittsburgh, Pa., on Thursday, November 20th, Dr. Xavier Oswald Werder, aged sixty-two years.

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Original Communications

THE APPLICATION OF THE CARDIOVASCULAR STUDIES OF THE WAR TO CIVIL PRACTICE.

By JOHN H. MUSSER, JR., M. D.,
Philadelphia.

The cardiovascular studies of the soldier and the inducted man before he actually was mustered into the service of the United States have not yielded as much information as have studies in other branches of internal medicine or in preventive medicine. This may be accounted for by several factors. In the first place, during the examination of recruits at the beginning of the war the examination of the heart was deemed a simple and uncomplicated procedure. Gross lesions of the heart were expected to be readily diagnosed while the questionable, less readily detected pathological processes were thought to be of such slight moment that men in possession of such lesions were not expected to break down except under exceptional circumstances. The fallacy of this was soon made evident and the late Major Theodore Janeway promptly planned to rectify the error by the appointment of special boards who were to devote their entire time to the study of the cardiovascular system of those recruits believed to have defects of the heart or the arterial system. The studies of these boards necessarily were largely statistical and it may be safe to prophesy that these statistics will not be available for a long time.

Furthermore, the value of such statistics may be questioned as they were compiled by a large number of men representing various degrees of medical knowledge, of diagnostic judgment, and of ability to recognize cardiopathies. Besides, intensive studies were not possible in the hurry of a large number of examinations; an elaborate apparatus, such as the electric cardiograph, could not be supplied to each cantonment, nor were there men available to run it; while still another factor, which was responsible for the lack of any very definite advance in our knowledge of cardiovascular disease, was that all grossly diseased hearts were detected and eliminated before their owners had an opportunity to become soldiers. Thus it was impossible to collect a large number of cases of disordered hearts and subject them to critical study. Again, heart disease rarely developed primarily in the soldier and there was no large series of cases, such as occurred

in meningitis, measles, and other acute infectious diseases, though Karsner has called attention to the frequency of acute endocarditis in soldiers dying from late effects of wounds. The one cardiac condition that was intensively studied, disordered heart action, has turned out to be in truth not a cardiac condition at all!

In spite of lack of any notable contribution to the subject of cardiovascular disease there have been made numerous observations which will be of value in the future to us as medical practitioners. I shall attempt to point out some of these and to give you also a few personal observations made while acting as cardiovascular examiner of the thirty-eighth division, during which time 944 soldiers were referred for study on account of some objective disturbance of their cardiac mechanism, and while on duty in Base Hospital No. 20 in France.

Congenital abnormalities of heart.—During the examination of the thirty-eighth division I saw three cases of dextrocardia, and in none of these cases was there complete transposition of the viscera. Only one of the men was aware of his abnormality. I also saw three cases in which I thought there was congenital valvular disease.

Changes in size of heart.—The most important factor in properly outlining the heart by percussion is the use of a very light stroke of the plessor finger and firm apposition of the pleximeter finger to the chest wall. Very accurate results can be attained by observing this rule. Cardiac hypertrophy is always secondary to some cause and, whenever an enlarged heart is found, the cause should be carefully sought for. The apex of the heart normally is from seven to nine cm. beyond the midsternum in the fifth interspace. An apex situated beyond these margins calls for a study of the cause. Excessive muscular development may be responsible for a certain number of cases, but it is well to leave such a diagnosis until other possibilities have been exhausted. Changes in the size of the heart whereby the percussion dullness extends to the right of the sternum or upward above the third rib is indicative of damage to the heart musculature, and after all the condition of the heart muscle is the final criterion upon which we base our opinion as to what the heart can and should do.

Changes in impulse of heart.—Frequently the character of the cardiac impulse gives a very definite clue as to the possibility of some abnormal heart

lesion. Goodman (1) has called attention to the value of the character of the impulse in differentiating aortic insufficiency and mitral stenosis when there is an apical thrill.

In the former condition the impulse is diffuse and heaving; in the latter there is a quiet, forceful, circumscribed tap. Another diagnostic point that we may have been prone to overlook, is that thrills may occur in a variety of pathological heart conditions, and even when the heart is apparently normal. Mitral stenosis is diagnosed when a thrill, presystolic in time, is felt, but with a rapidly acting heart it is not always possible to time accurately the occurrence of the thrill in the cardiac cycle and it should be remembered that a presystolic thrill does not necessarily imply mitral stenosis. Morris and Friedlander (2) in particular have called attention to a functional presystolic thrill.

Heart murmurs.—The outstanding feature in the examination of a large number of men is the frequency with which accidental murmurs are met. These murmurs may vary from simple cardiorespiratory murmurs, which disappear when the breath is held, to complicated puzzling murmurs, the genesis of which can only be determined by considering the auditory characteristics, the location, and the transmission of the sound; changes in the area of cardiac dullness; changes in the character of the sound after exercise and after change in position, and the functional test of the heart. Among the heart murmurs that I came to look upon as accidental and which I had heretofore held to be the murmur of a syphilitic aortitis, was a rather soft blowing systolic murmur, heard best over the aortic cartilage and transmitted up the vessels of the neck, but after having negative Wassermanns reported in some thirty cases, finding no change in the size of the heart, a good functional response, and the absence of syphilitic stigmata or history, as well as no history of any acute infection, I concluded that such murmurs were purely accidental or functional.

Another feature in physical examination which is frequently overlooked is that valvular lesions may exist without the occurrence of heart murmurs when the heart is auscultated in the usual upright position. We have all seen typical cases of aortic insufficiency with huge hearts, characteristic vascular findings, and so on, without aortic diastolic murmurs. Such cases may be properly diagnosed without further investigation, but the examination of borderline or questionable cases, such as are seen in young apparently healthy males, is not complete without auscultating the heart in the prone and lateral positions, and after exercise. Change in position or exercise will bring out many murmurs which we may have suspected but could not demonstrate with the patient sitting quietly in the usual upright position.

In addition to the usual and well known murmurs that occur in valvular heart disease a murmur which has the eponymous name of Graham-Steell has been much discussed. Goodman (3) in particular has stressed the importance of this murmur in aiding in the diagnosis of mitral stenosis. It is a diastolic murmur, heard best in the pulmonic

area, replacing to a large extent the second sound, but may occur either at the beginning or ending of diastole. It is frequently heard only after exercise or with the patient in the prone position. The value of this murmur in prognosis is questionable. Sailer (4) says that in the cases he has seen it is indicative of decompensation of a severe type. Cabot (5) in twenty-two cases out of fifty coming to autopsy in which the murmur was heard, found no lesion of the aortic or pulmonary valves nor dilatation of the pulmonary artery. Thayer's experience is directly contrary to this, as he says that in all cases that he has examined postmortem a marked dilatation of the right ventricle and the pulmonary ring has been present. In view of the fairly large number of soldiers suffering from mitral stenosis in whom the murmur was noted and whose lesion was apparently well compensated, it seems fair to assume that the murmur is not a prognostic sign of severe involvement of the heart.

Among the unusual auscultatory findings may be noted the so-called apical click and the third heart sound. Both these phenomena are apparently normal, the first rare, the second quite common. King (6), in the examination of 500 supposedly normal hearts, found the third heart sound to occur in 23.6 per cent of the subjects.

Cardiac rhythm and rate.—Excepting the normal sinus arrhythmia that occurs in practically all healthy young adults, particularly after exercise sufficient to cause deep respirations, irregularities of the heart action in the young men who were submitted to physical examination were quite rare. Extra systoles in apparently normal men were occasionally met with, but auricular fibrillation and paroxysmal tachycardia were never seen by me during the cardiovascular examinations nor in the examination of several thousand soldiers at the base hospital in France. Pulsus alternans, heart block, and auricular flutter, arrhythmias difficult to diagnose without the aid of instruments of precision, may have been observed but not recognized.

I was greatly struck by the frequency with which cases of tachycardia were observed in my examinations in the thirty-eighth division. I attempted to classify etiologically these 424 cases (7) that were referred to me with the diagnosis of tachycardia. My classification and the number in each group were briefly as follows:

1. Myocardial, sixty-nine cases; 2, hyperthyroid, ninety-seven cases; 3, neurotic, one hundred and eighty cases; 4, nervous (emotional), twenty-eight cases, and 5, toxic, thirty-six cases. The myocardial group included those soldiers suffering from true myocardial insufficiency; group two, those with signs and symptoms of overfunctioning of the thyroid; group three, men with marked subjective and vague neurotic symptoms for the most part referred to the heart, presumably likely to develop disordered action of the heart; group four, those soldiers in whom the excitement of the examinations seemed to be the only cause of the increased heart rate; and fifth, the men in whom the tachycardia was attributed to intercurrent infections (not tuberculosis) or to overuse of tobacco and coffee.

In France we noted the great frequency with which men who had been gassed suffered from tachycardia. It occurred in nearly all our 1,200 men who had absorbed by inhalation a fair amount of gas and it persisted for weeks, in spite of the disappearance of all other objective symptoms. It would be interesting to know what the late effects of poisoning by gas are upon the hearts of a large number of gassed soldiers.

Disordered action of the heart.—More intensive and more thorough work has been done in attempting to elucidate the pathogenesis of "soldiers heart," "D. A. H.," "irritable heart," "effort syndrome," and "N. C. A." or "neurocirculatory asthenia," according to the varying nomenclature employed to describe a condition which was at all times essentially the same, no matter what name was applied to it. Early in the war the English were struck by the large number of soldiers invalidated home who presented no evidence of actual organic cardiac disease yet who suffered from a syndrome in which the heart apparently played a large part in the causation of the symptoms.

This condition was thoroughly and carefully studied in all its phases by Thomas Lewis and his coworkers (9). In this country men returned from France with this condition were sent to the large U. S. Army hospital at Lakewood, N. J., and studied by Peabody and his assistants. In France Dr. A. E. Cohen was the cardiologist of the A. E. F. and devoted much of his time to the examination of soldiers suffering from the syndrome and in diagnosing and suggesting a line of treatment suitable for these men.

As a result of the extensive and varied studies the conclusion has been reached, at least by Americans, that the soldiers suffering from disordered action of the heart were men who started with a certain constitutional inferiority. These men had a neuropsychic instability which in some cases was manifested before their induction into the service. In others an anxiety neurosis was apparently developed only when the men were sent to camp, while in still others the neurosis did not appear until they were actually engaged in the stress and strain of warfare. In other words, the condition was a neurosis developing in those men who were constitutionally weak, with sympathetic systems not under stable control. These soldiers as seen in France were all markedly neurotic; there can be no question of that, and, as with the shell shock cases, many of them subjectively improved rapidly and markedly when they were told that they had been acted upon by a disability board and were to be invalidated home or back of the lines.

One of the rather striking phenomena that I noted in these men was their inability to stand progressively increasing exercise. In U. S. Army Base Hospital No. 20 we early started exercise classes. These classes were under the immediate charge of one of our sergeants, in peace times a Y. M. C. A. athletic director. The classes were also directly supervised by one of the medical officers whom I detailed for the work. In them we put our D. A. H. cases, men recovering from some acute infection, and soldiers who had been gassed. Various grades

of exercises were carried out, varying from a few simple setting up exercises to more complicated movements, followed by hikes of an hour or longer. The convalescence of the men gassed or recovering from some acute infection was more rapid than if they had been simply allowed to be around the hospital doing nothing; these men were given some occupation and they were kept from the mischief of idleness for at least part of the day. The most notable thing about these classes was that all the men progressed as a rule rapidly from the primary class to the more advanced classes except the D. A. H. cases. These soldiers seemed unable to stand any exercise except the simplest and easiest. I have seen men with well marked D. A. H. unable to lift their arms to the level of their shoulders more than five or six times on account of the precordial pain that promptly developed. I thought at the time, in view of the results achieved by Lewis in the management of D. A. H. cases by graduated exercise, that we were somewhere at fault in the handling of our cases. I learned subsequently that what we had noted had been observed by others. Warfield (9), for example, says that "in no cases of true effort syndrome was there any betterment even after days of the slightest exercise."

I wish to discuss before closing one other phase of this question which has been well treated by Neuhoof (10) and that is, that this syndrome is to be observed in civil as well as in military practice. It is more noticeable in military practice because the men with a certain constitutional defect are, for the first time in their lives, put under vigorous exercise, which they have previously intuitively avoided, associated with mental strain. Under certain conditions, however, it does appear among the civil population.

For example, I might briefly give the salient features of a syndrome for which I now have a woman under treatment. Mrs. F. came to me complaining of dyspnea upon the slightest exercise, associated with precordial pain, palpitation, and dizziness. The symptoms followed a rather severe psychic shock. In addition she had nocturnal dyspnea, some headache, was very nervous, had cold extremities, and flushes and sweats upon the slightest provocation. Physical examination showed nothing but a well marked tachycardia, greatly increased by exercise, and a faint systolic whiff at the apex. A comparable case in military practice might be quoted. Corporal B. was sent to the base hospital with almost exactly the same symptoms but more exaggerated. He had continuously a worried, drawn look. He was always stooping and inclining his thorax to the left, to relieve the pain around his heart, he said. In fact, he had the usual symptoms which persisted as long as he was observed, though they were greatly alleviated when he was told that he was to be reclassified and sent back to the United States.

In conclusion, I may say that I have made no effort to consider the complicating heart in the acute infections; I have omitted any discussion of pericardial or arterial lesions; and I have not touched upon the value of the so-called test of cardiac function, though, as a last word, I might sav

that the simple test of hopping on one foot one hundred times is most certainly of very great value in determining insufficiency of the heart.

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262 SOUTH TWENTY-FIRST STREET.

OCCUPATIONAL CAUSES OF ILL HEALTH.*

BY LOUIS I. HARRIS, M. D., D. P. H.,
New York,

Director, Bureau of Preventable Diseases, Department of Health.

Although the study of occupational diseases, when contrasted with other branches of medicine, has scarcely begun, we have learned enough about the influence of occupation as a cause of ill health and disease to frame a damaging indictment of present conditions. The loss of life on battlefields and as an incident to military life, which in the war just ended was shown to be truly appalling, makes a powerful and tremendous impression even upon those whose imaginations are ordinarily sluggish. They can visualize to a far greater degree the slaughter and bloodshed which result from the methods in vogue in civilized society of settling disputes touching national honor and national interests. But the aggregate number of deaths and cases of illness occurring in the civilized world year after year during periods of peace from occupational causes make the war mortality pale almost into insignificance. There are no newspaper headlines announcing the thousands of deaths which have occurred during the last week in industrial centres scattered throughout the world on account of preventable conditions in industry.

Everyone, even those who are most sensitive in the appreciation of the sanctity of human life, has been taught to regard the diseases and deaths due to industrial causes as inevitable. Slowly but surely the social conscience of persons in various communities is bringing it home to people generally, through the educational efforts of various agencies, that the diseases which are caused by occupational

conditions and hazards are not inevitable and can, to a large degree, be prevented. If it is true that these deaths and diseases are preventable, then the continuance of conditions which cause such deaths, disability, or sickness constitutes a most serious ethical, social and economic offense on the part of all those who are responsible for those conditions or who have it in their power to prevent them. In part, no doubt, a number of accidents and diseases resulting from industrial conditions are due to carelessness or ignorance on the part of workers. But as sanitary engineers and safety experts have devoted themselves to this study with increasing zeal and interest, many of the conditions which were formerly blamed upon the workers have been remedied and we have come to find that effective methods of prevention minimized the factors of carelessness or ignorance on the part of workers.

Within the limits of a brief paper it is impossible to do more than sketch in a crude and general way the principal causes of illness due to occupations and to hint at the remedies for these conditions. Before presenting even fragmentary description of these causes, it should be stated that there are a number of illnesses in which it is most difficult to say with any degree of preciseness how large a part occupational conditions, home environment, personal habits or other factors play in their development. An example may illustrate how complex and interrelated are the factors which enter into consideration as influences in the causation of disease. Any physician who has treated patients with hyperacidity or other disorders of the functions of the stomach among sedentary workers, such as clerks, bookkeepers, or needle workers, cannot help being impressed with the astonishing change for the better that frequently follows the simple prescription that such sedentary workers take a brief period of rest from their confining occupation and enjoy life out of doors. This measure alone, without the correction of radical errors in diet and in personal habits, may be sufficient to remedy the disordered condition. Faulty personal habits and errors in diet may, however, be due not only to ignorance and indifference, but quite frequently to the lack of opportunity to secure in the factory or its vicinity the kind of food that may be desirable, or to the lack of a sufficiently long lunch period, or to the absence of facilities for purchasing food. Frequently it will be found that when the occupational disease is not the only factor in the causation of a disorder it is somehow or other intimately related with other causes which may be operating to produce such a pathological condition.

For practical purposes, I have divided occupational diseases into two groups—one which I term the specific occupational diseases, and another, the nonspecific occupational diseases. The specific occupational diseases are those which are due to particular poisons or to special conditions in certain industries of such character that when the disease is mentioned it immediately calls to mind a specific industry. For instance, lead, arsenic, aniline, mercury poisoning or caisson disease, as occupational diseases, are distinctly associated with special industries in which these respective poisonous materials

*Read before the International Conference of Women Physicians, New York, September 24, 1919.

are handled, or in the case of caisson disease when work is conducted under high atmospheric pressure.

Typical of the nonspecific occupational diseases are tuberculosis, pneumonia, bronchitis, asthma, rheumatism, various forms of neuralgia or neuritis, in which the occupation of the individual plays a small or large part as a cause of the disease. These nonspecific occupational diseases are not exclusively and characteristically associated with any special industry. I desire, especially, to emphasize the importance of the nonspecific occupational diseases because they may affect almost any part of the body and may cause a great variety of symptoms; they should be of greatest interest to the medical profession. To be true to the splendid traditions which dedicate us to the service of the community, members of the medical profession cannot look upon the multitudes of illness which are due to occupation as being merely of academic or scientific interest; they must translate these conditions into terms of human suffering and a loss to the social and economic welfare of the family and of the community at large and find in them a stimulus for preventive activities. The physician who professes a lukewarm interest in, or indifference to the subject of occupational diseases confesses a lack of social conscience or of a humanitarian viewpoint.

Physicians as a class have not been sufficiently identified in efforts for the correction of conditions in industry prejudicial to the health of multitudes of workers. The physician, whether in private practice or institutional practice, whose interest in a patient is not limited to the diagnosis and treatment of disease along traditional lines, but who views the patient's condition against the background of the industrial environment in which such patient has spent a large part of his or her life, cannot practice long without being powerfully moved and inspired to take action as a good citizen and out of a feeling of close kinship with those who are suffering to remedy abuses through social, economic or legislative reforms. There are also many specialists in the field of gynecology, neurology, orthopedics, dermatology, as well as in various other special branches of internal medicine and surgery, who apparently have never stopped to observe the number of cases in their practice in which the occupational factor may have played a prominent part. Despite the educational efforts of many years most physicians continue to treat, the individual, without taking into account the special problems and circumstances surrounding the patient's life, but they treat a "case" of this or that disease, according to stereotyped routine methods.

Not long ago, in speaking to a specialist who must have encountered many cases of specific as well as nonspecific occupational diseases, particularly in the course of his hospital practice, I questioned him to learn why he had not reported any such disease during the last four years to the health department as required by the sanitary code. At first he refused to admit—and he was quite sincere—that he had treated many cases of occupational disease. When I began to enumerate the type of occupational diseases which were frequently encountered in his special practice, he conceded that he had

seen many such, but he was so engrossed in compiling statistics and writing ultrascientific reports for medical papers that it had never before occurred to him that in failing to report these cases he was ignoring his duty as a good citizen to help the constituted authorities investigate the places of employment of his patients with a view to removing the conditions which were a menace to many others beside his own patients. Although this specialist promised to report future cases, he has apparently lapsed into forgetfulness of his duty to the community because of intense interest in his narrow range of special work, which is so characteristic of most people in and out of the profession.

It is not the fact that people are deliberately bad that is responsible for the continuance of many evils which have long clamored for correction, but rather that no matter how stirred they may be for the moment by an appeal to sentiment or to their sense of justice, such appeals must be repeated with great force to stir any large mass of them to action.

Doctors, despite all propaganda, continue to be indifferent to their obligations to report occupational diseases and reflect upon the narrowness and inadequacy of medical education quite as much as they indicate their failure and inability to understand that they are aiding and abetting in the maintenance of industrial conditions which are the cause of needless deaths and suffering.

MENSTRUAL DISORDERS AND PREGNANCY.

Choosing almost at random one of the specialties, and one in which a large number of physicians are probably interested, namely, the field of gynecological practice, we find that menstrual disorders caused by occupational conditions frequently result in suffering and a considerable amount of disability. While dysmenorrhea is a condition found among all classes of girls and women, it is most frequent in certain industries. This has been disputed by some writers, but as a result of many inquiries and of several studies among certain groups of workers, I have come to feel with reasonable certainty that there is a very definite relationship between occupation and dysmenorrhea. It is true that a number in whom dysmenorrhea develops in certain occupations have acquired a tendency in this direction during childhood or adolescence, but there can be little doubt that fatigue, excessive physical exertion, particularly the kinds that may favor pelvic congestion, prolonged standing, and those conditions connected with industry which debilitate and cause anemia—all of these are factors which may produce marked dysmenorrhea.

While in the city of New York we are not often brought face to face with conditions in which women who are employed in industry are compelled to continue at work in the factory or shop during the period of pregnancy until the date of delivery, it is nevertheless true of many communities that women are compelled to perform labor that may be quite arduous and hazardous in factories and shops throughout the period of pregnancy. Although a certain amount of muscular exercise may be beneficial to pregnant women, the immoderate strains to which such pregnant women

in industry must expose themselves, has an injurious effect upon their health and may seriously impair their ability to endure critical complications of pregnancy or of the puerperium. The influence upon the children who are borne by such women cannot be favorable and undoubtedly plays a large part in increasing infant mortality in certain communities.

Women who have been employed in industries in which lead is handled have, as is well known, a high proportion of miscarriages and stillbirths, but as one goes from industry to industry, studying critically the processes in which girls and women are involved, one is forcibly struck by the insidious influences which operate in many other factories and shops to affect the future reproductive capacity and health of women workers, and which are the result of mismanagement and lack of decent medical supervision. These conditions operating insidiously frequently undermine the health of workers and establish the basis for invalidism.

Industry is essential to community welfare, but when it is conducted and managed as we find it is in many places today, it is inimical to motherhood, and its consequences are visited upon future generations.

I have not the time to present an orderly, classified and scientific description of the various menstrual disorders and eventual impairments of the generative functions which are the result of occupation. I have gone through factories, however, and have seen girls of tender years in dusty, dark and unsanitary environments, labor to the point of fatigue and exhaustion, leading treadmill existences in which with unvarying monotony they rose hurriedly in the morning, ate quickly of food that was perhaps inadequate for their bodily needs, and poorly prepared, rushed to work in crowded cars and trains, labored at the appointed and usually highly specialized and monotonous tasks in which they were employed, to come home so fatigued and exhausted that they lacked appetite and a desire for normal recreation, and after an insufficient or poorly prepared supper, dragged themselves to bed, to go through the same routine the next day. It has seemed to me that a public which permits this condition fails utterly to understand that the welfare of a community and of the nation could not but be seriously hurt by such treatment and lack of care of the future mothers and of our future citizens.

We repeatedly hear criticisms of the social workers, and of the other groups of our communities who are alert and active in protecting the people against such conditions. This criticism is indulged in by employers, by misguided and oversuspicious members of the general public itself. The measures, however, which insure against unemployment, against the effects of sickness and old age, and which have been advocated in and out of season by the so-called highbrows and uplifters, are most valuable in that they conserve the health and lives not only of the present generation of workers, and of society, which is dependent upon the latter, but builds also for the future welfare of the nation. We need, therefore, to rouse all members of the

medical profession to the realization of the significance of the ailments which have too often been treated by them simply as individual "cases." We need the guidance of physicians in stimulating and influencing legislators for the protection of the health of workers by a system of medical teaching which will help the average practitioner to translate individual cases of illness and suffering into terms of community welfare. We must ultimately come to see that a physician who fails to ally himself or herself with social workers is a visionless and uninspired hack. And a physician who has this humane view must ally himself with those who labor for social insurance and similar legislation, demanding only that the physicians who may be involved in the administration of social medicine shall receive a decent and just compensation and be saved from the necessity of excessive toil to maintain his economic welfare.

RESPIRATORY DISEASES.

For decades we have been treating tuberculosis from various points of view, but only recently have we begun to appreciate to how great a degree certain dusty occupations, or those in which ventilation is inadequate, or those in which fatigue and other factors weaken the resistance of the body, lay the foundation for the development of tuberculosis. In order that our activities in the prevention and control of tuberculosis may gain in effectiveness, it is essential that we appreciate fully not only the needs of adequate housing, the avoidance of crowding, sufficient and nourishing diet, and of personal hygiene, but we must also have a full and true appreciation of the occupational factors which predispose to the development of tuberculosis.

Among stonecutters, for instance, in the city of New York, an investigation made by the writer showed that fifty per cent. of all the deaths which had occurred in the course of two years among the members of a certain union had been due to tuberculosis. The irritating dust generated by stonecutting done by hand or by machinery had traumatized and lowered the resistance of the pulmonary tissues in these workers and was the cause of tuberculosis. There are those who express resentment at the demands made by working people for higher wages. And while it must be conceded that these demands are not always moderate and just, they are, however, the manifestation not only of the desire to profit by momentary opportunities, and by the exercise of newfound weapons of defense resulting from organization, but they are also frequently the manifestation of a crude attempt at selfprotection against the hazards of industry.

More and more those who are engaged in hazardous industries and who are organized are demanding increases in pay and shortening of hours in proportion to the hazardous character of their work, the assumption being that employers will come to appreciate that by safeguarding the health of workers and eliminating hazardous processes, the justification for wage increase and shortening of working hours will be removed except in so far as they must be maintained at a minimum standard consistent with decent living. But, to return to my theme, I desire to emphasize as much as possible

that tuberculosis is in no small measure the yardstick or index by which we may appraise the sanitary conditions in industry in any given community. This is a fairly reliable index because good industrial sanitary conditions, improved housing and better living conditions generally go hand in hand, and when tuberculosis is diminished in prevalence it reflects favorably on living standards. It is not recognized as frequently as it should be, that acute lobar and bronchial pneumonia are in no small degree predisposed to by industry.

General Gorgas, in his inspection of the South African mines, called attention to the fact that the largest single cause of death among miners in that locality—and the mortality rate was a very high one indeed—was due to pneumonia, exposure to changes in weather conditions without adequate precautions against wind and cold, fatigue and excessive physical exertion, as well as crowding in the mines. The pneumonia rate among longshoremen and among workers in refrigerating plants and in similar occupations is not appreciated as it should be. There are public health problems in which, as in other phases of industrial hygiene already mentioned, the physician must take a leading part in awakening and molding public opinion. There are numerous occupations in which irritant fumes and irritant dust cause irritation of the respiratory tract which leads to the development of chronic bronchitis, and which in turn may create conditions favorable for the development of tuberculosis.

I hesitate to further subdivide the various classes of disease which find their origin to a greater or less extent in occupation. I might indicate the numerous instances of so-called rheumatism which develops in men and women who are exposed to cold or excessive humidity or overuse of a group of muscles. Aside from the gastrointestinal conditions alluded to, one might indicate to what degree loss of appetite and consequent indigestion and anemia are found among large groups of sensitive persons who are employed in establishments in which processes are conducted that create malodorous conditions, or turning to other examples, one might cite cases of arthritis which are the result of the overuse of one or more joints or muscle groups. For instance, in certain groups of laundry workers called shakers, and who incessantly take wet clothes as they come out of the extractor twisted into various shapes and shake them out, we find that the shoulder joints become seriously affected and varying degrees of synovitis and myalgia result.

One might also in very much the same fashion recite the various neurological conditions directly attributed to occupation, as, for instance, cases of acute mania, resulting from employment of women in the lead industry. One might also cite the cases of hyperexcitability which one may observe among those who are employed in the handling of mercury in the manufacture of felt hats, or in the manufacture of scientific instruments, such as thermometers and barometers. Various forms of neuritis of occupational character and of local palsies have been described in the literature.

All that I can hope to do is to allude to some of the clinical conditions which are found in industry,

and which challenge the attention of those in our profession who have not previously explored this new realm of preventive medicine known as industrial medicine. I have refrained from mentioning our experiences in the city of New York with the hundreds of cases of caisson diseases resulting from work under high atmospheric pressure in the process of excavating for buildings, or in the construction of tunnels, nor have I alluded to the many forms of chemical poisoning found in a great many industries.

I hope to have awakened in some who have not heretofore been acquainted with various phases of industrial hygiene and industrial medicine an interest in this subject. As I walk through various streets in the business section of this and other cities, and as I have from time to time inspected various establishments, I have been startled by the unexpected discovery of mechanical processes carried on in buildings whose exterior give no clue whatever to the little world of romance and tragedy which they often concealed. I have found illiterate, ignorant, and sometimes relatively educated men and women in factories engaged in a process which I had assumed, from my reading of the literature of industrial medicine, was only of academic interest in relations to the city of New York. As I have observed some of the great number of processes carried on in various places in the city of New York, even those carried on in some of the best department stores, on some floor inaccessible to the public, I have learned to appreciate that the army of workers who are exposed to occupational hazards is a considerable one, and when I have attended clinics and hospitals where learned physicians give medical care to many of this army of workers, I have been startled to think of how utterly lacking these scientific men are in a knowledge of the significance of occupational influences. Many of them are not interested in acquiring a knowledge of the underlying causes in the factory and in the shop which are producing the diseases to whose etiology and treatment they are frequently devoting so much effort. They are interested only in what the test tube, the microscope and instruments of scientific precision reveal. But, the human element, which a knowledge of the industrial background of the sick person could give, is altogether foreign to their point of view. In fact, when this phase of medical work is called to their attention they indulge in a goodnatured condescending smile, as if to say, "Well, this is a new hobby, and we will forgive you if you do ride it hard."

In some medical colleges, notably Harvard, the study of occupational diseases is assuming great importance. Here and there progressive employers of labor who have learned to realize that the protection of the health of workers is not only humane but necessary for efficiency, and a source of added profit, have established medical supervision of their employees and disease prevention as a distinct branch of their business. But, if I may be permitted to make a special plea, I would appeal for a study of the causes of occupational diseases by physicians, by employers, legislators, and the public generally, not on the score of dollars and

cents which it may add to the pockets of those who look at it from a business viewpoint, but as a humanitarian, social, as well as economic contribution to the welfare of human beings.

The protection of the child, the woman, and the man in industry is a part of the program of preventive medicine which should not be viewed as inferior to child hygiene to which the natural sympathies of women incline most, but they should be viewed as closely interrelated branches of social effort in which the members of the medical profession in this and other countries must assume a leading part.

THE CAPILLARY AND VENOUS CIRCULATION IN RELATION TO DISEASE.

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In these days of so much specialization, both among those who treat disease and in the methods and armamentarium employed, I have sometimes feared that the basic elements of therapy are not sufficiently considered in all cases. Indeed, I have only to glance retrospectively over my own practice to find omissions of that character; and, of course, we all see the faults and failings of others more readily than our own. I have often thought that if I might have considered each case I have treated, with the judicial and unbiased mental attitude which I have recognized in myself when in the relation of consultant, I might have been of much more service to my patients. However, it did happen to me, comparatively early in my medical experience, to recognize the importance of one of those basic elements, which enter more or less into disease in general, and the longer I have dealt with disease, the more vital has appeared the relation of that element; I refer to the abnormal states of the capillary and venous circulation.

How blessed is the fetal life! with no care nor worry, nor longing that is not satisfied through that marvelous process of osmosis, which brings the needed nutriment and oxygen and disposes of waste. But, when the infant has inhaled its first breath of air and the heart has suddenly assumed a new system of distribution of that vital fluid, the blood, then it is that its troubles begin, which only cease when its cycle of mundane existence is ended.

To say that one has a perfect circulation, a normal and equable distribution of blood throughout the body, is to say that one is in perfect health. On the contrary, if there is not that normal and equable distribution of the blood to all parts of the body, there cannot be a perfect state of health, because whatever organ or area of tissue has either too much or too little cannot and does not perform its function perfectly, and the perfect state of health is made up of the perfect functioning of all the component parts. When the variations from the normal in the distribution of the blood are slight or but temporary, there is no notable disturbance of the health, but when such variations are considerable and persistent there is disturbance of health, whether noted or not, and the longer they

go unheeded and without the application of means to correct, the more certain that some more or less serious deflection from the state of health will be demonstrated.

One of my earliest lessons, in this relation, I learned from the case of a girl in Utica, N. Y., who, in the early seventies of the last century, fell while skating and struck upon her left elbow. Both she and her physician disregarded the injury until a few weeks later when she began to suffer pain. The pain became more intensified and the area of inflammation extended, until finally she was brought to Buffalo, where I assisted the late Dr. Julius F. Miner in operating upon the arm. We removed the entire ulna, the upper third of the radius, and the lower third or more of the humerus, because of the periostitis and osteitis and consequent osteonecrosis that had developed from that simple but neglected injury. This case I reported with other resections in my thesis in 1873, published in the *Buffalo Medical Journal*. From my subsequent experience with the constant current in the form of galvanism, I am convinced that the prompt application of that stimulant in the manner I have described to this society as "soakings," would have averted all the succeeding suffering and osteonecrosis.

I recall other traumatic cases which were regarded as of no consequence at the time, but which resulted fatally or seriously, because of neglect to correct the local disturbance of the circulation promptly. One was that of a man at Warren, Pa., who was struck on the knee by a bicycle, and who, in a few months, lost his leg and soon after his life as the result of that injury.

As showing the utility of the treatment I have mentioned, I recall the case of a laborer, a ditchdigger, who was struck on the tibia, a little below the knee, by a shovel or pick, with the result that for more than two years he had suffered much pain and had been unable to work. After nine "soakings" in the constant current, using a thick clay electrode, negative, over the inflamed area, the inflammation disappeared and he was able to return to work. For years after I never encountered that man upon the street without his stopping to tell me what a wonderful cure I had performed on his leg and that he had been able ever since to work as well as ever.

Such illustrations might be enumerated by the score, but you all have seen them in injuries that resulted in painful periostitis and felon; in the blows upon the mammae of women, which resulted in indurations that proceeded, by gradual cell alteration, to a cancerous tumor; or in the blows upon the head or the abdomen, which resulted in the most serious consequences. In all these cases the serious sequences might have been averted by the correction, by one or more of the means which I will suggest as I proceed, of the initial disturbance of the capillary circulation, which was the first cause and the foundation of all the succeeding consequences.

Another wide field, in which I have been impressed with the fact that the relation of the capillary to the venous circulation has not been sufficient-

ly appreciated or considered, is that of the affections loosely denominated heart diseases. Of all the organs of the body I verily believe no other has been so irrationally maltreated as the heart, not only by the humble and obscure practitioner, but as truly by the great in the profession, whose illogical and ineffective treatment of their notable patients is sometimes blazoned in the public prints, which later announce the death of the patient from heart failure. I recognize that this may seem, at first glance, a severe stricture to make, but I do so advisedly and with prepenance and aforethought.

It is not surprising that fatalities from heart affections so frequently occur, when that organ, which has been greatly overworked and cannot of itself alter the conditions that are opposing it, is prodded and whipped up by such drugs as strychnine, digitalis, and caffeine, instead of using methods to correct the disorders in the capillary and venous circulation which have been causing the undue efforts of the heart and its exhaustion. I submit that it is no less a blunder when committed by a titled professor of a great university or other famous consultant than when plain Dr. John Smith, of Griggs Cross Roads, commits the like error.

Appreciation of the actual relation of the heart to the circulatory system is aided by the consideration of the heart as a double mechanical pump or, more correctly, a quadruple pump, two cylinders (chambers) on each side with a valve between each pair, the two sides working simultaneously upon two circuits of the circulating fluid, the terminal of each circuit connecting with the beginning of the other circuit, so that in truth the two form one continuous great circuit through which the blood is constantly passing, with only the interruptions by the valves. This vital quadruple pump differs from a like arrangement of chambers of a purely mechanical pump in that instead of the emptying and filling of the chambers by means of pistons working in the cylinders, the latter effect is produced by the contractions of the muscular walls of the chambers of the heart. Also, a most surprising fact, the heart is automatic, while the purely mechanical pump requires a force from without to move the pistons and propel the circulating fluid.

One of the most beautiful laboratory experiments I ever witnessed, was the demonstration of the automatic action of the heart. The heart of an animal was suspended in the air by means of glass tubes connected with the stumps of its arteries and veins in such manner that through one of the tubes it received a fluid from a glass fount slightly elevated, which entered one of the auricles and made the round of the chambers of the heart and emptied into a receptacle from which it returned to the fount. That little heart had been suspended for several hours, but was beating as regularly and rhythmically as our own hearts are now beating and the demonstrator assured me that he had continued similar experiments for thirty-six or forty-eight hours. As there was no nerve connection, the experiment demonstrated that the contractions of the walls of the cavities resulted from the successive filling with the fluid, which, in this instance, was the serum of the blood of the animal from

which the heart had been removed; but the demonstrator said that other fluids, as a slightly saline solution, would result the same.

The purely mechanical pump requires for its perfect working a sufficient supply of whatever fluid is to be propelled and also a free exit of the same, and this applies also to the vital pump which we are considering; and here it is pertinent to note the difference between a purely mechanical system of a quadruple pump with two circuits of rigid tubes, the terminal of one circuit connected with the beginning of the other circuit, and that of the vital circulatory system which consists of approximately rigid tubes (arteries) on one side of each circuit and soft tubes (veins) on the other side and, interposed between the terminals of the arteries and the beginnings of the veins of each circuit, millions of microscopic tubules, the capillaries of each circuit. This is the fact that makes so vastly important the subject of this paper, since the interference with the continuance of the requisite supply and the freedom of exit of the circulating fluid lies chiefly in an abnormal state of these capillary systems. That abnormal state is usually a paresis from overdistention, and as the capillaries are in close proximity to each other, if an area of them is distended, each in the abnormal area swollen, they impinge upon one another and produce a stasis in that part, which not only interferes with the function of the organ or tissue in which such stasis occurs, but creates a resistance to the contractions of the heart and an impeding of the return of the blood to the heart, directly proportionate to the extent of the area or areas of the stasis.

In the latter respect, the impeding of the return of the blood to the heart, if the area of stasis is great it is equivalent to the effect of shock, which suddenly drives from the superficial vessels the blood which they should contain and dilates with it the great veins of the abdomen, which become paralyzed by the distention and they cannot, as they should, push the blood on to the heart which, lacking its requisite supply to stimulate its contractions, becomes weak in its pulsations or ceases altogether.

In such cases I have many times demonstrated the magical effect of ergot upon the distended and paralyzed capillaries and veins, in the restoring of approximately normal pulsations of the heart within fifteen or twenty minutes, when the pulse had been faint or absent and even the pulsation of the heart difficult to detect. There is only one way in which that drug could have accomplished such a change promptly, if at all, namely, by contracting the abnormally dilated capillaries and veins and so returning enough blood to the heart to secure its proper functioning. Such demonstrations of the therapy of ergot harmonize with and confirm such experiments as I described on the heart of the animal. I can recall several cases in my experience in which this drug unquestionably saved life. If, in those cases, I had not made use of ergot, the patients would have died and according to the usual acceptance, they would have died of heart failure, which to my mind is an

utter misnomer and implies a misconception of the facts. They would, in my judgment, have died of circulatory failure, because as soon as the contraction of the dilated bloodvessels had sent enough blood to the heart, there was no indication of lack of force in the heart, or the so-called heart failure.

While on the subject of the heart and the circulation, I will mention my experience with those states of high arterial tension, high blood pressure. The most extreme arterial tension I ever saw, and in which it seemed that the radial artery itself might rupture, was entirely dissipated within twenty minutes by a hypodermic injection of ergot, leaving the pulse soft as that of a child; and I cannot recall a case of abnormal tension, even in a case of true apoplexy in one instance, in which ergot did not modify the tension. From these experiences, I can only infer that the abnormal tension in those cases was due to areas of abnormal relaxation somewhere in the course of the circulation, which the ergot acted upon, producing a more normal general circulation. I may say here, parenthetically, that if the dicta of authors on materia medica, and of the present day experimentalists on the action of ergot, were true, I would certainly have killed scores of my patients whose lives were, in truth, saved by the real therapeutic action of that drug. Ergot does not contract bloodvessels as the books and experimentalists say, but it does contract and normalize the abnormally relaxed and dilated bloodvessels (capillaries and veins), which is a very different statement.

Another field in which the abnormal state of the capillaries is basic and of vast importance includes most of those diseases which are denominated nervous; and in which I fear there is too frequently a lack of appreciation of that basic relation. Superficially, there does not appear an intimate association between the nervous and circulatory systems, and I can readily understand how one who deals especially with the former may fail to recognize the relation if he has not happened to note the effect in those cases of a rapid alteration of the latter, such, for instance, as is produced upon the capillary system by the hypodermic injection of the drug ergot in a case of so-called nervous disease.

I may say in advance, that I do not anticipate that you will accept what you may be pleased to term my dicta on this subject if you have not made such an observation as I have suggested, or until you have the temerity to make the experiment for yourself. If you do so, I cannot see why you should not demonstrate the same results that I have so often observed.

Many years ago I went to call upon a friend, an old lady, with whom I was accustomed to spend a few minutes almost daily, and found her on the walk in front of her house. As soon as she greeted me I recognized that she was aphasic and then observed that she was also partially hemiplegic. She made a great effort to express herself, but her speech was meaningless and I chided her not to talk and assisted her into the house and immediately gave her a hypodermic of ergot, with the result that within a half hour she had recovered

from the paretic state, as to speech, arm, and leg. Evidently the paretic state had occurred just before I appeared on the scene and the correction of the causative hyperemia was prompt.

I was one day called, by telephone, by the late Doctor Shaw, of Kennedy, N. Y., who said he wanted me to see with him the worst case of epilepsy that he had ever encountered. He said he did not really expect that any relief might be obtained, as he had already had three doctors see the patient and all had agreed that the patient must die, but he would like me to see him. While driving to the farmhouse several miles from the station, the doctor related the case to me. For several months the patient, a young man, twenty-one years of age, a school teacher, had had spells of a nervous nature. He cited one occasion as an illustration. One day the young man, on leaving the house, suddenly turned and threw some object he had in his hand, a book, as I recall, with violence back into the room. Finally he began to have convulsions, which recurred several times, increasing in severity. After a pause in his recital, the doctor remarked, "He's a very good young man." On hearing this the seemingly ridiculous thought occurred to me, "Perhaps he has been *too* good; perhaps his mother (who, the doctor had told me, had died when the patient was a boy) had told him that he must not handle his penis and perhaps he had never retracted the prepuce; with the natural result of these nervous manifestations." I did not mention this thought to the doctor, who went on with his account of the patient, and I quite forgot my mental picture. When we arrived at the house, a woman came out on the porch and informed us in a stage whisper, "He's dying; he's just had a terrible convulsion and it took six men to hold him in bed." My first glance at the patient assured me that he had not had a true epileptic attack, as his eyes and countenance were bright and clear. I sat down beside him, got out my hypodermic syringe, and filled it with my ergot solution, and as I was about to introduce the needle into his arm, the doctor cried, "Look out! he's going to have another," which irritated me as I already regarded the case as hysteroepilepsy and the doctor's suggestion might develop a convulsion, so I said emphatically, "He's not going to have another," and proceeded with my injection and again filled the syringe and gave him another injection, each time the syringeful, after which I thought, "You may go on with your convulsion, if you can!" for my previous experience with the drug had determined a sense of security and confidence when I had put into the circulation of a patient a good dose of ergot. I then began to question him and within three or four minutes the intuition that had occurred on the way recurred to me and I requested him to expose the organ, one glance at which was sufficient to confirm my snap diagnosis as to the causation of his condition. I said to the doctor, "You clean this up and there will be no more convulsions"; and there were no more. Subsequent questioning revealed that my intuitive "picture" had actually transpired. I may say here that in my experience no other centre of irritation to

the nervous system compares with that of the glans penis or the glans clitoris, when those organs are not properly cared for by the mother, nurse, or physician.

I think I need not assure you that ergot is not a narcotic and does not act directly upon nerve tissue, so that in this case, as in others that I shall relate, the calmative effect was obtained through the correction of those capillary areas whose congested state had been irritating the nervous system.

A man was brought into my office suffering from delirium tremens and in a high state of nervous excitement. He occupied every chair in the room within three minutes and it was difficult to restrain him long enough to give him the first hypodermic of ergot, after which I used the constant current in doses of ten to fifteen m-as over the three pairs of cervical sympathetic ganglia, particularly the lower pair, which I have found to have the best effect upon the cerebral circulations, continuing this treatment a half hour or more and then gave him another hypodermic of ergot. Within an hour of his entering my office, he went away as calm and sedate as could be desired.

To any of you who may be familiar with the tremendous nervous reaction that results in a narcotic habitué within a few hours after the sudden and complete suspension of his customary drug, the history I am about to relate may appear incredible, but, as one of the older members of this society, and, I trust, accredited as veracious, I vouch for its correctness, which also may be confirmed by the records of the W. C. A. Hospital of the city of Jamestown, N. Y. A physician from central New York was treated by me some fifteen years ago. He gave the history of having taken daily, hypodermically, one hundred and twenty grains of morphine, together with from fifteen to twenty grains of cocaine. Of course I would not have accepted his word as to the quantity, but, as he had spent a week in Jamestown before putting himself in my hands, I was able to confirm his statement in that regard by visiting a number of the druggists from whom he had obtained the drugs.

His arrival at the hospital was announced to me by telephone and I hurried over and took charge of him. I at once ordered that he be given a bath. He was undressed in his room, a hospital bathrobe put on him, and he was taken to the bathroom. I arranged this to give me the opportunity to remove all his clothing and effects to the closet of another room and lock them up, and also to search the bed and everything else in his room where he might have secreted the drugs. His bag contained several hypodermics and a quantity of each drug, but nothing was found secreted, as he had not been left alone in the room during the brief time before I arrived. As soon as he returned from the bath I gave him ten grains of blue mass and immediately thereafter administered two drams (four times my usual dose) of my solution of ergot by hypodermic injection. Before I had completed the injection he was asleep and for more than forty hours he slept continuously, except when awak-

ened to give him medicine or nourishment or to get him up to attend to nature's functions.

Five days after he entered the hospital, I had him brought to my office in order to treat him more conveniently with electricity. During those five days I had treated him with the constant current from a portable galvanic battery, not only over the cervical sympathetics but along the spine and had given him many hypodermic injections of the ergot solution. He never asked me for his drugs and at no time exhibited the nervousness that is usual after suspension of the narcotic drugs. A fortnight after he came to the hospital I arranged for him to board at a farmhouse near my home on the shore of Lake Chautauqua and he came to my house each day for the galvanic treatments and the administration of the ergot. Within two months he had gained more than thirty pounds in weight and could hardly be recognized as the same individual who had come an emaciated, haggard, physical wreck. The treatment outlined above was all he had, except a bedtime dose of the *rhamnus frangula*, as a laxative.

The very great prevalence of narcotic addiction that is being demonstrated, while I am writing this paper, impels me to trespass a little beyond my subject proper, although I shall keep in relation to it, to express the conclusions I have formed from a considerable experience in dealing with the "habit cases." In the first place, I emphatically do not accept the disease theory of habituation, that the subject is not responsible for the habit since he is the subject of a disease which impels him to it in spite of himself. Careful study of the subjects I have had to treat has convinced me beyond question that the longing for and the so-called uncontrollable impulse to continue the use of the drugs are but a part of the reaction from the stage of stimulation, which is their first physiological effect. During the stage of stimulation the circulation is more active than normal and this increased activity in the brain circulation, together with the drug's specific action upon nerve matter, develops an exalted mental state, which is agreeable, but when that stage has passed there occurs a reaction, following a recognized law of stimulants, and a stage of depression ensues, accompanying which and causative of the depression is a lessened activity of the circulation, due to a relaxed state of the capillaries in the nerve centres, the brain and spinal cord. With the retarded flow of blood through those nerve centres, there is lessened oxidation and metabolism; and a consequent tissue demand for that which is lacking, an internal unsatisfied sense, a reaching out for something to allay, which is the longing of the addict. A little experience on the part of the subject demonstrates that another dose of the drug will bring the agreeable stage of stimulation, which, of course, is again followed by the stage of reaction, engorgement, depression and longing, and so cycle follows cycle until the subject has become an habitué. But this, you see, is not disease nor the result of disease, but merely a succession of cycles of physiological action and reaction. Quite naturally, the continuation of this unnatural bodily subjection to drugs that should be

used only by physicians in the treatment of pathological states results in impairment of various functions, particularly of the digestive tract and the secretory glands, in loss of flesh and strength and in the development of a state of neurasthenia or something worse, but these actual diseased states are sequential to, not causative of, the habit.

Second.—The system of tapering off, which is so common an element of methods of treatment, is not only entirely unnecessary, but quite as undesirable, as it prolongs the period of habituation and has a bad moral effect upon the subject, practically saying to him, "Of course you need the drug, but we think that you can get along with a little less." On the contrary, my own method of immediate, complete and continued suspension of the drug or drugs, demonstrates to the subject from the beginning that they are not needed; and an additional element of my method, namely, absolute nonsubstitution of any sort or kind of narcotic, goes yet further and demonstrates to him that he neither needs the used drug nor any of like action upon the system.

Third.—The treatment after suspension is directed to five chief objects: 1. Custody, which secures against access to the used drugs or substitutes and controls the necessary elements of treatment. The best custody is that of a well regulated hospital, where physicians and nurses or attendants may best carry out any effective method of breaking up the habituation and restoring the general health, which is always more or less depreciated by the drugs. 2. Elimination, attention to which from the beginning is very important. With my method, the first dose given is a mercurial, preferably blue mass, which is followed in a few hours with a brisk saline cathartic. There should be secured daily two or three stools, which may usually be regulated by the administration of the *rhamnus frangula* (fluid extract) in sufficient amount, and the mercurial should be repeated at least twice a week, for a fortnight. 3. Control and correction of the circulation, which is always more or less disturbed, often tremendously so, following suspension, and which is also directly causative of the extreme nervous symptoms that usually follow the suspension. This is accomplished best and most promptly by the administration of ergot hypodermically in doses proportionate to the extent of the circulatory disturbance, as its action is to contract the abnormally dilated and relaxed capillaries and veins. Other valuable means to the same end should be used in connection with the ergot, the constant current, dynamic or from cells (galvanism), applied over the chains of the sympathetic ganglia, especially over the cervical ganglia; dry cupping along both sides of the spine, the more cups applied at the same time the better (I have applied eighteen at the same time and the patient has gone to sleep with them on); alternate hot and cold sponging of the spine, which helps to correct the relaxed circulation in the sympathetic or vasomotor ganglia; massage or mechanical vibration and the static modalities. 4. General support, by administering as much nutriment as can be taken care of by the subject. At first this should be only in liquid form

and of digestible character and should be administered every four hours during the night as well as the day, but not, however, to disturb sleep. Digestive ferments should be employed whenever indicated, as nutrition is of very great importance. 5. Securing of sleep, which if not accomplished by the methods enumerated under three and four, veronal or trional may be given, but a stomachful of warm, liquid and easily digestible food at bed time is very helpful to this end.

Fourth.—After the correction of the abnormal circulation in the brain and spinal cord, the subject ceases to have the longing or the uncontrollable impulse and these states will only recur after the subject has again and voluntarily resorted to the drug and so set up again the physiological stimulation, reaction of depression, and resultant tissue demand or longing. There is no treatment that can avoid this result if the subject so prefers, but, after being freed from his thralldom by the method which I have described, he will not take his first dose because he cannot help doing so. The very stringent laws now in force will prevent much of the former rehabilitation. The control of alcoholic addiction, relief from delirium tremens and even of the serous apoplexy or wet brain are very simply effected by the above method. It goes without saying that the subject should be put in the best physical state possible, by correcting the abnormal states that had been caused by the use of drugs or by any other cause, for the more solid and complete the foundation of general physical health, the more secure will be the subject against future temptation and the folly of voluntary rehabilitation.

I might continue my narration of cases to include that state of general nervousness which is often more trying to bear than pain, headache, toothache, neuralgia, neuritis, neurasthenia, hysteria, chorea, asthma, spasm, convulsion, paresis, and insanity, all treated on the same lines, namely, to correct abnormal states of the capillary circulation. The fact that these different nervous manifestations have been relieved by these methods appears to me to give a rational basis for my belief that the majority of the disorders which are denominated nervous depend in large part upon the abnormal states of the circulation in and about nerve tissue and I therefore do not hesitate to declare this to be my definite conviction.

In conclusion, I will mention some of the methods which I have employed to secure the correction of the abnormal circulatory states I have mentioned. My professor of therapeutics, the late Doctor Eastman, began his lecture on mercury with "Mercury is the great equalizer of the circulation," and while I would most certainly substitute ergot for mercury in his dictum, I have recognized during most of my medical life that mercury is an aid to that result which should not be neglected. It is especially effective in correcting the abdominal circulation and, through this effect, in correcting the remoter circulation as well. Its action in stimulating the secretory glands of the abdomen is a fundamental desideratum toward equalizing the circulation, and this implies the correction of areas of abnormal capillary and venous

states. I need no more than suggest to you such methods as massage, mechanical vibration, dry cupping, dry heat, in whatever manner secured, the light rays for deep effects, alternate hot and cold water or hot water and ice applied to the spine (which I regard as one of the most effective and valuable elements of treatment in cases involving circulatory paresis in the brain or along the spinal cord, in neurasthenia, hysteria, hypochondria, the earlier stages of melancholia, etc.); the various electromodalities and particularly the constant current, or what I am yet old fashioned enough to like to speak of as "galvanism," which has accomplished so many striking and, indeed, marvelous results among my patients; all of which results, as well as those obtained from the use of the other methods mentioned, were the direct sequences of the correction of the abnormal states of the capillary and venous circulation to disease.

During the time that I have been writing this paper, I have had experience with an extract of ergot made by one of the most noted drug houses of the world, which, had I been using the drug for the first time, might have deterred me from any further experiment with it, since the effect of this preparation was precisely the opposite from what my experience of forty-five years' almost daily use of the drug has taught me to be the normal therapeutic action of ergot in pathological cases.

The only explanation that I have been able thus far to discover is that this extract was probably made in an acetic acid menstruum and a considerable amount of the acid remained in the semisolid product and that the irritative effect of the acid not only overcame the normal action of the drug but produced symptoms that were alarming.

In a paper read before the American Medical Association fifteen years ago I pointed out that the acetic acid extract should not be used to prepare a solution for hypodermic injection, and this applies as well to the fluid extract as to the solid, since, in emergency, the former might be employed in place of the solution of the solid extract. In view of this recent demonstration, I desire to emphasize the caution that you use only the extracts made with alcohol. The alcoholic fluid extract should be used only in emergency, when there is not time or opportunity to prepare the solution, as the former hurts greatly and is locally irritative.

The manufacturers of ergot extracts should distinctly label their products as alcoholic or acetic acid and upon the acetic acid extracts, whether solid or liquid, should place conspicuously "Caution: Do not use hypodermically." It would be manifestly unfair to the drug, to the exponents of its therapeutic virtues and value and to the patient needing its exceptional aid, to accept conclusions suggested by the effects of such a sample as I now report. The solutions upon whose effects I have based all the assertions which I have made as to the therapeutic action of ergot, were made from the pharmacopoeial solid extract (alcoholic), manufactured by a reliable house, from the best Spanish ergot (crude drug).

My solution is made by dissolving one dram of the solid extract in one ounce of sterile distilled

water containing two or three grains of chlorethone as a preservative. The solution should be filtered; and all processes in the preparation of the solution should be thoroughly aseptic. An ordinary dose is one half a fluid dram, which may be doubled, or repeated as indicated by the degree or extent of the circulatory paresis, keeping in mind that the object of its administration is the normalizing of the abnormal circulation.

SYPHILITIC OCULAR AFFECTIONS.

BY AARON BRAY, M. D.,

Philadelphia,

Ophthalmologist to the Jewish Hospital.

Civilization is a constant strife for supremacy. Individuals, families, nations, groups, and races are perpetually engaged in the eternal struggle. Ethics, morals, rights, national and international laws are the pillars upon which the world's civilization securely rests. Occasionally, however, all these noble principles are brushed aside in the perpetual struggle for a place in the sun and it becomes a life and death struggle. Laws are disregarded, treaties are broken and considered a mere scrap of paper, neutral rights are denied to non-combatants when national or military expediency demand their violation. The attainments of certain material or immaterial objects are the dominating factors that control the individual, national, or racial forces. Individuals rob, embezzle, cheat, steal, and commit murder, while nations legalize wholesale murder in order to gain commercial or national supremacy. When individual force is insufficient, combinations of forces develop so that force allied to force, forces its way against other forces. Individuals seek power over individuals or groups of individuals; nations seek supremacy over other nations and some even go so far as to seek to obtain predominance over the entire world. Labor wars, political wars, religious wars, national wars, are the external manifestations of the internal desire for supremacy. Men war against men; nations fight against nations, and races are in conflict against races. We have thus, war in the open and war in trenches; war on earth and war under the earth: war on the water and war under the waters.

Mankind has mastered the control of beasts of the field, the fishes in the water, and fowls in the air as predetermined from the days of creation. But there is an enemy common to all mankind over which the Bible has not given us any jurisdiction. Man is to rule only over visible enemies but not over the invisible lower races, and the arch enemies of mankind are the invisible nations of the lower order, known to the world as microorganisms, which like submarines spring into action when least expected. Some of these lower organisms are still unknown to us, but with a great many we have made personal acquaintance and have had to fight many pitched battles and not infrequently we have suffered serious defeat. Among the well known lower forms we shall mention the most prominent and the most numerous as well as the most powerful and dangerous ones grouped in the following

chief classifications: The cocci, which included gonococci, pneumococci, streptococci, meningococci; the bacilli—tubercle bacilli, diphtheria bacilli, influenza bacilli, tetanus bacilli and the spirochete. There are a host of smaller nations among these lower forms, but we shall not burden you with them at the present time, as they are not sufficiently prepared for warfare against the human race. Some of these are in offensive and defensive alliance and act conjointly in emergencies (mixed infections). In the process of conservation mankind has called to its aid modern science to halt the advance of these invaders. Asphyxiating gases have been invented to destroy the enemy by a process of disinfection. Sulphur fumes, formaldehyde gas, chlorine lime, are projected against the enemy camp; antitoxins, vaccines, and serums are modern weapons against these invaders.

The most mischievous of these races is the spirochete, the members of which are counted by billions. They do not kill at once, they merely inflict serious wounds and reduce vitality. They affect you and your children and children's children unto the third and fourth generations. They markedly reduce the chances of repopulation and at best allow the procreation of weaklings and imbeciles. The effect of these modern and recently discovered organisms have been known to mankind for thousands of years, and in the right spirit of preparedness mankind has mobilized its forces against them and science has been called upon in the effort to stay their ravages. Ehrlich, Wassermann, Noguchi, and a host of others have tried to lead the army of science against the enemy with more or less success. They have invented means to destroy the enemy by certain intramuscular, intravenous, subdural injections. The menace to the human family from these is serious indeed, as they do not subscribe to the rules of modern warfare. They give no quarter, neither do they surrender. They do not recognize the flag of truce, nor do they accept an armistice. Unconditional surrender is their slogan. They do not appreciate the sublime philosophy of "peace without victory," and a league of nations cannot interfere with their well established policy. Their form of government is unique and their motive the destruction of the human family by a process of attrition. They are not concerned with national or religious problems, as they have already invaded all nations and all religions. Theirs—like the Bolsheviks—seems to be an international problem. Absolute monarchies, constitutional governments, democracies, or bolshevism make very little difference to them: they thrive well in all forms of government and in all classes of peoples. Religious differences do not concern them. They declared war against the world. They fight the Moslems and the Christians. They war against the Buddhists and Confucians. They do not respect the self-satisfied agnostics and the arrogant atheists and are now fairly well established among the young Judeans. How one race can fight the whole world is really a wonder, but medicomilitary writers are in harmony on one fact that this race has already invaded the whole world and all of its nations and races.

The spirochete is a secret enemy; we know its habitat, however, although we cannot trace its origin. One must, however, bear in mind that no evidence of the presence of the enemy is detected locally, until the circulatory system has been invaded and the enemy is well dug in in the recesses of the human soil. It is not enough to attack the enemy locally, he must be met constitutionally and made to surrender. It is of interest to note the mode of attack on the part of the various lower races. Some establish themselves in the throat and from there they send the poisonous arrows that destroy life. Others have some predilection for the lung and demolish the fortifications until the lung is destroyed and made functionally useless. Some prefer to attack the coverings of the brain and cause death, while still others prefer to invade the genital organs. The spirochete has its choice of invasion through the urethral or vaginal canal, from which point it enters various parts of the human economy and inflict heavy damages on many organs. They do not kill at first shot, but rejoice in torturing their victim by degrees and for many years.

After the spirochetes invade the human body they send their forces to the various organs and there engage in a local conflict with the cellular elements. Some prefer to encamp in the ocular tunics and fluids. In fact all cases of syphilis show some ocular symptoms sooner or later in the course of their lives. Primary invasion through the visual organ is very rare, but occasionally it does occur in the form of a palpebral or conjunctival chancre. In the majority of cases, however, the eyes become affected in the secondary, tertiary and the so-called parasymphilitic stages. One must also mention the fact that the eyes may be affected through hereditary transmission of the disease. During the secondary stages of the disease we may find a battle raging in the iris giving rise to an acute iritis. One must bear in mind the fact that fully seventy per cent. of all cases of iritis are caused by the spirochete. Here the battle rages in its fury for about six weeks after which the enemy is defeated and is compelled to retreat and evacuate the ocular regions. Not infrequently the enemy returns and we have a recurrence of the disease. In the majority of cases the enemy retreats leaving the visual powers intact and the patient is cured. In some cases, however, it is found after the enemy evacuated the ocular soil that great damage has been done and the previous normal condition can never be restored. This is especially true when the region of the ciliary body has been invaded simultaneously with the invasion into the iris. Vision in some cases may be markedly reduced; posterior synechia, annular synechia, occlusion and seclusion of the pupil are some of its sequelae. Where the vitreous has been the scene of conflict we can always find some evidences of the struggle long after the battle has subsided. The cornea is not infrequently chosen as the battleground. Both acquired and hereditary syphilis may affect the cornea. In the acquired form we find acute inflammation of the cornea which readily yield to antisyphilitic treatment. In hereditary syphilis the

corneal involvement is characteristic. It is usually seen in children and young adults. It runs a very long course, requiring months and even years for a cure. There is, however, a reduction in the visual acuity and not rarely because of serious complications partial blindness may result from this form of keratitis. The result of the struggle between the corneal cells and the spirochetes is of such nature that even years after the cessation of hostilities there are evidences of a former struggle visible in the interstices of the corneal tissue. In the struggle between the spirochete race and the human family the pupil in a majority of cases shows signs of permanent wounds. In fact the pupils are in a large proportion of cases diagnostic of syphilitic disease. A rigid pupil that does not react to light, that is not bound down by adhesions as a result of disease, or does not react to accommodation and convergence is a sure evidence of syphilis. So is the Argyll Robertson pupil an evidence of syphilis in its later stages, the parasyphilitic stage, the beginning of locomotor ataxia and cerebrospinal syphilis. The chorioid, the retina and the optic nerve are often involved in the disease. In these ocular tissues the disease may appear in either the acute or chronic form and may lead to a marked reduction in vision and in some cases to total blindness. The optic nerve affection appears either in the form of inflammation of the optic nerve, which eventually may lead to a postneuritic atrophy, or it may appear as a primary progressive atrophy without any inflammatory symptoms. The latter form always leads to total blindness. It occurs usually in the very late stages although I have seen several cases in young men occurring only three years after the initial lesion.

Optic atrophy is a frequent cause of blindness, and is, according to Magnus, responsible for twenty per cent. of the totally blind. The prognosis in syphilitic optic neuritis is rather favorable and in a majority of cases vision remains practically normal. Blindness, of course, may also be caused by chorioretinitis of syphilitic origin, and occasionally by chorioiditis. This occurs mostly, however, in neglected cases, that is, in patients who presented themselves late in the disease. The spirochete has another method of making its enemy helpless, by acting upon the muscular structure of the eye. One would almost think that the spirochete knows the anatomy of the human eye and thus skillfully, strategically attacks certain portions where it can do most mischief. It is certain that they have chosen the third nerve for their target. It may paralyze all of the branches of this important nerve or it may affect only part of its branches. We have therefore a condition known as ophthalmoplegia. Depending upon which part of the nerve is affected we have an internal, an external and a total ophthalmoplegia. In paralyzing some of the external ocular muscles the spirochete causes the patient to see double, giving rise to dizziness and vertigo. Occasionally only the levator palpebri branch is affected causing blindness by mere drooping of the lid.

A number of curative agents are at the disposal

of medical men to combat this disease. If, however, mankind wishes to live in peace it will have to find some preventive agent. The process of civilization must not be tainted by the process of syphilization. Since nearly all infections by this germ are the result of sexual intercourse one would think that the prophylactic element is in the direction of preventing such sexual pleasures. This is, however, impossible and perhaps not at all desirable. One cannot conceive a race of mankind so devoid of the essential life giving passions that it can withstand the sexual desires so burning and so urging. I do not think such race would have any chance to survive. It would be an inferior race. Individuals may reach a stage of continence and celibacy, but not a race. Education, however, can do a great deal in the preventive treatment of this disease. Early marriages, where the economic conditions permit their consummation have a great preventive value. Where early marriages are not possible general information on the subject of sexual cleanliness will do more in the direction of prevention than will all the government agencies that wish to make the race moral by force of law.

917 SPRUCE STREET.

NEURASTHENIA.

BY AUGUST SAUTHOFF, B. S., M. D.,
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Neurasthenia has long been regarded as nervous exhaustion and the correctness of this view becomes apparent when one considers the signs of fatigue that make themselves manifest after severe exertion. There is the same lack of resiliency of the nerves, the same inability to return to the normal. The first symptom of neurasthenia is fatigue. The patient feels weary, easily grows tired. He may awake refreshed but soon becomes absent-minded. He may even have the feeling as though the mind shuts down. Some patients are tired when they awake and remain that way, but others feel more active after resting the greater part of the day.

It seems difficult for the patient to think; everything seems so far away. It takes such an unusual effort to bring facts to the conscious mind where they can be used and the patient feels that he cannot make this effort, so he lets it go and assumes that he cannot think. Frequently the attempt to think causes a feeling of heaviness above the eyes or an actual headache. The normal rested mind can focus on any idea and retain on the fringe of consciousness that which has just gone before and also that which is to come, but the neurasthenic can only hold that which is in the centre. All the rest is out of reach; it seems to slip away. As a consequence, the patient assumes that his memory is poor. He complains that everything is so distant, that it doesn't come clear; that he can't keep himself together, and feels better when his mind is helped by some one; that whenever he tries to think, other thoughts crowd in and when he tries to centre his mind it causes acute suffering; that his mind works to suit itself. At times thoughts of the past keep

running through his mind; he loses the conversation, and catches himself letting go.

The neurasthenic patient is always irritable. Everything bothers him too much; he complains that every little thing goes right through him, touches his nerves on the raw, and makes him flighty for awhile; at times he gets so angry he knows nothing; he is easily offended; is quick tempered and likely to lose patience; he has spells when he is nervous, ugly and cranky. He complains that he can't be contented anywhere; he has such a miserable feeling; at times he would like to tear himself to pieces; he has such a desperate feeling, is all hemmed in. The insignificant annoys him just as much as the important and as a consequence, things seem to lose their relative values.

The patient complains that he cannot get interested in anything, cannot take comfort in anything, cannot apply himself to anything. The healthy mind is constantly seeking entertainment and holds those things before it that give rise to immediate or future happiness. The things that are concerned with future happiness are those that make up the central trend of the individual. The neurasthenic has no central trend. All things claim his attention equally and demand interest. Interest in anything means a striving toward that thing. His interests are distributed over so many subjects that he cannot take any particular interest in any one thing and pursue it. He has lost the ability to draw from other sources and direct energy along any one line.

As he cannot get interested in anything and as he cannot think readily, it is difficult for him to favor any proposition and so he cannot decide. Each side lays claim to equal consideration. He is always worried; is worried about everything; is in a constant state of tension. He never has a feeling of satisfaction or completion; nothing is ever settled with him. The neurasthenic is noticeably lacking in control. His will seems weaker. He complains that he wants to do things, but it seems as if mind and body do not work together. He wants to work, but then his mind says, "No, you can't do it." When finally he gets himself to do something, he works too fast.

He is always emotional, has not learned to check and restrain his feelings. The quantity of emotion released is in excess, consuming energy that is necessary to guide the thoughts and to initiate activity. He allows himself to be carried away; always goes the limit, dissipating his energy. He frequently works himself into a state of frenzy and after he is exhausted and his inhibitions weakened, he falls an easy prey to any shock. Moreover, it takes less to startle him and it becomes more difficult for him to recover his composure. As a consequence, he feels unable to cope with the situation, feels weaker in the face of obstacles to be overcome and a feeling of uneasiness and insecurity is developed. He complains that he is always uneasy, feels afraid and he does not know why, it seems as if something is going to happen. He always has the feeling as though things are not coming right. In most patients, however, actual fears develop. These need not necessarily result from the idea of wrong-

doing, but this emotion may become associated with any idea that is repeatedly impressed upon the individual when he is in an anxious state. There may develop a fear of death, suicide, loss of mind, syphilis, tuberculosis, heart disease, water, high places, people, harming some one. When the habit is once established it seems as if the energy usually sought its outlet in that emotional system. As he always has the feeling of not being well, he is forever trying to satisfy his mind with an explanation of his condition, and so when a new ailment is suggested to him he at once comes to the conclusion that that is the solution of the problem. Any one of his many symptoms might be interpreted as a sign of some serious disease. In this way he becomes hypochondriacal. It might also happen that he believes he is possessed of some disease as a punishment for some wrong he has committed.

At times there is a tendency for certain thoughts associated with painful feelings to recur and it is impossible for the patient to put them aside. These are the results of memories that were once pleasurable, but have since become associated with the feeling of reproach. While the thought is pleasurable, it may frequently be called up and will always be enjoyed; but when it is once attached to the feeling that it is wrong it then becomes disagreeable and whenever it recurs it is painful and the individual begins to fight against it. These obsessions may also be developed if an idea is repeatedly impressed upon the individual while he is in a state of dissatisfaction. Beside these mental symptoms there are always physical symptoms. These are numerous and may refer to any system or organ of the body.

The neurasthenic patient complains that he does not sleep. He may fall asleep after going to bed but in a few hours he awakes and remains wakeful for the rest of the night. It may be that he finds it impossible to sleep and that only towards morning he gets a few hours of rest. When he arises he feels more tired than when he went to bed. The cause of this insomnia may be found in the tension under which the patient finds himself. Tension causes an increased alertness and wakefulness. He suffers from headache, has a dull pain above the eyes, a full feeling in the back of the head and a heavy feeling in the vertex. There is pain all along the spine, but especially in the small of the back.

Among the more evident circulatory disturbances may be found palpitation, the patient complaining that he can hear his heart pound in his ear when he tries to sleep. There may be tachycardia or bradycardia. The patient complains of nervous trembling sensations in the arms and legs, in the epigastrium and in the chest. There may be a weak feeling over the entire body or in the arms and especially in the knees. At times there is a sinking sensation in the chest. The patient complains that he feels as though let down. He can feel his "blood-vessels relax," and his head grows dizzy. This increased irritability of the vascular system is one of the principal features of neurasthenia and may even account for some of the pains and various paresthesias. Most of the pains, however, are of a

neuralgic character and have been thought to be due to a decrease in the alkalinity of the blood resulting in an accumulation of the adrenalin which again in turn might stimulate the sympathetic system and aggravate the vicious cycle (Kretschmer and Keissel).

The patient complains of pains in the muscles and joints, arms and legs and especially the calves. There are sharp pains in knees and shoulders; the hands and feet may feel numb; sometimes there are crawling sensations that start in the soles of the feet and run up the back of the leg to the small of the back. At times it seems as if the cords are too short. At times there are burning, itching sensations in the skin.

There may be disturbances of the special senses as blurred vision, dark spots before the eyes, ringing in the ears. Hearing may be too acute or too dull. There may be a lack of taste and of smell. Gastrointestinal disturbances are among the most frequent complaints. There are indigestion, flatulence, eructations, anorexia, nausea and constipation. There are always genitourinary disturbances, such as frequent urination, burning urination and complaint of sexual weakness.

Some of these symptoms fall under the group of vagotonia. They are the same as those resulting from a stimulation of the greater vagus, viz., a hyperfunction in the respiratory, gastrointestinal and genitourinary systems, muscular and secretory, but with a slowing of the heart beat, decreased blood pressure and certain vasodilatation.

Some of the described symptoms fall under the group of sympathicotonia and are those resulting from a stimulation of the sympathetics. They are the opposite to those mentioned above. Kraus has recently compared the symptoms of vagotonia to those produced on the withdrawal of morphine in habitués, and he concludes that this latter condition results from a disturbance of the balance of the two opposing divisions of the vegetative nervous system or from a sensitization of the vagus. Incipient pulmonary tuberculosis frequently gives rise to symptoms of vagotonia and has often been diagnosed as neurasthenia. Influenza, and especially the myocardial weakness following, presents vagotonic symptoms.

Endocrine disorders of the parathyroids, pancreas and thymus cause vagotonia; while disorders of the adrenals, hypophysis and sex glands produce sympathicotonia. Cannon has shown that fear, anger and pain cause sympathicotonia. Desire and infectious diseases produce the same result. It does happen, however, that in some instances fear brings on vagotonic symptoms. Goitre, as a rule, brings on sympathicotonia, but occasionally it causes vagotonia. This has been explained on the ground that when the nervous disturbance which travels along the sympathetic fibres is excessive, and when the extended vagus system is especially sensitive, the disturbance overflows onto the other nervous tracts.

The vagus system and the sympathetic system keep the visceral tone in a balanced condition. When one or the other is overactive a state of un-

balance is produced which is registered in the mind as discontent. This unknown discontent that cannot be subdued by the patient causes the feeling of insecurity. This latter feeling predominates in neurasthenia. The individual is constantly looking for something to produce internal calm or contentment. Under normal conditions this is produced by the satisfaction of various wants or when the emotion is allowed to drive the individual to carry out its aim. If, however, conditions are such that the emotion persists and the individual is subjected to this constant strain, exhaustion results and neurasthenia is produced. In the instances just enumerated the neurasthenic condition is the result of emotion added to some disease; in true neurasthenia the symptoms result from emotion acting on a predisposed nervous system.

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NEW NEEDLES FOR SEWING IN DEEP CAVITIES.

By ALFRED KAHN, M. D.,
New York.

The needles herein described are made with the idea of facilitating the coaptation of wounds in deep or narrow cavities, as in the throat or nose. As now used these needles are fashioned somewhat after the pattern of the aneurysm needle, the thread being passed through a carrier. Both sides of the wound to be sewed must be coapted onto this long needle or carrier. The technic requires an extreme amount of patience, which to say the least is very tedious, for the thread must be carried through both sides held in position by a pair of forceps, while the carrier retraces itself in order to get the ligature through and properly tied. The needles here shown overcome many of these difficulties and lessen the tediousness of the technic.

TECHNIC AND DESCRIPTION OF NEEDLES.

In this method, two needles are used, a female needle (Fig. A) and a male needle (Fig. B.) The illustration shows that the female needle has three needle holes, one vertical and two horizontally placed; the thread is passed from one side of the needle to the other, across the vertical opening (Fig. A). The male needle is sharp pointed and

notched, so that it is able to pick up the thread from the female needle. The male needle is arranged upon the stylet cannula principle. It is the stylet part of the instrument that is notched, so that when the thread is picked off the female needle, the stylet can be drawn up to the cannula, with the result that

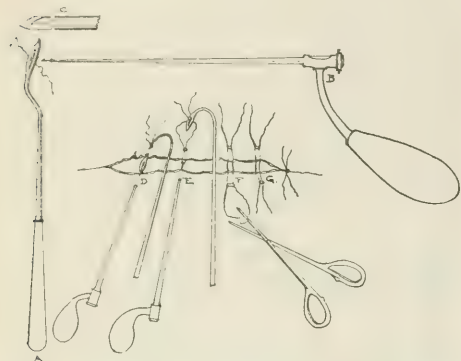


FIG. 1.—Diagram of needle designed for sewing in deep cavities and plan of technic.

the male instrument is now closed, having in effect turned itself into a needle, the notched point stylet end now having been closed. As will be seen in illustration (Fig. C), it is now not necessary for either carrier to be itself carried through both edges of the wound. The female carrier pierces one side of the wound, the male carrier pierces the opposite side of the wound. The male carrier then hooks the thread from the female and pulls it directly through; the stitch is then looped toward the male side. The ligature can now be drawn through and tied; or the loop can be cut through by a pair of scissors, and two sutures made instead of one (Figs. D, E, F, G, demonstrate this technic).

50 EAST FORTY-SECOND STREET.

SURGERY AT A BASE HOSPITAL.

By ADDISON G. BRENIZER, M. D.,

Charlotte, N. C.,

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TABLE NO. I.

Total number of admissions to this hospital.....	23,288
Number of deaths.....	420
Deaths from pneumonia.....	284
Total number of surgical cases.....	17,466
Number of deaths, entire service.....	77
Number of deaths, operated cases.....	52
Number of deaths, pneumonias.....	3
Number of deaths, empyemias (operated, 57).....	12

Although large numbers of influenza patients were brought in close proximity to surgical wards and some of them placed by mistake in surgical wards, I have not been able to find a single case of this disease caused by this temporary proximity.

In spite of the fact that, at first, empyema patients were operated upon very early and often when the pneumonia had scarcely resolved, autopsy reports failed to show a single case where death

followed when a single pleural cavity was involved; they all showed multiple serous membrane involvement: double empyema; pericarditis, or peritonitis. I am persuaded that early operation before the pneumonia is resolved and while the fluid is thickly purulent is a mistake. All patients with a single sided empyema, with thick pus, where the pneumococcus was the organism present, finally did well. On the other hand, those showing streptococcus organisms required secondary operation in several cases. Irrigating the chest with Dakin's solution, in late cases, hastened recovery. I believe the Italian method of draining the chest under negative pressure, with incision closed around drain and the cavity alternately washed with Dakin's solution and drained in a closed circuit to be far superior to any method I know. All our thoracotomies were done with local anesthesia.

Abdominal cases should be held at the front twelve days before transportation, if possible. Even when the peritoneal cavity had well taken care of the presence of foreign bodies and operation, the wound in the abdominal wall frequently broke down before the twelfth day or later. Secondary abscesses of the abdominal wall were not uncommon. One case depended upon gauze packing as a hemostatic, rather than care for bleeding points. This was a case of developed intestinal obstruction, where I found numerous loops of small intestine matted around a large gauze packing. Patients with through and through chest wounds traveled with little inconvenience; septic cases and patients with open sucking wounds should be held at the front for a time. The patients most injured by travel were those with compound fractures of the femur and with wounds of the knees and head.

Patients with wounds arriving at the base were usually in the following condition when dressed respectively with:

1.—*Dry gauze*: In clean wounds the gauze adhered, in septic wounds the gauze acted as a stopper of wound discharges. Packing wounds with gauze seemed to make the operator careless in regard to hemostasis.

2.—*Dichloramine-T*: No wounds received had been dressed with dichloramine-T.

3.—*Protective gauze*: Wounds left wide open and dressed with a simple protective of gauze laid on, gave better results than when packed with gauze.

4.—*Rubber tubes*: There was no advantage in drainage with rubber tubes in wide open wounds and there were a few cases of hemorrhage from erosion of vessels from pressure.

5.—*Carrel-Dakin*—The cleanest wounds were those amply filled with soft Carrel tubes, through which Dakin's solution had been administered *en route*.

6.—*Vaseline gauze*: Vaseline gauze was worse even than dry gauze; its power of absorption of wound secretions and its draining power were almost entirely lost and the wounds gummed with vaseline were more septic.

7.—*Bipp and flavine*: No wounds received had been dressed with these preparations.

GAS GANGRENE.

(Seventeen cases, three deaths).

All of the following factors predisposed to gas gangrene in the following order: Ligation of main artery of limb; insufficient débridement and tight packing of wound; tight bandages and low vitality from shock and hemorrhage. Local operation was indicated for the drainage of pent up secretions and amputation only when the circulation below the point of injury was considerably interfered with and when the life of the patient was at stake from a severe general toxemia. We were very conservative in our amputations and even in our local operations in cases of gas gangrene and usually limited ourselves to a minimum of manipulation after the administration of Bull and Prichett's antigas serum.

We found antigas bacillus serum (Bull and Prichett) of great value both as a prophylactic measure and in early treatment and administered it in all cases where the clinical appearance of the wound and bacterial findings enabled us to make a diagnosis of either gas gangrene or gas bacillus infection. I may cite one among several rather severe cases: A large wound of thigh and buttock with flowing foul muscle, crepitation over thigh, buttock, back and abdomen, which subsided on the giving of antigas serum in doses of 20,000 units intravenously. It is certainly not justifiable to base local operations and amputations on bacterial findings alone. One must distinguish gas gangrene, mixed gas bacillus infection and the presence of the gas bacillus in the wound with no clinical evidence of its presence. In gas gangrene the general range of temperature is high and there is a moderately fast pulse at first, followed by a moderately high or low temperature and very fast pulse. Following this sequence, a fast pulse is a bad sign.

We found the gas bacillus so often in well debrided wounds, where the muscle was well supplied with blood, that I feel well persuaded that the gas bacillus attacks almost altogether devitalized muscle. When the infection is well set in and the wound is foul and the muscle fluid, the muscle and subcutaneous tissue and fat are attacked, but probably only after the vitality of the tissue is lowered by the mixed infection through the swelling of the parts or a thrombosis.

DÉBRIDEMENT.

A thorough débridement may be expressed as a wide opening and the removal of all foreign material and devitalized tissue to the entire depth of the wound.

The principal errors in débridement were cutting across important structures, waste of skin covering (important for secondary suture); not carrying the incision to the extreme depth and perpendicular with the skin; and insufficient removal of bone fragments. The rule that all bone fragments attached to periosteum may be left could not be slavishly adhered to.

TETANUS.

(Five Cases, Four Deaths.)

All of our cases of tetanus were of the classical form and we observed no abnormal forms of

tetanus in our small series. The one recovery was a case of slow incubation, the others had an incubation period of from five to eight days. In one patient after three injections of antitetanic serum followed by operation, tetanus developed in seven days. This, of course, was not the attenuated type developing slowly after a prolonged incubation period, but the encysted *Nicolaier* bacilli were not reached in the wound cleansing and were set free, to develop in the tissues. The operation was a simple secondary closure of wound and the patient died, the only death in a series of almost a thousand secondary wound closures. Since this patient had received three injections of antitetanic serum before the operation and still was not protected, it illustrates the importance of the two factors in the prophylaxis of tetanus, namely: a, complete cleansing of the wound and b, preventive antitetanic serotherapy. In spite of the history of this case, the one patient whose life was saved made his recovery after 7,000 units of a tetanic serum had been given subcutaneously and intraspinally. While our results were bad, they correspond fairly accurately with the reports of Leishman and Smallman (1) and German observers, who report mortalities in a large number of cases of 73.7, 78.2 and 70 per cent.

The following is a classification of the abnormal forms of tetanus recognized largely by French writers:

- A.—Splanchnic tetanus.
- B.—Cephalic tetanus: 1, nonparalytic type; 2, paralytic type; 3, with paralysis of the motor nerves of the eye; 4, with paralysis of the hypoglossal.
- C.—Unilateral tetanus.
- D.—Tetanus of the limbs: 1, monoplegic form; 2, paralytic form.
- E.—Localized tetanus: Abdominal thoracic type.
- F.—Attenuated tetanus: developing slowly after a prolonged incubation.

All these abnormal types show a relatively long incubation period and usually offer considerable hope, when treated with serum, large doses of chloral, carbolic acid locally and magnesium sulphate (Meltzer).

With the exception of the serum reaction, exhibited in our cases by urticaria and asthma, easily relieved by a few drops of adrenalin, there is no objection to giving repeated doses of antitetanic serum and certainly no objection after a period of from seven to ten days. We have found the tetanus bacillus in wounds without local or general symptoms from this bacterium; they were cleansed with Dakin's solution and closed.

SECONDARY CLOSURE OF WOUNDS.

(960 Cases.)

We distinguish, a, primary wound closure; b, delayed primary wound closure; and c, secondary wound closure. Almost all of our wound closures were after the fourth to the sixth day and before the twelfth day.

Our secondary wound closures were almost entirely controlled by bacteriological findings. Smears were made on swabs and placed in culture tubes and sent to the laboratory. These swabs were wiped over the wound everywhere, shaken off in serum broth, incubated for twenty-four hours, smeared on a slide and stained by Gram's method. The strep-

tooccus and gas bacillus were detected microscopically by the fact that they retained Gram stain, by their manner of growth and their morphology. The laboratory reported on as many as 168 such cultures in forty-eight hours. We entirely disregarded quantitative bacteriological examinations as prescribed by Carrel and depended entirely on these qualitative cultures. All wounds not showing streptococcus and gas bacillus and which had had sufficient antitetanic serum within ten days (at least two doses) we closed immediately by our technic of secondary wound closure. This technic mechanically removed the bulk of the bacteria. When the streptococcus was found present the wound was treated with Dakin's solution, after the Carrel method, until the streptococcus appeared no longer in cultures. When the gas bacillus was found, the wound was similarly treated and Bull-Prichett gas bacillus antitoxin was given. The wound when very moist and covered with necrotic tissue was frequently chemically scoured with Dakin's solution.

Our effort was always to close wounds before the twelfth day, before the epithelial edge was laid down and the skin retracted too much. We considered of importance: a supple elastic skin, a débridement *en masse*, so as to mechanically remove the bulk of all bacteria, a sufficient undermining of the skin, that it might be readily closed without tension, and a careful hemostasis.

Technically we operated as follows: The entire area surrounding skin and granulation tissue were well cleaned with ether and painted with iodine; the whole granulation tissue area was surrounded by a sharply cut incision, perpendicular with the skin surface, and the skin undermined for some distance outward; with the skin edge retracted outward, the granulation and underlying scar tissue was dissected off in bulk and in a continuous mass down to supple bleeding muscle; a careful hemostasis was provided for; the raw area was again sponged over with half strength iodine, dead spaces, facial planes and muscle united with catgut and finally the skin edges brought together without tension with silk worm gut and fine catgut.

We had a ninety-six per cent. healing *per primam* or a gain of at least eighty-five per cent. for surface covering. Approximately sixty-five per cent. of these men were returned to duty, the other thirty-five per cent. were reclassified, owing to the extent of the wound, or bone, joint, tendon or nerve involvement.

In only one case did we have a loss of either life or limb and this was the case of tetanus referred to, following a secondary wound closure, though the patient had received three doses of antitetanic serum and the last dose less than ten days before the operation.

PREOPERATIVE CASES.

The types of cases which did not require operation were perforating and penetrating, usually perforating, rifle and machine gun wounds with the exception of the abdomen and head. Such cases with few exceptions and even those with fracture have done remarkably well. Perforating rifle and machine gun wounds of the soft parts and even many of the chest and those causing fracture could

be evacuated after forty-eight hours without injury and remain so at the base for healing.

The advantages of the preoperative train are a ready evacuation and relief of congestion at the front and the opportunity of temporizing in doubtful cases. The disadvantages of the train are lack of equipment for caring for the wounded and for feeding them en route and especially the care of those who were improperly selected.

CHEST SURGERY.

The indications for operation at the front in chest wounds are: Open sucking wounds, hemorrhage, the removal of splintered bone, and large foreign bodies. All chest wounds did best when primarily closed.

The indications for operation at the base are: Empyema; chiefly foreign body causing suppuration; hemorrhage or excessive pain and aspiration even after hemorrhage; with two weeks elapse and blood in the chest.

By far the greater number of our chest operations were done under local anesthesia. I have carried local anesthesia to the point of resecting two ribs with a flap of the chest wall for exploration and again, in a conspicuous case of a French captain, of opening the chest, elevating a first and second rib torn from the sternum and fixing the ribs to the under surface of the pectoral muscles, at the same time using the pectoral fascia to wrap, fix and elevate a fractured and depressed clavicle. The injury was caused by the tongue of a wagon which contused and broke in the chest wall.

Where a general anesthesia was needed, we found chloroform and chloroform followed by light ether useful. The use of nitrous oxide and oxygen, with the idea of inflating the lungs, we considered a disadvantage in cases tending to hemorrhage. Hemorrhage was frequently controlled on the collapse of the lung and the pressure of the accumulated blood, which was aspirated after a period of two weeks and the lung allowed to expand. Important in the technic of chest surgery is the position, enabling the patient to use the uninjured lung as much as possible. It is rare that the chest can be most advantageously opened through the classical route by resection of third and fourth ribs in front. In operating it is better technic to follow the tract of the missile and thus be able to clean away all débris and devitalized tissue down to the foreign body.

After operations on the chest the patient should be propped up and inclined to the injured side; after hemorrhage the chest aspirated, only after a period of ten days to two weeks. If fluid remains and the wound left closed, unless the fluid becomes purulent and the patient appears septic, a thoracotomy should be done for drainage. In the future there will be little need for the negative pressure cage as used by Willy Meyer. My fear, a collapse of a single side of the chest, has almost disappeared.

SECONDARY HEMORRHAGE.

Secondary hemorrhage occurs almost always in septic cases.

The bleeding vessel should be ligated at a secure point above the site of bleeding. Time is lost by otherwise temporizing with local ligations and packings. Moreover such an attempt may end in disaster, for the vessels in a badly infected wound are frail and friable and are apt to pinch off or cut through or bleed again from collaterals. It is surprising the failure of gangrene to appear or the low limit of gangrene even in high ligation in a case of slowly developing secondary hemorrhage. I have ligated the brachial above the elbow without gangrene and the femoral above Poupart's ligament with gangrene limited to the foot.

Predisposing causes of secondary hemorrhage are: Failure to tie proper knots; lack of absolute fixation of compound fractures of the limbs; improper selection of ligature material when Dakin's solution is to be used; pressure and erosion by drain tubes; and above all, sepsis. Silk is rapidly broken up in Dakin's solution, followed by chromic catgut, to a less extent plain catgut, and finally linen resists the fluid. This fact should be well known but unfortunately it is not.

The treatment of secondary hemorrhage is the replacement of the blood lost by transfused blood, water by mouth and rectum and ample feeding.

KNEE JOINTS.

Through and through rifle and machine gun wounds of the knee joint compared most favorably with operative results and these patients should not be operated upon immediately. After débridement of the knee, I should advise in scale of preference: Complete closure; closure of capsule and fascia; and leaving the wound wide open. With the knee joint, just as with the abdomen, the synovia like the peritoneum, will frequently resist infection, while the subcutaneous tissue and fat will break down in pus. Due to the structure of the head of the tibia, with its honeycombed cancellous tissue, the shattering of the head of the tibia is more serious than the shattering of the condyles of the femur. Sepsis and infections of this bone tissue have been very severe and stubborn.

Knee injuries with marked bone shattering, or those containing foreign bodies not immediately removed, and those markedly septic demand immediate amputation. A long continued streptococcus infection of the knee usually necessitates amputation.

Our attitude has been one of extreme conservatism regarding amputations and our results in cases which finally resulted in amputation would suggest that we had erred on the side of conservatism, when we finally did amputate. In our effort not to amputate at all, we had the tendency to wait too long at the sacrifice of the man's general condition. There were cases of excision of the patella showing good functional results but the tendency was to a weakened knee and genu recurvatum. With the patella lost as the fulcrum of the long arm of a lever, the extensor muscles and tendon above the knee, and of the short arm of the lever, represented by the tendon below the knee, the patellar ligament serves with difficulty the function of extension. In this case, the knee must be thrown in a

backward curve and the ligament allowed to act as a string to a bow. Compared to the normal, the function was far from good.

Knee joints should be mobilized as soon as possible. The difficulty of forcing patients to use a painful joint is very great. We have had little success in mobilizing the particular joints at this base due to their septic condition and their severity. In five cases of purulent gonorrheal arthritis of the knee joint, with a large trocar and rubber tube I aspirated the joints, washed them out with boiling hot salt solution, and bound the knee down for three days. After this I placed the patients on their feet and made them use their joints. Four of these knees showed almost perfect motion and the patients were returned to duty; the fifth patient was discharged in less than three weeks and the case was not followed. This procedure I had carried out formerly in civil practice with excellent results. All strong antiseptics should be barred from use in the treatment of wounds and infections of the knee joint.

ANTISEPTICS.

Of all chemical antiseptics our attention was confined to mercury salts for our hands, alcohol and iodine for skin in cases coming to operation and for wounds when closed, and Dakin's solution largely as a cleansing agent for ridding the wound of necrotic tissue, slough and secretions and in reducing the bacterial count to a minimum where the streptococcus or Gram staining bacilli was found. Antiseptics available at the front are limited largely to iodine, mercury salts and alcohol. I believe there is not much advantage to be gained beyond the addition of Dakin's solution.

ANESTHETICS.

Our nurses served most efficiently as anesthetists in administering gas oxygen, ether and chloroform. The objections to an efficient nurse anesthetist are her lack of medical training and her interpretation of the condition of the patient, her inability to assist in certain emergencies, where the man and physician might excel, coupled with her natural physical weaknesses and inconveniences brought about through a consideration of her sex. I feel that the anesthetist should be a physician well trained in giving anesthesia and able to assume responsibility for the patient to the surgeon and not look to the surgeon otherwise engaged. Our nurse anesthetists were excellent, but I never saw them fail to look to the surgeon to take the whole responsibility in cases of emergency.

Local anesthesia was widely used in head injuries, in operations upon the chest, where inhalation anesthetics were contraindicated on account of infections or affections of the respiratory tract, in closure of smaller wounds and in dental surgery. Spinal anesthesia was of advantage in cases of shock, especially combined with gas oxygen or a preparation with morphine and, scopolamine. In this way not only was a satisfactory anesthesia obtained, especially below the waist, but at the same time, the conditions of an anociassociation cared for. Gas oxygen and gas oxygen combined with light ether is the anesthetic of choice in shock cases and

depleted patients. The period of recovery was certainly lightened in such cases. I have rarely seen, even in the hands of experts, a sufficient relaxation of muscle for abdominal operations under gas oxygen alone. I feel that the additional retraction and packing, necessitated by an insufficient relaxation, is more damaging to the patient than the addition of a little ether. We disapproved of gas oxygen in chest cases with a chance of hemorrhage.

Gas oxygen has offered a ready and easy induction and relieved excitement where cases were gathered together in the rush of the operating room. The ready induction allowed for an immediate beginning of the preparation for the operation without the consciousness of the patient. Chloroform, though certainly far more dangerous, was used as an induction anesthetic to ether. A ready induction was important to us, for we did as many as ninety-eight operations in a single day and operated with three tables in one room and two in another adjoining room. We had no experience with Depage anesthesia or other colonic anesthetics and felt opposed to this form of anesthesia on the principle of indefinite doses and inability to recovery an overdose.

FLUIDS.

Sodium bicarbonate in two per cent. solution raised the blood pressure more quickly and more actively than salt solution. Its effect was probably less transient.

Saline given intravenously was of value in restoring the volume lost through hemorrhage and in temporarily raising blood pressure, but this effect was soon lost. When a large volume of blood had been lost, the result was temporary and very likely would not hold the patient through the emergency. Water by rectum was absorbed as readily if not more readily than saline subcutaneously. For the continued effect, saline intravenously should be followed by water by rectum and by mouth. Even then, when the volume of blood lost is considerable, one is leaning on a very slender reed. The patient needs blood. Gum salt should take an intermediate position between saline and blood. We were prejudiced against gum salt by reports from the front and therefore never gave it a trial.

BLOOD TRANSFUSION.

It is very difficult to define and state the difference in effect of whole blood and citrated blood, blood into which a chemical reagent like sodium citrate is mixed to prevent clotting. I do not think the decreased coagulability of the recipient's blood is of much importance and this decreased coagulability is temporary, not lasting much longer than twenty-four hours. In the army, where the problem resolved itself into restoration of blood volume lost, the results with citrated blood were amply good. In depleted and long standing septic cases, as observed in civil practice in pernicious anemia, whole blood probably gives quicker and better results. The object of a blood transfusion in these cases is not only to raise the volume but actually to make a viable red cell graft into the blood stream. I am not at all sure that citrate may not somewhat disturb the viability of the grafted cells.

I found the apparatus furnished by the army rather complicated and difficult to handle and tubes like those of the Kimpton Brown or Vincent type necessitated too much of an operation for a blood transfusion, on account of the destruction of veins of the recipient and frequently of both donor and recipient. I devised an ampoule of 500 c.c. capacity, drawn out to tubes at both ends and with one end bent into a U curve, the other straight. Two to three grams of citrate in a fifty c.c. salt solution were drawn up into this ampoule, the ends sealed in a flame and the ampoule thus sterilized. The ampoule was fitted with a rubber tube holding a needle on to the lower straight end and the upper bent end was hooked into a noose of bandage around the neck of the operator. The operator was able to use both hands in preparing both the donor and the recipient. The citrate was present in the ampoule to meet the blood as it ran in. By means of a second rubber tube holding a glass mouth piece and fitted on the top of the ampoule, it could be blown or sucked upon and thus the flow in and out of the ampoule regulated. We had neither hemolytic nor protein reactions in our cases of blood transfusion as they had all been carefully grouped. We had good success in patients with prolonged infections, both immediate and remote. Available sources of blood were gassed men and the lightly wounded. We did not recommend using our personnel. The difficulty of finding donors was never experienced at the base as at the front. We used only properly grouped healthy donors and had no trouble in finding sufficient volunteers.

AMPUTATIONS.

The value of the guillotine operation was its rapidity; the conservation of the part and it offered an open surface, free from pockets for drainage and for access of antiseptics. Under constant traction, the skin pulled down, and frequently, healing of skin took place without secondary closure. The mediotalar amputation is not justifiable in war surgery. There should be no compromise in disarticulations, resections and attempts at bone plastics in infected war wounds. The lower third amputation is preferable to an attempt to conserve by the Symes operation. There was no compromise of the amputation by a consideration of the terminal scar in war surgery. Where conditions were favorable we looked for a lateral flap to supply stumps for the lower extremity and terminal scar for the upper extremity. We recommended no operations through the elbow and knee joints. A stump of four or five inches was left below the knee and one of at least three inches below the elbow. Bones of stumps finally became covered with fibrous tissue and bone callus; they rounded off and actually became drumstick in appearance. It is just as well that they be left parallel at the time of the operation.

HEAD INJURIES.

All lacerations of the scalp should be explored for fracture since radiographs of the skull are often misleading. Foreign bodies in the brain should be accurately localized and removed. No drainage

should be left in the brain. The magnet was useful in extracting foreign bodies from the brain and allowed for extraction without damage by opening and closing of bullet forceps or other instruments. The manipulation of such another instrument through the uncertainty of its grasp is likely to do considerable damage to the brain substance. We saw several late abscesses of the brain which, in every case except one, followed the leaving of foreign body and debris in place. They did well with secondary drainage down to the bone.

This résumé of certain problems at the Base Hospital is offered in narrative form and drawn from answers to a questionnaire put out by the Research Society of the American Red Cross Society in France, under the secretaryship of Colonel Seale Harris. These are approximately my answers to his questions, preparatory to a conference which was to have been held in Paris but which never took place.

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609 NORTH COLLEGE STREET.

LETHARGIC ENCEPHALITIS.*

Report of a Case.

By HYMAN HERSHBERG, M. D.,

New York,

Captain, Medical Corps, U. S. Army; Neurologist to Base Hospital No. 69, Savenay, France.

CASE.—L. J., aged twenty-two years, white, single. Chief complaints, drowsiness and double vision. Family history, negative. Previous history, exanthemata including scarlet fever in childhood; denies venereal infection.

History of present illness.—His present illness began suddenly on December 24, 1918, with dizziness, headache, fever, and double vision. A few days later, he became very drowsy, and was almost stuporous. He suffered from marked constipation and had frequently a buzzing sensation in both sides of the head. He had a chilly feeling in the morning and fever in the evening. Since the onset of the illness, he had difficulty in passing urine, especially in starting the stream. He was admitted to Base Hospital No. 69 on January 6, 1919, complaining of marked drowsiness, constant tendency to sleep, double vision, and general malaise.

Physical examination.—Patient appeared drowsy; no cutaneous, muscular or osseous abnormality; no adenopathy except inguinals; throat showed no infection; tongue clean; teeth negative; heart, lungs and abdomen negative; external genitalia negative.

Neurological examination (January 10, 1919).—Marked weakness of the muscles of the right side of the face; weakness in drawing up the right corner of the mouth, closing right eyelid and wrinkling right forehead; quivering about the right side of the mouth; deviation of uvula to the right; active movements of the arms and legs good; no Kernig; no Babinski; no abnormal reflexes; all abdominal reflexes present; no ataxia; no objective sensory

findings; no astereognosis; no involvement of muscle joint tendon sense.

Ophthalmological examination (January 11, 1919).—V right 20/50; left 20/30. Right pupil is larger than the left. Both pupils react to light accommodation and consensually. Nystagmus on looking to the left with fleeting diplopia. Eye grounds normal.

Otolaryngological examination (January 11, 1919).—Larynx negative. Mouth, deviation of uvula to right. Nose, right side completely occluded by deviated septum passing against the middle turbinate. No pus to be seen in nose or throat. Ear drums are slightly retracted.

Laboratory findings.—Spinal fluid (January 17, 1919), twenty c.c. clear fluid under slightly increased tension; globulin negative; five cells one c. mm.; no growth; smear shows no bacteria; Wassermann reaction negative.

Blood.—January 7, 1919, negative for malaria; red blood cells 4,810,000; white blood cells 11,800; polymorphonuclears, sixty-two; small mononuclears, thirty-five; transitionals, three. January 16, 1919, white cells 15,600; small mononuclears, eighteen; large mononuclears, three; polymorphonuclears, seventy-nine. January 17, 1919. Wassermann reaction, one plus.

Urine.—January 9, 1919, amber colored, clear, acid; specific gravity, 1.030; albumin negative; sugar negative; occasional white blood cells; calcium oxalates. January 14, 1919, color light straw, clear, alkaline; specific gravity, 1.008. Albumin negative; sugar, negative; few urates.

X Ray.—January 21, 1919: No evidence of mastoiditis.

Temperature.

January	a. m.	p. m.
8th.....	101°	101°
9th.....	98°	100.2
10th.....	100	100
11th.....	100	99.2
13th.....	99	99.6
14th.....	99	99.8
15th.....	99.8	99.8
16th.....	100.6	100.8

Clinical course.—January 16, 1919: Right facial palsy distinctly more marked; patient aroused with difficulty from his drowsiness; right pupil slightly larger than the left; evidence of weakness of the left sixth nerve.

January 31, 1919: The upper facial group of muscles is distinctly weak. He does not close the right eye completely, nor does the occipitofrontalis or orbicularis palpebrarum contract well. The left side of the face is also paretic. The left eyelids do not entirely approximate. He cannot frown nor wrinkle the forehead.

February 10, 1919: Examination shows but little evidence of condition noted on previous examinations. He wrinkles the forehead normally. On showing teeth, both sides of face show about the same degree of movement of facial muscles. His drowsiness has disappeared. He gets up from bed and walks about the ward without difficulty. During the following days of February all signs and symptoms of the disease disappeared and he was discharged from the hospital completely improved.

*Authority to publish granted by the Surgeon General, U. S. Army.

Conclusions.—During the acute stage of the disease, the presence of cerebral neoplasm involving the pons was ruled out by the high temperature and the absence of any eye ground changes. With the sudden onset of the disease associated with fever, dizziness, marked drowsiness, paresis of one facial and the subsequent involvement of the other facial, fleeting diplopia nystagmus with the partial involvement of the left sixth nerve, followed by improvement and the disappearance of all signs and symptoms, it would seem probable that an infective process was the underlying cause of this case of lethargic encephalitis.

LONDON LETTER.

(From our own correspondent.)

Reclassification and Treatment of Pensioners in Great Britain.—Helping the Disabled.—St. Bartholomew's Hospital Peace Fund.—New Hospital in London with Low Fees.—The Labor Party and Health and Sanitation.

LONDON, November 8, 1919.

The question of how to deal equitably and justly with the enormous army of pensioners in Great Britain, and at the same time as economically as possible, so as not to press too hard upon an already overtaxed population, is greatly exercising the minds of those who are in charge of the Ministry of Pensions. It goes without saying that more depends upon the medical members of that Ministry than upon any other members. How to estimate the amount of the pension and adjust that amount fairly to disabilities brought about by the war to individual claimants is an almost incredibly difficult task. A discussion on the subject took place at the rooms of the Medical Society of London on October 27th last. The discussion was opened by Col. A. L. A. Webb, C. B., C. M. G., A. M. S., who is the chief of the medical department of the Ministry of Pensions. Colonel Webb gave a clear and succinct account of the problems to be faced and the manner in which the medical department was dealing with them. Capt. R. McNair Wilson, who took part in the discussion, brought up some very interesting points. For instance, with regard to that form of heart affection so prevalent among soldiers and the irritable heart of soldiers, Captain Wilson pointed out that almost invariably it was not a true heart affection, that it was symptomatic not fundamental and due more often than not to infection on toxemia generally arising from dysentery, malaria, or trench fever, especially from trench fever from which there are probably 500,000 soldiers in Great Britain suffering at the present time. If a man infected with malaria comes for medical examination for a pension on one of his bad days, perhaps has had rigors the night before, his heart will be in a disordered condition and he will be awarded a high pension. Whereas a man who may be equally badly infected with malaria but comes on one of his good days will get a low pension. Mere functional tests of capacity are of little use, the first cause must be sought for and found. Neither is it wise to send these men to a specialist, for if he is a heart specialist he will look no further than the heart; if he is a neurologist

he will look no further than the nervous system, and so on.

Major Bynam, who followed, corroborated the statements of the previous speaker by some facts drawn from his own experience. He said that in more than one case in which heart disorder had manifested itself, he had proved by carefully conducted tests with lice that the subjects were suffering from trench fever.

Among the many questions asked during the discussion none was more to the point than that by Dr. de Havilland Hall, who inquired whether those applying for a pension by reason of disability incurred in military service could refuse an operation or other means of treatment if advised by a medical man, and whether this refusal constituted a cause for the denial of a pension. Colonel Webb in answering this question said that like a civilian a wouldbe pensioner could refuse an operation if he thought fit but that this fact would be taken into consideration when estimating the amount of pension. In short, a good deal is left to the discretion of the pension authorities in such a case.

Dr. V. Warren Low, president of the Medical Society of London, made some pertinent remarks in a speech reviewing the discussion. He said that in many respects the pension system was demoralizing and open to a good deal of abuse. He gave as an example the Civil War pension system of America, in which country he understood that the cost of the pensions nearly seventy years after the war was more than a few years following the end of that struggle. He also said that he had heard that the pension lawyers were the greatest beneficiaries. Dr. Low interpolated a tale exemplifying somewhat the manner in which cases for compensation are engineered. Some little time after the workman's compensation act came into force Mr. Low was told by his assistant at the hospital that a patient in one of the wards required a gastroenterostomy for the relief of a gastric ulcer. He went up to see the man, asked him if he had any symptoms, such as pain, hematemesis, and so on, and the patient said no. "Then why do you think you have a gastric ulcer?" "Because I am getting compensation for one." It appeared that when working at his trade, he had spat a little blood. This alarmed him and he went home. However, no further bleeding occurred or other symptoms and doubtless he would have returned to work and things would have gone on as usual. Unfortunately he described the situation to a friend who advised him to apply for compensation. Well, to make a long story short, his case was diagnosed as gastric ulcer and he received compensation. The sequel is funny. On account of receiving this compensation he could get no work, so that the man in rugged health was debarred from work and from receiving good wages and had to live in idleness and comparative poverty. Finally, in despair he went to a hospital to be cured of a disease from which he had never suffered and thus once more be able to take his rightful place as a man sound in mind and limb and fully able to earn his living by the sweat of his brow. But he could not even do this and had to go through life with the handicap of being supposed to have a

gastric ulcer. There seems to be a moral attached to this tale, a moral which might be taken to heart by some who apply for pensions. Colonel Webb said that in many ways in the future more strictness and discretion would be employed in the medical estimation of the disabilities of those who were candidates for pensions.

* * *

The Lord Mayor of London recently gave a luncheon at the Mansion House to inaugurate an appeal for aid for St. Bartholomew's Hospital. The governors of the hospital are faced with the situation that the cost of the institution's maintenance has risen from approximately £90,000 (\$450,000) for the year ending 1914 to £122,000 (\$610,000) for 1918, during which year subscriptions fell to £11,309 (\$56,545). The management has curtailed expenses in every way possible, the convalescent home at Swanley has been closed, and up to the present time has studiously refrained from constant appeals for funds. But the time has now arrived when this course is imperative if the great work which St. Bartholomew's has carried on uninterruptedly for nearly 800 years is to be maintained and extended.

The hospitals of Great Britain generally are in a worse state financially than St. Bartholomew's. The latter is very well endowed, whereas the majority of the others have little or no endowment and must depend on charity almost if not quite wholly for their maintenance. It seems that the days of the voluntary hospitals of Great Britain are nearly numbered and that the American pay system will be adopted.

As an evidence of the trend of affairs in this direction the announcement has been made recently that the Mildmay Hospital, Mildmay Park, London, which since the year 1884 has been a free hospital for destitute persons, is about to embark upon a scheme of alteration and improvement with a view to providing medical attendance to the poor and respectable middle classes at a very low weekly rate. The committee of the Mildmay Memorial Hospital have been induced to devote their attention entirely to those members of the middle classes who have suffered financial loss as an outcome of the war, and who, as a result of the increased cost of living, are unable to afford in time of illness the heavy expenses of a nursing home. Those who are mainly intended to benefit by the scheme are the widows and children of fallen officers, men and women dependent on small incomes and pensions, barristers, solicitors, stock brokers, civil servants, bank clerks, city clerks, spinster ladies, poor schoolmasters, poor parsons, and others who have appearances to keep up on inadequate or barely adequate salaries. The vast number of people who belong to this class were, before the war, frequently in affluent circumstances, but now conditions are completely changed. Sir George Newman, the chief medical adviser of the Ministry of Health, in his memorandum on preventive medicine, to which reference has been made, states that radical changes must be made in the management of the hospitals. Undoubtedly, the Ministry of Health will grapple with this problem as soon as

even more pressing problems have been settled to some extent.

* * *

The Labor Party bulks large in importance in this country, and, of course, no matter affects the working man so intimately as that of good housing and living under sanitary conditions generally. At a congress held recently, the London Labor Party affirmed that the heavy mortality among the working classes, compared with that of the wealthy classes, was not only a condemnation of capitalism but reflected discredit on the members of the local authorities who had failed in their duty to the community. By carrying into effect the following policy the party would secure, even within the existing law, a radical improvement in the health of the people: 1. The strict enforcement of the Public Health and Housing Acts and by laws thereunder insuring to each household all reasonable sanitary requirements, irrespective of the vested interests affected thereby; and the vigorous administration of the sale of food and drugs act, with the object of insuring that all food sold, especially milk, shall be pure and of genuine quality. 2. The development of baths and wash houses; the establishment where suitable of "cottage" baths and laundries for the common utility of a street or a number of families, with efficient sanitary safeguards, it being understood that the Labor Party prefers and will strive for a bathroom for every family, and the provision of every possible convenience for the lightening of the work of the household. 3. The operation of maternity and child welfare schemes designed to be helpful to mothers and to promote the health and comfort of themselves and their children. 4. Urging necessary amendments to the law affecting the public health of London, including the establishment of first class hospitals under the London County Council. 5. The enforcement of the law relating to the smoke nuisance.

Excretion of Salicyl after the Administration of Methyl Salicylate.—P. J. Hanzlik and N. C. Wetzel (*Journal of Pharmacology and Experimental Therapeutics*, September, 1919) found in experiments on dogs and one cat that the excretion of salicyl after administration is much less—twenty-five per cent.—than after sodium salicylate. This indicates that salicyl in the form of methyl salicylate is either more completely destroyed in the system than sodium salicylate, or, more probably, that because of its great lipoid solubility it is retained and its excretion is too long drawn out to be satisfactorily estimated. After gastric administration from 0.2 to 0.52 per cent. of the whole amount given was excreted unchanged in the urine, and after intramuscular administration 14.4 per cent. This discrepancy between the results from the two routes indicates that a considerable portion of the compound can be hydrolyzed in the alimentary tract. The relatively large amount excreted unchanged may be of importance in explaining the greater analgesic properties and toxicity of methyl salicylate as compared to sodium salicylate, and may have a bearing upon systemic and urinary antisepsis by means of this compound.

Editorial Notes and Comments

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DEMOBILIZATION AND VENEREAL DISEASE.

There are two diseases of dominating potency and prevalence, both of which have been increased considerably in these respects by the war. Tuberculosis is one and venereal disease the other; under the head of venereal disease of course are placed all forms or manifestations of it. Tuberculosis has been increased by the war but not nearly to the extent that venereal disease has been. The war just over will be no exception; in fact, if the pessimists are to be believed the aftermath of this world war with regard to venereal disease will be much greater than that of any other war.

While such is the opinion of a good many people, one cannot escape the impression that there is a certain amount of exaggeration in this doleful view of the situation. In the first place, exact statistics are lacking generally speaking, as the figures at hand have not been compiled with accuracy and care. The statement may therefore be regarded as an expression of opinion rather than the outcome of painstaking research and compilation of figures. Moreover, there is another point which should be taken into consideration. It is by no means certain that before the war there existed such reliable statistics of venereal disease as would render comparison of any definite value. It is true that statistics as to venereal disease have been forthcoming from Canada. These figures, which have varied not a little, have been put very high for the civil population. The opinion has also been given out,

that soldiers returning to Canada are more likely to become infected by the civil population than that the population is to be infected by them. Similar views have been circulated with regard to the state of affairs in this country, and it is probable that conditions are more or less alike in all the countries which have been at war.

Although statistics may be misleading, there appears to be almost a consensus of opinion that not only is venereal disease extremely prevalent but that it is rife among the civil population, and that any measures to decrease or eliminate the disease must be applied to the civil population. This is obviously rational reasoning. If a large proportion of the civil population is infected with venereal disease, the only way to prevent its spread or to stamp it out, is to employ methods tending in this direction among the civil population; and this, of course, is where the path is beset with difficulties. The question which persists is, What steps shall be taken to stop or to abate this menace? The answer has not yet been found.

In Great Britain there are, broadly speaking, (at any rate, in the medical profession) two parties. One of these parties is made up of those who think that "early treatment" or "delayed disinfection" will solve the problem. The other advocates "prophylaxis" or "immediate selfdisinfection," to be carried out at the time of exposure to infection. No convincing proof that either mode of treatment has been successful has been adduced. Has "delayed disinfection" been put to the test on a sufficiently wide scale to warrant the assertion that it is effective? It is asserted by the advocates of "direct prophylaxis" that this method has been successful in some armies. Much, if not most, of the data in favor of the method have been obtained from military sources. Could these be applied to a civil population or have army statistics been employed in such a way as would satisfy an expert statistician?

The modified form of compulsory notification which is in use in some parts of the United States and in some of the dominions, has not been mentioned in any of the schemes presented in Great Britain. But it is very unlikely that either compulsory notification or compulsory segregation would find favor there, nor does it seem that direct prophylaxis has much chance of being adopted. The matter should be debated without acerbity or heat, and the two parties in Great Britain should come together to discuss the question calmly and without prejudice from all points of view.

MENTAL MEDICINE AND DETERMINISM.

It was an unexpected contact on his part, Freud tells us, which caused him to put his finger upon an alarm that, in the words of the poet, "disturbed the world's sleep." Much time has elapsed since Freud wrote his simple story in the *History of the Psychoanalytical Movement*, of his first conviction, which had resulted from conversation with older physicians and through experience with patients, of the principles for which he stands. The disturbed world has behaved just as it does on each dawning morning. Certain hardy souls heard the alarm at once and sprang from their beds undismayed by bath and breakfast and even the shouldering of pick in the chilly hours of early candlelight. Others, more slowly but none the less thoroughly, shook off the warm wrappings of conventional thought which provided them with an imperfect functioning psychotherapy. Others again, whose beds were large and firm in the comforts and strength of conservative thought and practice, responded with wide open eyes only when the daylight was clear about them, especially when the hand of war had drawn their curtains ruthlessly apart. Yet their long slumber with their careful awakening has given to their vision, when at last it was awake to the things that had been taking place in the psychological realm, a much greater impressiveness and support to encourage those who have been toiling longer in the earlier morning twilight.

This assurance comes to the early toilers themselves and to the waiting world, which is keenly alive to its mental needs as they appear in the special clinic or as they press for explanation at every turn of daily life. Doctor Rivers has brought his wide knowledge and broad and profound interpretative intellect to bear upon the subject and has discussed in his lecture, delivered in the John Rylands Library a few months ago (W. H. R. Rivers, M. D., F. R. C. P., F. R. S.: *Mind and Medicine*, Longmans, Green & Company), the importance of the theory of mental causation which has been Freud's discovery and development. This lecture has also received the hearty recognition from the medical press in Great Britain. Such a principle of determination, as he points out, had long been accepted in the world of physical sciences, and of course it had been foreshadowed in the psychological world. Medicine, however, particularly mental medicine, was held back in its progress, and we might add physiological medicine too, because there was lacking such a recognition and exhaustive study of the principle of determinism in relation to the mental life. The scientific under-

standing and use of this principle could come about only by admitting an active unconscious mental life as well as the more obvious but necessarily superficial conscious life.

Though Doctor Rivers is not yet ready to agree in all the details of Freud's exposition and use of the principle, he gives such warm testimony to the value of his work and of the convictions to which he has attained in pressing this principle that he himself shows its acceptance indispensable to the future progress of medical psychology and medical practice. The details of application for which Freud has stood out are matters for test and proof in the exigencies of daily practice. If we follow the general principles with open minds and fearless resolution to reduce difficulties to the ultimate causes which are operating, we avoid the danger of being mislead by appearances when the work is only partially done. Freud himself bids godspeed to those who find that they still must carry on "their works in the deep."

SURGICAL CONDITIONS IN THE MOUTH.

The tooth brush has become such a fetish in our generation that it would seem almost like heresy to say anything that might suggest that unless used properly and carefully it might do more harm than good. The teeth of mankind among civilized peoples at the present time are so bad that we simply must review all the conditions relating to the mouth if we would determine positively what are the causes at work encouraging deterioration of the teeth. The tooth brush is among these and must be weighed with the rest. The implement was never used so much as it is at the present time and yet the teeth of mankind were never so bad. The question must arise, therefore, Is the tooth brush the effect of the recognition of this state of affairs? That is, is the tooth brush now being used so much because it was never felt to be needed so much, or, once mouth infection has taken place, does it play a definite rôle in the causation of the very unsatisfactory condition of the teeth of the present generation?

Considering how serious the conditions are within the mouth, the investigator would be perfectly justified in asking how the use of the tooth brush came into vogue. The immediate answer to this would be, that instead of coming in as a cleansing agent, the tooth brush was originally intended as a polishing tool. A good many fastidious people wanted to have their teeth look clean and shining and so they brushed them. In order to aid in this polishing process various tooth powders were invented. We have a whole series of them, from the

Middle Ages, in which chalk and ground bones of various kinds and certain other polishing materials were used rather freely, down to the present time. For polishing purposes the brush had to be drawn rapidly to and fro across the surfaces of the teeth. This is the way the tooth brush was used originally and has been used ever since.

Later, the tooth brush was set up as a cleansing instead of a polishing agent and the idea of its use was that it would brush away particles of food that have lodged here and there in the mouth and keep them from decomposing and thus prevent the spread of decay to the teeth. Once decay has taken place, however, the use of the tooth brush is about as unscientific a procedure as could well be imagined. The brush is rubbed vigorously over decayed surfaces and then just as vigorously over teeth as yet unaffected. We know that tooth decay is due to bacteria and it is easy to understand that once there was even a slight cavity in any of the tooth surfaces the brush would become thoroughly infected with bacteria and carry these all around the mouth. Wherever there was a crack in the enamel bacteria would be rubbed in.

Once there is an infection in the mouth the tooth brush carries it all over and particularly rubs it into the edge of the gums just where, because of the pressure of the tooth itself, circulation may be slightly interfered with and resistive vitality is lowered. Rather coarse brushes are used, cold water is often recommended to keep the bristles good and stiff, and it is easy to understand how many slight injuries of the thin edge of the gums where they come up to the neck of the tooth must necessarily be inflicted. Into all of these the tooth brush rubs indiscriminately whatever bacteria it may have gathered anywhere throughout the mouth and it is no wonder that receding gums and the collection of tartar beneath the gums is one of the special mouth troubles of our time and is causing the loss of a great many teeth. The collection of tartar has often been set down as due to superacid or other pathological conditions within the mouth, but the more we have studied such formations throughout the body the more the presence of a series of microbes has been found as the immediate cause. We used to blame gallstones on all sorts of biliary conditions, but microbes have been found as the nucleus of most of them and we know now that it is practically always an infection of some kind that lays down the favorable conditions for the formation of calculi anywhere in the body. The tooth brush from a surgical viewpoint, then, cannot be looked upon without serious suspicion. Is it possible, however, that we are in the presence

of two evils, one of them the tooth brush, the lesser evil, and that it does more good than harm? Is it possible that it carries to the mouth in its various parts substances that are so precious in their action in preventing decay that brushing the teeth is a real benefit, though it is connected with some unfortunate abuses in the wide diffusion of the microbic flora of the mouth which it invites and indeed encourages by its activity? We leave the question of the tooth brush as an extremely unsanitary instrument in the light of the present day bacteriology for our readers to think about.

PROGNOSIS AND TREATMENT OF CARDIAC ACCIDENTS IN SUBLIMATE POISONING.

In acute intoxication from bichloride of mercury, a marked remission of all the symptoms takes place on about the fifth or sixth day. The liquid stools are less frequent and distressing, the inflammatory accidents diminish in intensity, and yet this amelioration does not favorably influence the prognosis because both weakness and prostration soon increase, the patient becomes emaciated and cachectic, and death takes place without agony in a lapse of time varying from one to two weeks. Death is not an absolute consequence of corrosive sublimate poisoning because in some cases when early treatment has been resorted to, the accidents have been mild and have rapidly disappeared. But usually sublimate will produce the most serious accidents unless appropriate medication has been promptly brought to bear.

All other factors being left aside, the cardiac accidents occurring during sublimate poisoning in themselves offer the greatest danger. That this should be so can be readily surmised since being almost always secondary, they become superadded to a preexisting morbid process. By their mere presence they impose a double amount of work upon the already weakened organism, and their appearance only too easily denotes that the organism will succumb. Cardiac complications consequently darken the prognosis of acute sublimate poisoning either immediately—because death may occur from syncope—or at a later date. If the acute pericarditis is recovered from, as may sometimes happen, recovery may be absolute and complete. But it may also be incomplete from the pathological point of view, leaving partial adhesions which in no way influence the cardiac functions, or it may be incomplete from the clinical point of view, setting up a cardiac symphysis with all the serious consequences that accrue from it.

Acute endocarditis resulting from sublimate poi-

soning may terminate in complete recovery, but it may also lead to permanent valvular lesions. The cardiac accidents of mercurial poisoning may result in chronic valvular cardiopathies, so that the ultimate prognosis of these complications in acute sublimate intoxication should invariably be reserved, because beside the accidents to which they themselves give rise, they may leave behind them a myocardium the resistance of which will be lessened.

Leaving aside the well known general treatment of acute sublimate poisoning, which must be carried out, it may be said that pericarditis complicating the situation is to be treated according to the rules applied to pericarditides in general. Dry pericarditis, which may subside spontaneously, will be benefited by local bloodletting and counterirritation. The local application of ice may give good results, but it is only at the end of the pericarditic process that tincture of iodine or cautery points should be resorted to in order to hasten resolution of the exudates. Local bloodletting and counterirritations will be most effective when the fluid collection is small in amount, otherwise the effusion will be a direct menace to life and paracentesis should be at once resorted to. The endocarditides are almost invariably obstinate to all forms of treatment so far advocated, so that the most rational means of dealing with this lesion is by symptomatic medication.

Obituary.

FLOYD M. CRANDALL, M. D.,
of New York.

Dr. Floyd Milford Crandall, secretary of the Medical Society of the State of New York, died on Wednesday, November 19th, in the Presbyterian Hospital, New York, following an illness of two weeks. Doctor Crandall was born in Belfast, N. Y., in 1858 and received his medical education at the University Medical College of New York. At various times he was a member of the staffs of Bellevue Dispensary, Northwestern Dispensary, New York Skin and Cancer Hospital, Children's Hospital, Minturn Hospital, and Infants' and Children's Hospitals. Since 1893 he had been adjunct professor at the New York Polyclinic Hospital. He was a member of the American Medical Association, American Pediatric Society, Medical Society of the State of New York, Medical Society of the County of New York (vice-president, 1905; president, 1906; board of censors); West End Medical Society (a founder and former president); New York Academy of Medicine (president of Section in Pediatrics). At one time Doctor Crandall was an assistant editor of the *NEW YORK MEDICAL JOURNAL*, and had been a frequent contributor to its pages. He also served as editor of the *Archives of Pediatrics*.

RICHARD COLE NEWTON, M. D.,
of Montclair, N. J.

Dr. Richard Cole Newton, a former assistant army surgeon and a member of the New Jersey Board of Health, died on Thursday, November 13th, in the Mountainside Hospital, Montclair, N. J., following a stroke of paralysis. He was sixty-eight years old. Doctor Newton was born in Roxbury, Mass., and was graduated from Harvard University in 1874. He received his degree in medicine three years later, from the College of Physicians and Surgeons of Columbia University. From 1880 to 1889 he served in the United States army as surgeon and since that time had practised medicine in Montclair, N. J. He was formerly a member of the New Jersey State Board of Health and during the war served as a member of the draft board. He was a member of the American Medical Association, the Associated Physicians of Montclair and Vicinity, and of the Essex County Medical Society.

News Items.

Shell Shock's Name Is "War Neurosis."—The Department has issued an order officially designating the disease commonly known as shell shock as "war neurosis."

Sir David Henderson Here.—Lieutenant General Sir David Henderson, K. C. B., Director General of the League of Red Cross Societies, arrived in America a few weeks ago for a conference with American Red Cross officials.

Eastern Medical Society.—The Eastern Medical Society of the City of New York will hold a stated meeting Friday evening, December 12th, at 8:15 at the Hotel Brevoort. Rabbi Stephen S. Wise will deliver an address on How to Americanize and How Not to Americanize. A general discussion will follow.

Public Health Library Reopens.—The library of the health department, which was temporarily closed following the recent removal from 139 Centre Street, has now been settled in its new surroundings on the third floor at 505 Pearl Street and is open to all who are in search of information on public health topics. The library is a branch of the Municipal Reference Library.

Medical Association of the Greater City of New York.—A stated meeting of the association will be held Monday evening, December 15th, at 8:30 in Hosack Hall, New York Academy of Medicine. A discussion of the merits and demerits of compulsory health insurance will be participated in by Dr. E. Eliot Harris, Dr. George W. Kosmak, Dr. J. J. O'Reilly, and others.

Music and Medicine.—A conference on Music as a Medicinal Aid will be held Sunday afternoon, December 21st, at 3:30 at the DeWitt Clinton Auditorium, Fifty-ninth Street and Tenth Avenue, New York, under the chairmanship of Dr. Siegfried Block. The conference is under the auspices of the *New York Globe and Physical Culture Magazine*. Doctors, nurses, and musicians are invited.

Laval University Medical School Burns.—The main buildings of the University of Montreal, better known as Laval University, containing the medical department, were destroyed by fire on November 22nd. The loss, which is covered by insurance, is estimated at \$400,000.

Army Hospital Statistics.—On November 7th there were 18,406 patients in sixteen army hospitals in this country, according to reports by the Surgeon General. Reports from fifteen Army general hospitals and one base hospital for the month of September show that of 2,399 patients who received a surgeon's certificate of disability, 2,269 were able to resume their old occupations or were not in need of retraining, and only 130 were designated as unfit for their old occupation.

Vital Statistics.—Vital statistics for New York city for the week ending November 15th are as follows, the figures being taken from the weekly health index issued by the Bureau of the Census: Total deaths, 1,115; death rate, 11.1; average annual death rate in 1,000 for the corresponding week of the years 1913-1917, 13.2; per cent. of deaths under one year for week ended November 15th, 11.3, for corresponding week 1913-1917, 15.5.

Smallpox Outbreak in Ontario.—A serious outbreak of smallpox is reported in Ontario. Press dispatches attribute to Health Commissioner Fronczak, of Buffalo, the statement that there are 4,000 cases of the disease in Ontario and 2,000 in Toronto, but a later dispatch from Toronto puts the number at 800 cases in mild form. Four cases have been found in Buffalo in spite of the establishment of quarantine at the border. Travelers into the United States from Ontario are required to present a certificate of vaccination from United States Public Health Service representative.

Civil Service Announcements.—The United States Civil Service Commission announces open competitive examinations for senior assistant physician, assistant physician and junior assistant physician, for both men and women, for positions in Saint Elizabeth's Hospital, Washington, D. C., and in positions requiring similar qualifications. The salaries announced are: Senior assistant physician, \$2,500 to \$3,500; assistant physician, \$2,000 to \$2,500; junior assistant physician, \$1,500 to \$1,800. Applications must be filed with the Secretary of the Fourth Civil Service District, Old Land Office Building, Washington, D. C., by December 16th.

Saccharin Not a Proper Substitute for Sugar.—As a result of the sugar shortage, the Department of Health of the City of New York has issued a warning to the public regarding the substitution of saccharin for sugar. It is stated that:

1. Saccharin is a coal tar product and not a food.
2. Saccharin has no food value, and, if substituted in whole or in part for sugar in a food product, it reduces, lowers, and injuriously affects the quality and strength of such food product.
3. Saccharin is inferior to and cheaper than sugar.

If saccharin is substituted for sugar, or if it is mixed with a standard food product so as to reduce, lower, or injuriously affect the quality or strength of such food product, the department of health will consider that Section 139 of the sanitary code has been violated.

International Labor Conference Sets Health Standards.—The recently adjourned International Labor Conference has given its approval to the prohibition of child labor under the age of fourteen years, though Japan, India, and a few other Oriental countries were excepted under the provision. Employment of women in industries where the materials used might be detrimental to maternity was disapproved by the conference in the adoption of a report of the committee on unhealthful processes. The report also recommended the adoption of some plan for the disinfection of wool and hair to prevent the spread of anthrax.

Municipal Civil Service.—The Civil Service Commission of the City of New York announces an examination for deputy medical superintendent, grade four, the salary being \$2,520 yearly with full maintenance for incumbent and family. The examination is open to both men and women who are citizens of the United States and residents of New York State. Candidates must be at least twenty-one years of age, licensed practitioners in the State of New York, and must have completed one year's internship in a hospital of recognized standing or equivalent hospital experience. Applications will be received at Room 1,400, Municipal Building, until December 18th. Further information may be obtained from the Commission.

Nationwide Health Program Planned.—Surgeon General Rupert Blue, of the United States Public Health Service, has sent a letter to State and city health officers and to various associations suggesting a conference in Washington to consider a health program prepared by the Public Health Service. Doctor Blue points out that practically all of these agencies have under consideration some plan of health conservation and that unless the work can be coordinated and properly directed, little will be accomplished and there will be much overlapping of effort and waste of funds. The associations invited to join in the suggestion are the American Red Cross, American Public Health Association, American Medical Association, National Tuberculosis Association, International Health Commission, National Safety Council, American Child Hygiene Association, and others.

Telephone Offices Unsanitary, Says Health Department.—Following an investigation into the conditions of telephone operating in New York city, Dr. S. Dana Hubbard, superintendent of the division of industrial hygiene of the Department of Health, has concluded that the operators work under unhealthy conditions. Published excerpts from Doctor Hubbard's report state that switchboard rooms, rest rooms, and lavatories are illy ventilated, that in a number of exchanges plumbing conditions are wholly inadequate, and that the food served at luncheon, for which the girls pay, is in many instances unclean. The speed under which operators work has seriously affected the health of many of them, and because of the scarcity of women the girls are forced to do twice the normal amount of work they should do. Eighty-two exchanges and one telephone training school are said to have been visited in the course of the investigations.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 907.)

Although many features differentiate gout from rheumatic affections, many cases of podagra are falsely diagnosed as rheumatism (Wilson). When the first attack of gout occurs, the patient himself not infrequently refers to the pain as being of rheumatic origin, and the presence of marked neuralgic pains in regions other than the joint particularly attacked may tend to suggest some condition other than a monarticular inflammation and even give a definite impression that several joints are about to become involved. While inflammation of the great toe is the typical acute manifestation of gout, almost any articulations may be affected, successively or simultaneously, including, in a few instances, the knee and elbow joints. Occasionally the knee or elbow is even involved in the initial gouty attack. Previous injury of some joint, e. g., a contusion or sprain, may induce localization of the disorder in this joint, drawing it away from the customary toe involvement (Garrod). X ray examination has been recommended for the purpose of differentiating gouty from other forms of joint disease, uratic deposits being characteristically transparent to the rays. But according to Koehler, 1912, who examined over 100 cases with the rays, the knee, hip, and elbow, when involved in gout, do not yield the typical gouty x ray picture. It is well recognized, indeed, that joint pains with some degree of enlargement and deformity may result from gout in spite of the absence of any uratic deposits in the affected articulations. In brief, confusion between rheumatism and gout is most likely to arise in that minority of gouty cases in which a polyarthritides, instead of the usual exclusive inflammation of the great toe, is developed.

The gouty attack in its usual form is readily distinguishable from acute rheumatism by the involvement of but one or two joints, in particular the metatarsophalangeal articulation of the great toe; by the highly acute onset, and by the extreme degree of pain in and the appearance of the affected joints. Pain is marked whether the parts be at rest or in movement, and tenderness is such that the least jar or contact of bedclothes is dreaded. The skin over the involved joint is tense and shiny, and in coloration passes from that of active hyperemia to a deeper red with a bluish tint indicative of cyanosis. A family history of gout, or a history of similar joint attacks in the patient himself, afford useful corroborative evidence. Where such histories are not obtainable and several joints are involved, confusion is more likely to arise, and the diagnosis must be based on a combination of several

factors, such as habitual excesses in food or drink, sedentary habits, absence of the migratory tendency noticed in acute rheumatic joint disease, frequent escape of the largest joints, the finding of tophi about the small joints or in the helix of the ear, the less marked sweating, the absence of heart disease, and the patient's age—usually over thirty-five years. According to Thompson, in gouty involvement of the finger joints, knees, or elbows tenderness to transverse pressure is greatest over the condyles, while in rheumatic fever it is greatest over the tendons situated anteriorly and posteriorly to the joints. Adler, 1912, states that in gout there are special points of tenderness where the nerves cross the affected joint; he also lays stress, as features differentiating gout from rheumatic fever, on the extreme degree of hyperalgesia of the integument over the affected joints in the former disease, and on the exacerbation of gouty pain at night.

Treatment of the acute gouty attack comprises local as well as general measures. The limb affected should be elevated and the diseased joint or joints kept warm and protected from trauma by wrapping in cotton or flannel. Anodyne applications may be made in the form of warm alcoholic or alkaline fluids, a solution of menthol in alcohol, lead and laudanum solution, or ichthyl ointment. For severe pain morphine may be administered. General treatment includes an initial purge and colchicum or salicylates as specific remedies, which seem not only to promote elimination of wastes by exciting the liver to increased functional activity but likewise, in doing so, to allay the pain. According to Chase, 1916, the uric acid in the blood is reduced by atophan, salicylates, and dietary restrictions; the purin free diet recommended is one in which meat, peas, beans and spinach are excluded, and likewise coffee, tea and alcohol, which promote uric acid retention. In the intervals between attacks, alkaline treatment is advised, together with dietetic precautions, copious water drinking, and general hygienic measures.

(To be continued.)

Septic Arthritis Treated by Autogenous Vaccines Prepared from the Conellan-King Diplococcus.—Charles H. Hay (*Ohio State Medical Journal*, November, 1919) concludes that septic arthritis, which is usually called rheumatism, is caused by a focus of infection somewhere in the body. It is most often found in the crypts of the tonsil or may be found in the teeth or elsewhere. In all cases of septic arthritis a culture should be made from the crypts of the tonsils. If the organism is not found there search is made elsewhere. A vaccine is made and 200 million bacteria are given every third day for about ten doses. At the end of this time the tonsils are enucleated. In the acute cases treatment with vaccines is of little value.

Early Treatment of Acute Osteomyelitis.—P. Vignard (*Presse médicale*, September 8, 1919) refers to the difficulty experienced by the surgeon in deciding upon the proper line of treatment in cases of acute osteomyelitis in which the morbid process shows no definite localization, no distinct abscess exists, and edematous infiltration covers an area much larger than the actual focus of disease. In the vicinity of joints, especially the hip, it is often nearly impossible to exclude from the start a suppurative arthritis. If the latter did not actually exist, it would be a serious mistake to open the joint in the presence of a nearby focus of suppuration. On the other hand, where the author elected a conservative line of treatment in cases of this type, unfortunate results frequently followed either from a rapidly progressive septicemia or from joint involvement which might have been obviated by earlier operative intervention. Early intervention, in its turn, seemed to cause rapid entrance of toxins into the circulation, and several patients otherwise apparently not very toxic succumbed within forty-eight hours. These difficulties are well obviated by the use of the fixation abscess. In the first case in which the author employed it there was pain in the left lower extremity and puncture of the hip joint yielded several mls of turbid fluid, after the temperature had been 40° C. for three days. The fever and constitutional symptoms nevertheless persisting, a fixation abscess was instituted. Next day the temperature began a gradual descent, and the patient later completely recovered. Six other cases of osteomyelitis of the femur, tibia, or humerus are reported in which the measure yielded gratifying results. In instituting the artificial abscess, two or three mls of turpentine should be injected at once and the suppurative process facilitated by hot applications. If no induration, redness, nor pain appears within twenty-four hours, the injection should be repeated and once again on the next day if necessary.

Treatment of Chronic Empyema.—John E. Wattenberg (*Annals of Surgery*, November, 1919) gives the results of the treatment of 121 cases of chronic empyema. Nearly every patient had had an operation which had given adequate drainage, usually by the resection of a rib. The rib had frequently reformed before the cavity had healed. These patients were then subjected to further operation just as if the openings had been too small in the beginning. Most of the patients were undernourished on admission. It has been shown that the protein loss of a patient with an empyema cavity is twenty-three grams a day. With a change of diet many patients gained forty pounds in a few weeks. Of the 201 cases of empyema treated all but six were of the chronic type and had had one or more operations prior to admission. The site chosen for most of the operations was the posterior axillary line. In twenty-seven cases there were pleurobronchial communications and in two this condition developed at the hospital postoperatively. In the ten patients operated upon in order to enlarge the openings so Dakin fluid could be applied, an organized exudate was found of a grayish white

color which had a leathery consistency and was somewhat elastic. It was usually adherent to some parts of the cavity. The surface was irregular, producing many pockets for pus. This made antiseptic treatment futile, hence reopening was necessary. Proper opening in the first place would have avoided this. The average time of treatment prior to admission was seven months. It seems advisable to wait from a week to ten days before operating in acute cases.

It was found that the necessary procedure in the treatment of these cases was the enlargement of the opening. Into the sinuses leading into the cavities vaselined tubes were introduced of a size larger than the one used at the time. In some instances the scars were extremely firm and they were difficult to dilate. If dilatation caused too much suffering the tubes were allowed to remain the same size for forty-eight hours. The dilatation was at times painful but as it replaced an operation it was justified. The process was continued until there was room for four or six Carrel tubes. The antiseptic treatment should be continued while the dilatation takes place. The average time required for sterilization was twenty-eight days. If the regeneration of bone is too rapid to allow for dilatation, resection must be done. This was done in forty-two cases. The rib above the sinus tract was usually selected. If this is not dependent enough the lower rib may be resected. A liberal incision four to five inches long, parallel to the course of the ribs, should be made. The place for the incision in reoperated cases was always marked by the location of the existing sinus.

If the pleura is found to be markedly thickened an incision must be made through it. It should not be attempted to make an opening and try to dilate it by stretching, for this causes a rapid closing of the wound. Any vessel worth clamping during the operation is worth tying. There were three instances of postoperative hemorrhage. These were packed with gauze. In one case hemorrhage occurred a week after operation. The tubes should be placed so that the entire cavity may be reached. Often the cavity may be broken down with the gloved finger converting several pockets into one. No sutures were used at the end of the operation. When the tubes were placed in the wound gauze was packed about them. Dakin's instillation was usually begun the same day. The treatment was given every hour during the day and every two hours at night. During the treatment the patient was required to lie down from five to ten minutes in hopes that the antiseptic would be better applied. When the cavity was reduced to a sinus dichloramine-T (five per cent.) was used every three hours. The wounds closed on an average of ten days after they reached the sinus stage. None have reopened. Nitrous oxide general anesthesia was used when operation was required. At dressings the skin was cleansed with benzine, and Dakin's solution injected until it returned clear. When irrigating and when giving hourly instillations, enough Dakin's solution must be given to overflow the cavity. This must be done even if the external dressings must be changed oftener than

once a day. The skin is then dried with sterile cotton handled with forceps. Gauze covered with petrolatum is placed about the wound to avoid burning. If the wound is kept sufficiently open, the dressings are painless. Cultures were taken from the wounds of all patients twice a week. The same loop was used for the same patient each time. The pus was placed in a tube containing one half a c. c. of one half of one per cent. sodium thiosulphate to neutralize the Dakin solution. The culture was then placed on blood agar, incubated twenty-four hours, and then examined. Five fields were counted and an average taken. The hemolytic streptococcus was always present and was the first organism to disappear. When a negative culture was secured, the cavity was cultured daily for seven successive negative cultures. Then all tubes were removed, a thick gauze dressing snugly applied, and the cavity allowed to close. The dressings were changed when they were soiled. The lung rapidly filled the cavity. It is determined what posture the patient can assume so as to take in a maximum amount of the solution, and the solution is introduced just to the point where it threatens to induce coughing. It has been reported that death has been caused by the cavity being overfilled. If the cavity has been sterilized and all tubes removed the opening may close before the cavity is entirely obliterated. A pneumothorax will be formed, but this will take care of itself. Great care must be taken to keep the Dakin solution at proper titration. Where the cavity showed an inappreciable shrinkage after several months' treatment, and the hemolytic streptococcus was not present, all treatment was stopped and tubes were removed except the external dressings. Three patients were cured in this way, two were tuberculous, and three are under treatment.

Treatment of Lymphosarcoma and Hodgkin's Granuloma.—Isaac Levin (*Annals of Surgery*, November, 1910) asserts that lymphosarcoma presents only one phase in Hodgkin's disease, and the latter is probably an inflammatory condition of the lymphatic system. Cancer is a local disease, as the unknown etiological agent attacks a limited number of cells within a certain organ and leaves the rest of the organism, and the remaining part of the affected organ, uninfluenced. The subsequent growth of the primary, and even the secondary, so-called metastatic tumor, is due to the proliferation and migration of the cancer cells and does not need to be influenced further by the initial etiological agent. There are exceptions to this in the cancer group. The spindle celled sarcoma of Rous is a malignant tumor which infiltrates and destroys the surrounding tissue and metastasis in the internal organs. It may be inoculated from one animal to another with all the manifestations of a malignant tumor. This may be also done with a filtrate of the growth passed through a Berkefeld filter. Another tumor which presents analogies to lymphosarcoma is a plant tumor, the so-called crown gall, which is a new growth caused by a proliferation of a group of cells within the tissue, the normal cells of which do not proliferate. The disease is caused by a parasite. The tumor grows invasively and destroys normal tissue. The pathogenesis of

lymphosarcoma is analogous in many respects to that of malignant crown gall. In an animal the processes of inflammation, repair, and tumor growth frequently intertwine and an inflammatory process may present characteristics, both clinical and pathological, which render these processes more akin to cancer. During an inflammatory process a general leucocytosis may occur which results from a rapid proliferation of the cells within these organs. Hodgkin's disease represents a borderline condition between an inflammatory disease and a malignant tumor. The regional lymph glands offer the first barrier. Every inflammatory or parasitic disease is usually accompanied by a swelling of the lymph glands nearest to the port of entry of the injurious agent. These so-called inflammatory lymphomata show an increase in the number of the lymphoid cells which is due mainly to a wandering in from the other lymphoid organs of the body. Mitosis is rarely seen. In Hodgkin's disease the lymph glands swell rapidly; they show an increase in the number of cells found in the normal lymph gland. The condition resembles an infectious disease more than a malignant tumor. However, the main features of the disease resemble cancer. Some insist that the disease is a type of tuberculosis. Lymphosarcoma differs from Hodgkin's granuloma as only one type of cells is proliferated and the cells break through the capsule of the gland and invade the adjoining tissue. However, both of these conditions may be found side by side in the same patient and they are gradations of the same disease. In the same patient one gland may show the characteristics of Hodgkin's disease and another of tuberculosis. This shows that there is a close relationship between inflammatory lymphoma, Hodgkin's granuloma, and lymphosarcoma.

Clinically a lymphosarcoma may appear to be identical with a true sarcoma in the same region. The chief therapeutic measure in cancer—sarcoma as well as carcinoma—is prompt surgical removal. It has been demonstrated recently that the employment of radium and x ray therapy before and after operation enhances the chances of success, but operative procedure in the majority of cases is the first therapeutic measure. The same surgical procedures should be employed in lymphosarcoma. The pathogenesis of the disease demonstrates the fallacy of this. Lymphosarcoma is a manifestation of a systemic disease which embraces the entire lymphoid system. A discrete tumor or lymphosarcoma is always surrounded by diseased lymphoid tissue, and the operation is followed, not by a recurrence, but by the development of the latter tissues into new tumors. The Hodgkin's granulomata are present at the same time in other regions. The operation may be performed in one region while other enlarged glands are present in another location. Therefore surgery can be of no therapeutic value in Hodgkin's disease or lymphosarcoma and should only be employed to obtain tissue for microscopical diagnosis, while radium and x rays, which are considered as adjuvants of surgery in sarcoma or carcinoma, are the best therapeutic agents in Hodgkin's disease and lymphosarcoma.

Synovectomy in Chronic Effusions of the Knee.

—Cotte (*Presse médicale*, August 28, 1919) notes that recovery in chronic knee effusion is often obtainable by ordinary surgical means. Some cases, however, present a condition rather in the nature of a proliferating synovitis, with more or less pronounced fatty reaction in the vicinity, or of a fibroplastic pachysynovitis somewhat similar to the pachyvaginitis found as the starting point of certain hydroceles. The slow course, gradual transformation into fungous synovitis, and results of laboratory studies conducted in a few cases seem to show that these are instances of tuberculous hyarthrosis. Such involvement is refractory to all ordinary methods of treatment. Excision of the inflamed synovial membrane can alone eliminate the disease process. A case of chronic hyarthrosis of four years' standing, with acute recurrent attacks, is reported in which synovectomy gave excellent results, pain and swelling of the knee passing off and complete joint function being restored. In four later cases the results were not quite so good, but nevertheless very satisfactory. Improved technic and the use of arthrotomy procedures permitting of earlier mobilization than the arthrotomy with section of the patella usually carried out by the author will probably increase the certainty of recovery from the effusion while completely restoring joint motion. Such procedures might include arthrotomy by double lateral incision or by section of the tubercle of the tibia.

Action of Vesicant Gases on the Upper Respiratory Passages.—R. Moreaux (*Paris médical*, August 23, 1919), in examining numerous cases of war injury by toxic gases, in particular dichlorethyl sulphide, observed, as regards the nasal cavities, signs of intense acute coryza, with especially copious mucopurulent secretion. The pharynx showed diffuse congestion, most marked on the posterior wall, velum palati, and anterior pillars, accompanied almost constantly by edema of the velum and uvula, and in severe cases by ecchymoses. The larynx showed edema of the epiglottis and of the periglottic region, diffuse hyperemia of the vestibule and glottic structures, frequently ecchymoses and erosions, sometimes infraglottic and tracheal lesions; and mucopurulent or at times pseudomembranous hypersecretion in the trachea, the latter condition giving rise to dyspneic attacks. The only important functional disturbances remaining after recovery from the acute inflammation are aphonia or more or less marked dysphonia, generally of myopathic origin. The erosions and ecchymoses may favor local implantation of the tubercle bacillus in subjects whose sputum contains this organism. In one patient laryngeal tuberculosis was observed to set in in this manner. In the treatment, one in 1,000 adrenalin may be applied to the inferior turbinates or incorporated in a paste with gomenol or camphor. For the pharynx, antiseptic gargles, intranasal use of sterile liquid petrolatum, and cocaine solution for dysphagia are serviceable. For the lower passages, intralaryngeal and intratracheal injections of sterile one in ten gomenol oil solution, benzoin and eucalyptus fumigations, and cocaine to the epiglottis and arytenoids are recommended.

Restoration of the Traumatized Nasal Outlet by the Italian Method.—L. Ombrédanne (*Presse médicale*, July 31, 1919) refers in particular to autoplasty for destruction of the lobe, part of the dorsum, and a more or less considerable portion of the alae of the nose. The two objects most difficult to attain in such a procedure are to restore the tip of the nose so that it will not sag and to afford permanently permeable nostrils. To attain the first of these objects the author recommends the use of a skin flap from the patient's arm, to be fixed to a fresh surface of the nasal integument. Any remaining fragments of the alae are first of all freed and kept in a lateral position by suture to the cheek. The arm flap is affixed above the level of the alae. An important point for successful results is to avoid suturing the graft to the alae remnants when the flap is severed from the arm. In the course of two months the graft undergoes spontaneous retraction to form a knoblike body which is of firm consistency and can then be fashioned to proper shape and sutured to the remnants of the alae and septum with the assurance that it will preserve its shape. Permanently open nostrils cannot be secured unless the newly fashioned nostrils are carefully lined with skin. Success in obtaining such nostrils depends entirely upon the amount of the original alae remaining. If one half of the original alae remain, good nostrils will result. One third of the alae suffices to provide functionally serviceable orifices. But if on one side the ala is entirely lost, the nostril on that side will be greatly narrowed, and can be kept functionally useful only by the wearing of an inner supporting tube at least during the night time.

Choledochoenterostomy and Postoperative Bile Duct Dilatation.—William Howard Barber (*Annals of Surgery*, November, 1919) states that suture operations are frequently attempted upon the common bile duct because it is practicable. In some cases it is helpful to unite a small sized common or hepatic duct to a loop of intestine or to the stomach and an oblique anchorage method may be helpful. Any method to reunite a partially destroyed bile passage is made difficult by the inaccessibility of the operative field and by the adhesions. Destruction of the common duct where the gallbladder is absent or unavailable for cholecystenterostomy impels the procedure of some form of choledochoenterostomy. In certain cases hepaticenterostomy has been done in spite of the dangers of liver abscess and the difficulties of suturing the gut to the liver. Tumor, calculus, or stricture may interfere with the entrance of bile into the intestine. In cases of injury to the duct choledochoenterostomy has been frequently attempted. From a series of experiments the conclusions were as follows:

1. A severed bile duct too small for sutures but long enough for direct choledochoenterostomy may be reunited to the upper small intestine or the stomach by anchoring it obliquely within the wall of the intestine or the stomach.
2. Of twenty animals, in eighteen, with temporarily obstructed ducts, there developed patent

functionating anastomoses in seventy-two per cent., and two with provision for spontaneous drainage. Of these latter, one animal had a perfectly functionating anastomosis for four months.

3. A certain degree of dilatation due to the inevitable interruption of the nervous connections during reconstruction of the bile duct is not incompatible with life. Harmful dilatation is associated with retraction of the transposed end, obstructive intramural scar, and deficient epithelialization.

4. The technic described reduces the adhesion forming traumata to a minimum and the factors in it tending to prevent the retraction and obstruction of the bile duct are: 1, Proper mobilization of the anastomotic intestinal loop; 2, the oblique course of the intramural segment; 3, possibly the dilatation of the intrainestinal end, and 4, anchorage of the bile duct with allowance for retraction.

Laparotomy for Retroversion of the Pregnant Uterus.—Couvelaire (*Presse médicale*, July 31, 1919) reports a case in which the uterus was fixed by firm adhesions to the pelvic wall behind it. Retroversion was so marked that the cervix was displaced to a point where it projected above the level of the pubis. The thick adhesions behind the uterus formed with the latter a mass which, before the operation, might have been mistaken for an ovarian cyst in Douglas's culdesac. Upon opening the abdomen the author broke up these adhesions and restored to the uterus the mobility required for normal gestation. Operative intervention is not generally indicated in retroversion of the gravid uterus, as the adhesions usually soften and relax under the influence of gestation. Where there are thick, firm adhesions, however, as in the case referred to, there should be no hesitation in intervening surgically even in the first month of pregnancy.

Heliotherapy in Mediastinal Adenitis.—A. Du-four (*Presse médicale*, August 25, 1919) refers to the statistical reports of D'Espine, Revillet, and Rollier as showing that about forty to fifty per cent. of cases of mediastinal adenopathy are practically cured by direct sunlight treatment, and that among the remainder, few are instances of complete failure of the treatment. Personal experience has convinced the author, however, that the procedure is by no means equally indicated in all cases. The best results are obtained in pure, uncomplicated adenopathy. In these, all physical and functional signs disappear after four to six months' treatment, and the results are confirmed by x ray examination. On the other hand, in adenopathy associated with signs of tuberculous impregnation, discrete pulmonary lesions, or the simple bronchial or pulmonary reactions described by Hutinel, results can only be obtained much more slowly. The exposures to sunlight must be of shorter duration. One year should be considered the minimum period required for the treatment, and even at the end of this time there are likely to persist functional manifestations such as temperature instability, or an abnormal bronchial sensitiveness. Finally, a few of these patients are quite intolerant of heliotherapy. Results also vary according to the age of the patient. The older the child, the more readily a cure is obtained. Media-

stinal adenopathy in infants is peculiarly severe and likely to spread, and infants are also very sensitive to sunlight, not infrequently showing a rise in temperature to 39° or 40° C.; these patients should be allowed to move about during the sunlight exposures, which should not exceed two to two and a half hours a day, even after gradual training. Few children whose lungs have been definitely invaded by the tubercle bacillus derive benefit from heliotherapy; most of them are made worse.

Liver Abscess.—Philip Talbot (*British Medical Journal*, September 20, 1919) believes that the majority of these cases can be treated successfully by aspiration of the abscess with a needle and syringe, it not even being necessary to aspirate all of the contents so long as the tension is materially reduced so as to permit of the entrance into the cavity of fresh lymph and serum bearing emetine. A dose of sixty mgm. (one grain) of emetine should be given a few hours before aspiration, and following the aspiration a regular course of emetine injections should be carried through, giving sixty mgm. daily for one week and then every other day until 0.7 to 0.8 grams have been given. After aspiration the temperature usually drops to normal at once, the liver rapidly diminishes in size and convalescence is rapid. The open operation with the insertion of a drainage tube into the liver, which is an organ that is constantly in motion, seems to the author to be a procedure which is physiologically unsound.

Injection of the Inferior Maxillary Nerve at the Foramen Ovale.—E. Gascard (*Presse médicale*, August 25, 1919) notes that in the procedures hitherto recommended for reaching the inferior maxillary nerve at the foramen ovale, e.g., for alcohol injection, the point of entrance of the needle is always below the zygomatic arch. There is some risk of injuring the internal maxillary artery, and some experience is required to keep the needle precisely in the required direction, lest it miss the pterygoid process and thus fail to reach the second landmark necessary for reaching the foramen. He recommends instead the suprazygomatic route. The first landmark is the angle, opening upward, formed by the zygomatic arch and the malar bone. The needle rests on this bony angle and is introduced in a direction perpendicular to the plane of the angle. Having penetrated for two and a half centimetres, it reaches the vertical portion of the greater wing of the sphenoid. The needle point being then lowered a few millimetres, it passes beyond the angle which the vertical portion of the wing of the sphenoid forms with its horizontal portion. The needle is now pushed in further in the same direction, its point hugging the lower surface of the greater wing, until it reaches the foramen ovale exactly five centimetres from the superior zygomaticomalar angle. The lower surface of the greater wing forms in some degree a groove which conducts the needle to the foramen. Were the needle not introduced in the proper direction, it could not pass in five centimetres without striking either the pterygoid process anteriorly or the spine of the sphenoid posteriorly. The region traversed by the needle in this procedure is remote from any important artery or nerve.

Miscellany from Home and Foreign Journals

Jaundice Associated with Acute Yellow Atrophy of the Liver.—M. Garnier and J. Reilly (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, July 2, 1919) assert that while the majority of cases of acute jaundice terminating in death are due to icterogenous spirochetosis and to a parasitic hepatonephritis, there is another form associated with acute yellow atrophy of the liver. Four cases of the latter type were seen by the authors during war practice. In each case jaundice appeared after a preicteric period of four to six days characterized by vomiting and more or less severe epigastric pains. It was always slight, and at times was even limited to the conjunctivæ. Nervous manifestations promptly appeared, the patients passing into coma, interrupted by periods of intense restlessness with inarticulate cries and inability to speak clearly. There were no signs of meningeal irritation and diuresis was sufficient throughout. Hematemesis followed and death took place two or three days after the appearance of jaundice. In spirochetosis the jaundice is much more pronounced, but the lethal factor is largely renal, complete anuria occurring and the symptoms being those of uremia. The acute yellow atrophy cases did not seem to be due to infection with the spirochete of Inada and Ido, the active agent in spirochetosis.

Minor Indications of Latent Foreign Bodies in the Esophagus and Respiratory Passages.—Guisez (*Paris médical*, September 6, 1919) states that in the majority of his recent cases of foreign bodies in the esophagus or respiratory tract, the condition was quite latent. Three children had large copper coins in the esophagus for weeks without disturbance of deglutition; another had a penknife in the right bronchus for six weeks, and a fifth had a coffee grain embedded just below the vocal cords with no symptoms save slight cough at night. Descent of portions of adenoid tissue or tonsils into the respiratory tract is to be thought of as a possibility whenever a child exhibits fever and vague indications of bronchitis for some days after a tonsil and adenoid operation. The cardinal symptomatic triad of foreign body in the trachea or a bronchus comprises a definite history of inhaling a foreign body, paroxysmal cough, and attacks of suffocation. Often these signs are absent, however. For the detection of latent foreign bodies, it is necessary to examine carefully whenever there is a history even of a foreign body having been swallowed; painstaking auscultation is required, and the physician should inquire thoroughly for any slight disturbances of deglutition that may have been noticed. Unless the foreign body is known to have been metallic, x ray results should not be relied on. In cases of foreign body in the esophagus the parents are often struck, even where the child has seemed to be swallowing normally, by a species of impaired nutrition or cachexia with a peculiar kind of pallor which accompanies a foreign body. The child takes much less food in the course of the day, and from time to time a little food is regurgitated.

Where the foreign body is located high up in the esophagus it regularly causes a definite degree of hoarseness, while if it is in the respiratory passages, a slight paroxysmal cough which appears at night and which was not previously present is of great significance. In some instances the breath is malodorous. A sudden suffocative attack at night or during play definitely indicates a foreign body in the respiratory tract. Often it is difficult to decide whether a body has lodged in the esophagus or is in the respiratory tract, the symptoms often being misleading on this point. In such cases the exact circumstances of the accident, especially dyspnea and cough immediately after the "swallowing" of the foreign body, are to be carefully inquired into.

Hypertension: Its Significance, Relation to Arteriosclerosis and Nephritis, and Etiology.

Eli Moschowitz (*American Journal of the Medical Sciences*, November, 1919) finds that a persistent hypertension represents, in the strictest sense, a decompensation of the circulation. The subjective and objective phenomena of decompensation represent a progressive process, and every persistent hypertension, unless complicating factors are introduced, will eventually result in the graver evidences of decompensation represented by the clinical picture of cardiac insufficiency. The signs of decompensation may be both subjective and objective, and there is only an approximate parallelism between the two. Subjective improvement or deterioration does not always correspond to objective improvement or deterioration, and vice versa. Many early cases of essential hypertension, in which both systolic and diastolic pressure are not too high, are, as far as present observations lead one to believe, entirely curable. The conventional classification of hypertension into essential arteriosclerotic and nephritic is not justifiable on etiological grounds; it is merely clinical and teleological. On such a basis the classification should include the cerebral, cardiac, and aortic types in addition. The vast majority of disorders associated with persistent hypertension begin as essential hypertension and if untreated lead to the clinical concepts of arteriosclerotic, nephritic, and other hypertension. All evidence available at present seems to show that arteriosclerosis, with the possible exception of the decrescent form of Clifford Albutt, is the result of the hypertension itself, or, less likely, of the cause that brought about the hypertension. Albuminuria is not necessarily the result of injury of the kidney parenchyma. Badly diseased kidneys may be present without albuminuria. The albuminuria associated with cardiovascular disorders is more the result of static circulatory changes within the kidney than of direct injury of the kidney parenchyma; what forces in the dynamics of the circulation bring this about we can only surmise. Functional tests of kidney function have thus far furnished us only a biological classification; we are unable to diagnose from them or from clinical signs, except to a limited degree, the anatomical

type of nephritis to be found at autopsy. Hypertension may occur with normal kidneys, or kidneys practically normal. The pathological changes in the kidney of Bright's disease seem to be in many cases the results rather than the cause of hypertension. Such a conception would render it probable that the hypothesis of the primary vascular origin of the lesions in the kidney in Bright's disease is correct. Arteriosclerosis and Bright's disease have in that case the same pathogenesis, the lesion in each being modified by the nature of the organ. The direct etiology of hypertension is unknown.

Laboratory Studies in Influenza at Camp Travis, Texas.—Philip B. Matz (*American Journal of the Medical Sciences*, November, 1919) says the epidemic of influenza at Camp Travis was characterized by the presence of the bacillus of Pfeiffer in thirty-nine per cent. of 868 throat cultures examined. Blood cultures were all negative in the influenza cases. Blood cultures in the complicating bronchopneumonias gave eleven per cent. positive, the organism recovered being the pneumococcus. The blood picture in the average case of influenza showed a slight leucopenia, with a relative increase of the small mononuclears. When bronchopneumonia developed there followed a slight increase in the total leucocyte count and an increase of the polymorphonuclears. Chemical examination of the blood showed retention of urea nitrogen in cases of pneumonia with no kidney involvement. The retention of urea nitrogen in cases having a transient nephritis was no greater. In Matz's opinion, this retention in the bronchopneumonia under discussion was due to protein injury and disintegration, associated with extensive lung inflammation. Blood chemistry in the empyema cases showed a retention of urea nitrogen. Acidosis was a factor in a large number of the bronchopneumonias, as was evidenced by a reduction of the combining power of blood plasma for carbon dioxide.

Joint Effusion as an Addition to Hutchinson's Triad in the Diagnosis of Congenital Syphilis.—A. Cantonnet (*Paris médical*, September 6, 1919) supplements Hutchinson's triad, viz., interstitial keratitis, characteristic dental defects, and rapidly developing deafness without apparent local lesions or the usual accompanying symptoms of otitis, by the addition of chronic joint effusion or hyarthrosis, involving especially the large joints, and in particular one or both knees. This manifestation he finds to be more frequent than deafness. It has nothing in common with the joint affections of acquired syphilis, manifest chiefly in the form of arthralgia or acute synovitis and sometimes as an osteochondroarthritis or Lancereaux's gummatous perisynovial infiltration. Inherited syphilis may induce an osteoarthritis sicca, but much oftener the condition is an osteoarthritis with effusion, simulating "white swelling." The syphilitic joint should not really be confused, however, with true "white swelling," for the swelling is hard and bony, there is actual fluctuation rather than a mere doughy consistency, there are no contractures nor faulty posi-

tions of the parts, and glandular engorgement is rare. Joint motion is preserved or but slightly hindered by the effusion. Generally pain is absent; if present, it is slight and chiefly nocturnal. There are no fungous outgrowths, the fluid is clear, sequestra are rare, and the general condition is rather good. Whenever interstitial keratitis is noted, examination and inquiry should be made for joint effusion. Sometimes, however, an actual effusion will not have been complained of by the child nor noticed by the parents, owing to its painlessness. Doubtless many instances of joint effusions in children, considered traumatic because they have followed some trifling injury, are actually the result of inherited syphilitic infection. These joint effusions respond to mercurial treatment even better than keratitis; the treatment should, however, be kept up for a long period.

The Clinical Significance of Achylia Gastrica.—Harvey G. Beck and George McLean (*Southern Medical Journal*, October, 1919) come to the following conclusions: 1. Focal and systemic infections are unquestionably concerned in the etiology of achylia gastrica. 2. The disturbances of the glands of internal secretion associated with achylia gastrica are also the result of chronic infections and not the cause of achylia. 3. Nervous or reflex disturbances in themselves are not etiological factors. 4. Exclusive of carcinoma of the stomach and advanced stages of chronic interstitial gastritis, gastrointestinal disturbances are either incidental or secondary to achylia. 5. It would appear that cardiorenal and metabolic diseases occur coincidentally with chronic infections and play an unimportant part in the etiology of achylia gastrica. 6. Alcohol and tobacco in excess without focal infections will apparently not produce achylia. The excessive use of tea and coffee may produce it.

Silent Renal Calculi.—Edward L. Young (*Boston Medical and Surgical Journal*, November 13, 1919) states that in nearly 4,000 autopsies at the Massachusetts General Hospital showing stone in the kidney or ureter, there was only one case with a completely negative history and urinary findings and normal kidney macroscopically and microscopically. There were four cases without symptoms and with negative urine, six cases without any damage to be demonstrated at autopsy, and fifteen cases where the damage was too slight to compromise the integrity of the kidney. Two cases with stones in calyces known to have been present for at least six or seven years, with repeated attacks of renal colic, showed one a normal the other an essentially abnormal kidney. Stones in the ureter do kidney damage more surely than stones in the pelvis or calyx, and a small stone arrested in the ureter may do as much damage as a large one. Stones in the calyces can cause as much damage as stones in the pelvis. Pus can be present during life without any evidence of infection or damage at autopsy, so the presence of infection as well as of pus is necessary before important kidney damage is proved to be present. The presence of a stone of any size in ureter, pelvis, or calyx may cause slight tissue changes, char-

acterized microscopically as a slight increase of interstitial tissue, slight arteriosclerosis, or slight atrophy of renal elements, but these lesions are not constant and apparently are of little if any account so far as the work of the kidney is concerned; aside from this, no damage is done the kidney by the stone as such. But the vast majority of renal or ureteral stones do at some time cause obstruction and always invite infection, so they are sources of danger to the individual. There is no arbitrary standard by which it can be said that a given renal stone may or may not require operation. In any given case without infection or other evidence of kidney damage a calculus may be left alone until it is passed, until pain forces an operation, until evidence of infection or damage begins, or until it is shown to be increasing in size so that a pyelotomy becomes more difficult. If, in spite of cystoscopic manipulation, a ureteral stone has ceased to make progress, it should be removed after remaining stationary a relatively short time, in spite of possible lack of symptoms, as the kidney is almost certain to be badly damaged.

Culture and Isolation of Anaerobic Germs Without Special Apparatus.—M. Rhein (*Presse médicale*, September 8, 1919) uses the symbiotic method to exclude oxygen from the anaerobic organisms. The *Bacillus fecalis alcaligenes* is always used for this purpose because it is strictly erobic and will not grow at depth in the vicinity of the anaerobic colonies; because it is a very thin, easily recognized rod and is negative to Gram's procedure; because it fails to modify sugars, gelatin, or coagulated albumin; because it sets free no special odor in bouillon cultures, and because it is not pathogenic to laboratory animals. To obtain a pure culture of a spore-forming anaerobic germ it is merely necessary, after sporulation, to heat the preparation for ten minutes to 56° C., thus destroying the *Bacillus fecalis alcaligenes*, but not the anaerobic spores. Where the anaerobic germ under examination is not spore bearing, it is well to inoculate bouillon with the *B. fecalis* a few hours before the anaerobic germ is introduced. The age of the bouillon used is of no consequence in this method, and the bouillon need not be boiled before inoculation. The anaerobic germs grow as rapidly in the mixed cultures as in inert gases, and their vital manifestations, viz., motility, sporulation, fermentation of sugars, proteolysis, and gas production, seem in no way altered. Toxin production is likewise unimpaired and the method may be used for the diagnostic recognition of pathogenic germs. In isolating the anaerobes, Rhein uses a slightly modified Marino procedure. A tube of sterile agar is first poured into the lid of a Petri dish; when it has solidified, the inoculated agar is added and finally another layer of sterile agar. More agar is then poured over the latter, and the lower half of the dish applied, avoiding air bubbles. Fifteen minutes later any overflow of agar is removed and the plate placed in the incubator. To obtain bacterial samples after incubation the lid is carefully removed and pieces of agar taken off with a platinum loop until the colonies to be examined have been reached.

Chenopodium Poisoning and the Ear.—E. Opikofer (*Correspondenz-Blätt für Schweizer Aerzte*, February 8, 1919) reports a case of chenopodium poisoning in a woman thirty-one years old who took about a tablespoonful of the oil. Two hours later she was suffering from headache, nausea, tremor of the entire body, and great vertigo, together with intense aural tinnitus. The next day she was totally deaf and suffered from an intense vertigo as well as the tinnitus. Three days later she could not understand words shouted in her ear. The vertigo and tinnitus gradually improved. At the end of a month she could hear single numbers whispered directly into her ear, and conversation at three metres. Tests showed a reduction of the hearing power. Reexamination two weeks and also five months later gave the same result. Treatment was of no avail. The test of the vestibular apparatus showed no spontaneous nystagmus; the caloric reaction, water at twenty degrees, was the production of a horizontal rotatory nystagmus at the end of forty seconds in one ear, of fifty in the other. The eyes were not affected. Search through literature revealed only four similar cases, one reported by Brown in the *Maryland Medical Journal*, one by Pole in the same magazine, and two by North in the *American Journal of Otology*. These are quoted in detail. The other cases of chenopodium poisoning reported did not mention any affection of the ears. In all five cases the deafness was bilateral and of equal degree on the two sides. The total number of cases of poisoning recorded, including those mentioned above, is fifteen. Of these ten were fatal. In only one case were ocular disturbances noted. He concludes that the auditory nerve is particularly endangered in this kind of poisoning, while the remaining cranial nerves, especially the optic nerve, are spared.

Lung Abscess.—Nathan W. Green (*Annals of Surgery*, November, 1919) states that a lung abscess may be confused with bronchiectasis but with few other conditions. In the subacute stage it may follow a pneumonia with an empyema. A lung abscess may accompany an empyema and there may be a direct connection between the empyema and a bronchus through the abscess. Fluid may be injected through an empyema sinus and be expectorated through the mouth. A method used in the treatment of some of these cases is to inject through the sinus fluid which caused coughing which could be recognized by the change in the color of the sputum. The presence of a subacute abscess may be suspected, after pneumonia or empyema, when the patient's temperature becomes normal and then gradually rises, accompanied by a hacking cough and an appearance of fresh pus in the sputum in moderate quantities. The expectoration may be followed by a considerable quantity of pus evacuated in a short time, with a recession of the discharge to the former condition. Chronic lung abscesses are more easily recognized because the clinical picture is more constant. The patient may appear to be chronically ill or in fairly good condition except for his local symptoms. The abscess may follow pneumonia, influenza or a pneumococcus infection, or accompany the inhalation of a foreign

body. The chief symptom of the chronic lung abscess is a profuse, foul expectoration. Change of posture will change the amount. The odor is characteristic. The x ray confirms the diagnosis, and when a foreign body is present it can frequently be detected. Occasionally the fluid level may be seen when the posture is changed. The lung abscess may have ragged walls or there may be several abscesses and simulate bronchiectasis. It may be a single abscess with a rigid wall. An empyema may overlie the abscess. Adhesions may be plentiful or there may only be a few. The abscess may contain a foreign body or masses of necrotic tissue. The symptoms include cough with a varying amount of expectoration from day to day, more profuse in the morning. Change in posture aggravates the cough and may cause an evacuation of the sputum, with a cessation of expectoration for several hours. A slight afternoon fever will be present, accompanied by a certain amount of anorexia. There is a gradual loss of weight. The physical signs may be obscure and often a diagnosis can not be made from them alone. They indicate a localized consolidation with occasional cavernous breathing, and if an empyema overlies the abscess the empyema signs will predominate. The physical signs vary from time to time depending on the contents of the abscess cavity. Clubbing of the fingers occurs, but as this sign is also present in bronchiectasis, it cannot be relied upon. The x ray is most valuable in determining the diagnosis. The sputum is generally of a greenish-yellow color, very profuse, frequently free from adhesive mucus, and has a characteristic disagreeable odor. The medical treatment aims to diminish the secretion, deodorize the sputum, and keep the patient in a good general condition. Drugs or change in climate may be resorted to. Postural treatment is often beneficial. Surgical treatment consists of thoracotomy removing one or more ribs and evacuating and draining the abscess. The operation may be divided into one or more stages depending on the quantity of adhesions present. After the resection a drainage tube is inserted and a dressing applied. The first operation may be used as an index to the patient's resistance. A definite prognosis as to the healing time can not be given.

Blood Transfusion.—J. R. Losee* (*American Journal of the Medical Sciences*, November, 1919) asserts that blood transfusion as practised today in the foremost hospitals is one of the greatest therapeutic advances in the past decade. The indirect method has saved the lives of many patients suffering from acute hemorrhage. Patients suffering from primary and secondary anemia should be transfused early in the disease in order to obtain the best results. Certain laboratory examinations are absolutely essential to the success of transfusion. The syringe cannula method transfers blood from the donor to the recipient with the least possible physical or chemical change, and is therefore associated with fewer reactions. No definite relation can be established between the amount of blood transfused and the blood count afterward.

Occurrence of the Pfeiffer Bacillus in Measles.—Andrew Watson Sellards and Ernest Sturm (*Bulletin of the Johns Hopkins Hospital*, November, 1919) investigated the presence of Pfeiffer or Pfeifferlike organisms in measles patients and found that an organism indistinguishable from them was present in twenty-five of thirty-one cases of measles. This organism was isolated from the sputum and conjunctivæ and in two cases from an excised inguinal gland. As the active symptoms of measles disappeared these bacteria also disappeared in the majority of the cases. The strains of Pfeiffer bacillus isolated in measles and influenza cases were compared, with a resulting considerable variation in the behavior of the different strains. The occurrence of this bacillus in both diseases makes it appear likely that it is not etiologically related to either.

Pathological Changes in the Testes in Epidemic Pneumonia.—Ralph G. Mills (*Journal of Experimental Medicine*, November, 1919) reports the pathology of the testes in sixty fatal cases of pneumonia, in some instances complicated by measles or influenza. He found that the changes were without clinical signs, were nonspecific, focal in nature, independent of the infecting organisms, and varied in intensity directly with the duration of the disease. The process was continuous, but the author divides it into the following states: Cessation of spermatogenesis; degeneration of preformed spermatocytes, spermatids, and spermatozoa; desquamation of altered cells and fragments of same; formation of giant cells in the tubule walls with subsequent liberation into the lumen; disappearance of all desquamated cells and all those derived from the spermatogonia by mitosis; in some instances thickening of the hyaline layer of the basement membrane.

Premature Separation of the Placenta.—Arthur Morse (*American Journal of Obstetrics*, September, 1919) reports the results of experiments conducted to ascertain the underlying cause for premature separation of the placenta and for the intramuscular lesions of the uterus which are found in the more pronounced cases of this complication. He concludes that the intramuscular lesions are not due to an acute distention of the uterine cavity, but depend upon obstruction of the uterine circulation. When such an obstruction is provoked artificially in rabbits by ligating the veins of one "horn" of the bicornuate uterus, the lesions produced are identical with those found in human cases. Similar lesions are also observed following simple rotation of the uterus. The primary lesion in placental separation is an engorgement of the decidual sinuses and a hemorrhagic extravasation into the decidua; the intramuscular hemorrhages occur as a secondary lesion in instances where the circulatory disturbance is excessive. Probably the excessive mobility of the uterus predisposes to a similar but spontaneous acute obstruction of the veins of the broad ligament in women advanced in pregnancy. The albuminuria sometimes accompanying placental separation is probably secondary to the disturbance in the uterine circulation and not an indication of primary nephritic toxemia.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Special Meeting of the House of Delegates to Consider the Report of the Committee to Study the Subject of Compulsory Health Insurance With Special Reference to Its Relation to the Medical Profession, Held at Albany, November 22d.

The President, Dr. GRANT C. MADILL, of Ogdensburg, in the Chair.

The following is the committee appointed by President Thomas H. Halsted, composed of the following members: Dr. Harvey R. Gaylord, of Buffalo, chairman; Dr. Grant C. Madill, of Ogdensburg, incoming president; Dr. Thomas H. Halsted, of Syracuse, retiring president; Dr. Joseph B. Hulett, of Middletown, president First District Branch; Dr. Frederick C. Holden, of Brooklyn, president, Second District Branch; Dr. Luther Emerick, of Saugerties, president, Third District Branch; Dr. Thomas A. Rogers, of Plattsburg, president, Fourth District Branch; Dr. G. Massillon Lewis, of Vernon, president, Fifth District Branch; Dr. R. Paul Higgins, of Cortland, president, Sixth District Branch; Dr. John H. Pratt, of Manchester, president, Seventh District Branch; Dr. Albert T. Lytle, of Buffalo, president, Eighth District Branch; Dr. J. Richard Kevin, of Brooklyn, chairman, Committee on Legislation; Dr. Henry L. Winter, of Cornwall, chairman, Committee on Medical Economics; Dr. Arthur W. Booth, of Elmira, member, State Board of Medical Examiners; Dr. George W. Kosmak, of New York, chairman, Committee on Legislation, Medical Society of the County of New York; Dr. John A. Lee, of Brooklyn, chairman, Committee on Legislation, Medical Society of the County of Kings, Brooklyn; Dr. James F. Rooney, of Albany, chairman, Committee on Legislation, Medical Society of the County of Albany, Albany; Dr. Walter H. Kidder, of Oswego, secretary, Medical Society of the County of Oswego.

The incoming president, Dr. Grant C. Madill, added to the committee Dr. Sigismund S. Goldwater, medical director, Mt. Sinai Hospital, New York.

Dr. Harvey R. Gaylord, chairman of the committee, presented the following report, which was unanimously adopted:

Your committee would like to offer the following brief résumé of the subject of its study before stating its recommendation:

The essential components of all compulsory health insurance schemes are two: First, the provision of a cash indemnity during a relatively brief period of incapacity to labor due to illness; secondly, the provision to the insured and their dependents during a determinate time of so-called medical benefits which comprise medical, dental,

and nursing attendance, hospital and sanatorium accommodations, maternity attendance, drugs, and all necessary medical and surgical supplies.

The proponents of this legislation rest their demand for the institution of this scheme in America upon two main allegations: First, that a very large amount of poverty is due to illness causing consequent unemployment and loss of income; secondly, that a vast amount of the population receives inadequate and insufficient medical attendance; that is, that medical attendance is grossly deficient both as to quantity and quality.

With the general features of the measures proposed for the legislative enactment of the compulsory health insurance scheme in this State your committee will deal only in the briefest manner; the matter is familiar to you. It is proposed to establish an administrative machinery radiating downward from a division of the State Industrial Commission, composed of a certain number of commissioners appointed by the Governor, who in turn will appoint a chief of the bureau of health insurance. Subordinate to the commission and acting under regulations made by the commission function the boards of directors of the local funds composed of three members elected by the employer members of the local fund, three elected by the employees and one additional elected by these six members.

All the affairs of the funds are administered locally by these boards of directors. Each local fund employs a medical officer who is permitted to practise and who is practically the medical supervisor of the administration of the benefits of the act. The medical profession is not represented upon any executive body under the proposed law, but is permitted to function solely through advisory committees, local and state. Its sole statutory representative has an administrative, not an executive function.

After consideration of the evidence put forward by the proponents of this legislation in support of their statement that a large proportion of the poor have been impoverished through unemployment caused by illness, your committee finds that none of this evidence is unimpeachable and that it rests largely upon *a priori* reasoning. The preponderance of evidence is against the fact that any considerable amount of impoverishment is caused by illness; moreover, in those cases where impoverishment is caused by illness, it is due to the long enduring disability preceding death occurring in the chronic diseases, especially tuberculosis, chronic heart disease, cancer, chronic joint infections, renal and vascular disease, which cause a disability long exceeding the period of twenty-six weeks during which the insured is entitled to benefits under the scheme.

The statistics of the Labor Bureau of New York State show that in the main disability from all causes, including accident, injury and illness,

is the source of, on the average, only 5.7 per cent. of unemployment, about the same amount as that caused by weather conditions (5.6 per cent.), a little less than half that caused by labor disputes (10.6 per cent.), or one thirteenth that due to lack of work (74.6 per cent.).

A survey entitled *Poverty in Baltimore and Its Causes; Study of Social Statistics in the City of Baltimore*, by the Alliance of Charitable and Social Agencies, McCoy Hall, Baltimore, Maryland, November 15, 1918, gives strong evidence of the small part illness plays in the cause of poverty; moreover, it evidences strikingly the fact heretofore stated as to the relationship of prolonged disability not covered in any scheme for health insurance to the relatively few cases of impoverishment due to sickness. Your Committee finds, therefore, that short illnesses causing ephemeral disability bear no relation to poverty; that where impoverishment is caused by illness it is in all instances due to long continued disability; and that illness is but a very minor cause of unemployment as compared even to the conditions of the weather or labor disputes.

Your committee is unable to find any available evidence that will bear inspection proving that, in the main, medical attendance in this State is grossly deficient in quantity or grossly defective in quality. If these facts were true it is unable to satisfy itself that the people of this State would receive a larger and closer degree of medical attention where one physician may care for either two thousand or more patients as permitted under this scheme than they now receive where the proportion of physicians to population is about one to seven hundred and eighty.

Moreover, your committee is quite satisfied that the quality of medical attention would no more be benefited in the United States than it has in Germany, Austria and Great Britain by the conversion of medical practice from its present plan into an enormous scheme wherein the practitioner would be employed from year to year under contract, and in the final analysis subject to lay dictation as to means and methods of practice.

Your committee feels very strongly that the inquisitorial powers which would be conferred upon the State Industrial Commission and its agents, and upon the local boards of directors, must be considered in its effect upon the public health, and especially as to the rôle it might assume in submerging and nullifying the activities of the present State Department of Health which has played so large a part in the reduction of morbidity and mortality by means of preventive, not palliative, medicine.

There is no uncertainty about the evidence that the relative morbidity rate, mortality rate, infant mortality rate, and maternal mortality rate, has been much more materially reduced in the United States during the past twenty years than it has been in Germany and Austria where compulsory health insurance not alone, but the whole scheme, including invalidity and unemployment insurance and old age pensions, have been in force. It can be seen, therefore, that compulsory health insurance as such plays a very small part in the reduc-

tion of length and severity of illness and that on the whole it has been of extremely little value, medically, in those countries; while it has been the cause of a profound deterioration in medical service and medical morale. Even in England where it has been in operation for a comparatively short time it has proved so defective and ineffective for the purposes for which it was instituted that it is now proposed to inaugurate the plan of State medicine to supplant it.

Your committee, therefore, finds:

First.—There is no necessity for the institution of a scheme covering the major portion of the population of the State providing for the institution of contract medical practice on a colossal scale in order to furnish medical attendance and other services.

Second.—In those countries where this scheme has been in operation for many years, it has caused a deterioration in medical morale and medical service and that its effect in this State would be the same; that is, a lessening in the quality of medical service.

Third.—In comparison with those countries where this scheme has been in operation the United States shows a more marked reduction in mortality rate, both general and as affecting maternal and infantile mortality rate. Apparently the morbidity rate under the scheme has doubled instead of being diminished in Germany and Austria since the institution of the social insurance plan.

Fourth.—There is danger of the scheme gradually undermining the functions so extremely valuable to the community at present subserved by the State Department of Health.

Fifth.—Owing to the paucity of accurate and unimpeachable data collected by means of an unbiased investigation, your committee recommends that the Legislature of 1920 be requested to appropriate a sufficient sum of money for the use of the health department and such other departments in association with it, as it requires, for the purpose of making a survey of the State of New York to determine the amount and character of illness in its economical relation to the commonwealth.

Sixth.—If additional legislation is to be enacted, it should provide for a greater development of existing agencies for preventive medicine, together with the extension on a large scale of the present county and municipal functions for both preventive and remedial medicine, and it should make further provision for the inauguration of a more widely extended utilization of the present institutional clinical facilities for the diagnosis and treatment of disease, in order to facilitate the access of the entire population of the State to modern methods in the practice of medicine.

Your committee, therefore, recommends that the House of Delegates and, through them, the Medical Society of the State of New York, unqualifiedly oppose the enactment by the Legislature of the State of New York of any law instituting a system of compulsory insurance against sickness because of its menace to the public health of the State.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of Wednesday, October 1, 1919.

The President, Dr. WILLIAM J. TAYLOR, in the Chair.

Brachial Birth Palsy: A Pseudoparalysis of Shoulder Joint Origin.—Dr. T. TURNER THOMAS said that obstetrical or brachial birth palsy represented only one phase of a much larger shoulder joint problem. Almost if not all shoulder joint injuries were associated with a brachial paralysis, palsy, or weakness of varying degree and duration. Very rarely would an actual nerve rupture be associated with the paralysis. The best evidence of the absence of such a nerve rupture was the almost uniform and gradual disappearance of the paralysis. This was easily proved in connection with adult cases and seemed to be true in the obstetrical cases, in which the paralysis was usually of longer duration and more difficult to follow up. If the crippling of the limb persisted into adult life it would probably be found in all cases that a posterior dislocation of the shoulder was associated, often with some moderate disturbance in the elbow joint. In obstetrical paralysis, soon after birth, there was a profound and almost if not complete paralysis of the whole limb, and not a paralysis limited to the small Duchenne-Erb group of muscles.

This extensive paralysis was best explained by the inclusion of the branches of the brachial plexus in an axillary inflammation and later cicatricial tissue, all of which was probably absorbed in time, thus accounting for the disappearance of the paralysis. Such a pathology had been well established by operative and postmortem findings in the obstetrical and adult cases. The Duchenne-Erb localization of the paralysis by electrical reaction to the deltoid, biceps, brachialis anticus (Duchenne and Erb), infraspinatus (Duchenne) and supinators of the forearm (Erb) had been widely accepted but not corroborated. In his first four cases, Duchenne had found posterior dislocation of the shoulder which he said occurred at birth and was chiefly responsible for the paralysis. He thought, however, that some of the paralysis was due to injury of the brachial plexus. In four later cases he had not found dislocation of the brachial plexus. Since then practically nothing had been said of the shoulder joint origin, the dislocations passing unrecognized and all cases being attributed to injury of the brachial plexus. Since 1911 when the shoulder joint injury was offered as the primary cause, this theory had made rapid progress. It was likely that sufficient traction on the head at birth to rupture the brachial plexus had never been applied in a successful delivery.

Discussion.—Dr. F. X. DERCUM was inclined to agree with Doctor Thomas' in regard to the nerve involvement which might be present as secondary to the trauma of the joint.

Dr. A. P. C. ASHHURST said that inquiry into the subsequent history of patients with birth injuries of the shoulder seen at the Orthopedic Hospital showed they did not return because their parents believed nothing could be done. In nearly all disability persisted. If Doctor Thomas's theory was accepted therapeutics must be changed and there

would no longer be much need of the neurologist. Obstetricians ought to take more notice of this injury and prevent its recurrence. Noting the histories of several families in which such injury was present, Doctor Ashhurst had found that in one family three children were severely injured at birth and the fourth killed at delivery. In another instance brothers and sisters died at birth; in another, only the sixth child survived delivery. It should be remembered that these injuries did not all occur in difficult labors.

Dr. ALFRED GORDON said that from the practical standpoint Doctor Thomas's advice and work were perfectly satisfactory and that he thought operation should be as early as possible. In the matter of pathogenesis, however, he felt that he must differ from Doctor Thomas. In the child presented by Doctor Thomas, operation had been done early and there had been use of the arm for three and a half years; the type of atrophy present was such as was seen in typical muscular atrophy due to disease of the spinal cord and nerves, and he was inclined to believe there was a real injury of the nerve trunks from the beginning. In some cases there was even a lesion of the cells of the spinal cord. Warrington reported eleven cases of complete recovery without operative procedure in a series of thirty-two cases; Bruns, six out of eleven. Although there were instances of adults who in infancy had had brachial paralysis and recovered without operation, from a practical standpoint he would follow Doctor Thomas's advice in the matter of treatment.

Dr. CHARLES W. BURR asked Doctor Thomas to state whether in his opinion anything could be done with these children at birth or whether it was better to wait until the child was several months old before operating. Personally he had seen few spontaneous recoveries from congenital brachial palsies. Probably this was due in part to the fact that patients seen at the Orthopedic Hospital did not come in an early period. The few cases he had seen in private practice had been let alone because it was thought at birth that nothing could be done, and in these the paralysis was as pronounced as at birth. He had been sending his patients to Doctor Ashhurst. They were not cured by neurological treatment.

Doctor Thomas stated, in closing, that all his work on this subject had been intended primarily to attract attention to the great need of recognizing the shoulder condition at birth and correcting any displacement then. Evidence was rapidly collecting that the dislocation was present at that time. The only time that joint displacement could be corrected was at birth. In the most severe cases conditions could be greatly improved at any stage, but the joint could never be restored to the normal after many weeks. The greatest obstacle to the recognition of the dislocation was the failure to look for it because of the general faith in the theory of a plexus rupture. The basic lesion, in his opinion, was the dislocation, anterior in adults and posterior at birth. The cases without dislocation were merely those in which the same causal force was not severe enough to produce dislocation and stopped at a sprain. His observations upon the various phases of traumatic brachial palsies were rock rooted in the

work of the late Dr. G. G. Davis, professor of applied anatomy in the University of Pennsylvania, and his endeavor to carry some of the results of Doctor Davis's work on the cadaver over into surgical practice.

Conjugal Syphilis of the Nervous System.—

Dr. ALFRED GORDON presented a review of the disorders occurring in syphilitic affections of the nervous system, with a detailed account of thirty-two cases with various nervous disorders of syphilitic character which had been followed up for a number of years. Not only in wives and husbands, but in other relatives, sisters and brothers, who lived with syphilitic parents, neurosyphilis developed later in life. In the latter cases especially the question of hereditary syphilis was totally eliminated from the present series. The investigations proved of particular interest from the standpoint of prophylaxis.

Letters to the Editors.

THE CHICAGO TRIBUNE REPLIES TO SURGEON GENERAL BLUE.

CHICAGO, November 14, 1919.

To the Editors:

In the issue of the NEW YORK MEDICAL JOURNAL for October 4th there appeared a letter from Surgeon General Blue of the U. S. Public Health Service relative to statements made by me. To this letter I ask the privilege of replying, partly because Doctor Blue makes certain incorrect statements and partly because the subject is one which should be fully discussed in medical journals.

In a letter dated October 17th Doctor Blue sent me his letter to the journals accompanied by a letter in which he stated that my article contained "a number of misstatements," whereas in the article for publication he headed "Correction of Erroneous Statements in the Chicago Daily Tribune" he describes my article as "so misleading." He brands two of my statements as misstatements. A third statement made by me he pronounced correct in his letter to me. The several other statements were not touched upon. Even though he had made his point the headlines and his several characterizations would not have been justified and he himself might be accused of attempting to mislead, especially in view of his own statement that the principal object of his letter was to justify the action of the Service in their action on lipovaccines.

First, let me briefly discuss the statement relative to the use of lipovaccines by the Army. Frankly, I did not know of the War Department March circular on lipovaccines until I received Doctor Blue's letter. However, I now have a copy of the circular before me and I find the facts are not in full accord with Doctor Blue's statements. I refer to "S. G. O. 444.2, Surgeon General's Office, March 12, 1919," signed C. R. Darnall. Doctor Blue says, "The fact is the Army discontinued distributing lipovaccine some months ago and withdrew that which was outstanding." The circular reads: "Lipovaccines were adopted as a war measure on account of their obvious advantages and have served their purpose. The technic of manu-

facture, however, needs further improvement and the duration of their protective power as compared with that of saline vaccines needs further investigation. Saline vaccines, therefore, will be used as a routine and lipovaccines will be reserved for emergencies."

The second charge of error is flimsy. My article related to measures of control of influenza. Among other methods I referred to the use of vaccines. Six paragraphs were given to discussion of vaccination. A part of the discussion of vaccines was devoted to lipovaccines. In giving the evidence for vaccination I cited the two Army experiments, inadvertently referring to the work at Camps Upton and Wheeler as having been done with lipovaccines. As is well known the vaccination at Camp Wheeler was with lipovaccines, that at Camp Upton with saline vaccines.

My article contained replies to eleven questions. Doctor Blue dissents from statements in connection with two. How well he has made his points the reader may judge. How accurate he has been the reader may also judge. When we consider that he does not dissent from nine of my statements and, furthermore, that he straightway gives another as his chief objection to my article, I think we can justly conclude that the headlines written by Doctor Blue were incorrect if not misleading. Had he been a fairer antagonist he would have furnished a different heading.

Doctor Blue writes: "The chief objection raised is the coupling of the refusal of the U. S. Public Health Service to license lipovaccines with the statements which imply that for this reason people are being deprived of a valuable prophylactic agent." He justifies the action of the service by the statement, "The lack at present of satisfactory potency and sterility tests for lipovaccines had led the Bureau to decline to license such vaccines for interstate sale and the evidence at our disposal indicates that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism."

I say the Public Health Service has made it impossible for most of the people to get influenza-pneumonia vaccines and (human nature being as it is) practically speaking, to prevent influenza-pneumonia vaccination. Doctor Blue says that at least the first part of the statement is incorrect, the Public Health Service having gone to the limit of their powers to make lipovaccines unavailable. I say that people who can get lipovaccines are lucky. Doctor Blue denies this and justifies the action of the Service on two grounds—lack of confidence in the sterility of influenza-pneumonia vaccines and lack of faith in their efficacy. Here, as Doctor Blue says, is the real point of controversy, the chief reason, for his open letter.

First, as to sterility, I assume that what Doctor Blue meant to say is that it is difficult to sterilize lipovaccines. Lipovaccines made according to the older method were in fairly wide use in the Army last winter. I have not seen any reports of any great harm due to lack of sterility. However, a simpler method of manufacture has been in use for more than six months. It was described by

Rosenow in June last and the description appeared in the *Journal of the American Medical Association* shortly thereafter. Using this method it is just as easy to make sterile lipovaccine as to make sterile saline vaccine and far easier than to make sterile smallpox vaccine—a product licensed by the U. S. Public Health Service.

Second, as to potency. I am not certain what potency tests Doctor Blue refers to. He may refer to lack of laboratory demonstration by the McCoy test or to lack of clinical proof of potency. This objection to influenza-pneumonia vaccines was raised frequently in October, 1918. Without going deeply into it, it seems to me that so far as the pneumococcus is concerned the evidence is very good that it can be used, in the laboratory, to produce specific antibodies and, clinically, to produce immunity as to streptococcus. The evidence is fairly good that it produces specific antibodies in laboratory animals. There is lack of agreement as to the degree of effectiveness in antibody formation with lipovaccines as compared with saline vaccines.

As I understand it the position taken by Doctor Blue is that if the Service were to permit the manufacture of lipovaccines they would be in the position of guaranteeing their efficacy to an extent. This he declines to do. May I ask him—Does the Public Health Service guarantee the efficacy of saline vaccines against influenza?

I have before me catalogues of biological products used for colds and a variety of disorders put out under license of the U. S. Public Health Service. Does the Service guarantee the efficacy of each of these? Or do they stand behind them in the sense in which they decline to stand behind lipovaccines? The last half of the sentence quoted is, "The evidence at our disposal indicating that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism." Suppose we ask, on the basis of this statement, why license the one and refuse to license the other?

The point made in favor of lipovaccines in my article was that using lipovaccines, vaccination can be done at one sitting whereas three sittings extending over three weeks are required for vaccination when done with saline vaccines. Vaccination at three sittings is possible in military life. In civil life it does not work. In ordinary times for the civilian life, for the uses of municipal and state health departments, the only vaccination worth talking about is one sitting vaccination.

Now, Doctor Blue may be right as to a laboratory proposition, that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism, but when it comes to fighting pneumonia and influenza among civilians he is just about as wrong as a man could be. His action is equivalent to saying influenza-pneumonia vaccination shall not be done generally. I do not think it is a wise decision.

Very truly yours,

W. A. EVANS, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Veneral Diseases. By C. H. BROWNING, M. D., D. P. H.; Director of the Bland-Sutton Institute of Pathology of the Middlesex Hospital, and DAVID WATSON, M. B., C. M.; Lecturer on Venereal Diseases, Glasgow University; Surgeon in Charge of the Venereal Department, Glasgow Royal Infirmary, and of the Lock Hospital, Glasgow. With an Introduction by Sir JOHN BLAND-SUTTON, F. R. C. S. Illustrated. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1919. Pp. xv-336.

Any attempt to confine our present day knowledge of gonorrhea and syphilis within the compass of one small volume of 335 pages must necessarily result in crowding and congestion. This book offers no exception. It is full of up to date venereal material, yet there are so many topics under discussion and they are treated so compactly that one feels that he is being hurried through for want of more space. Thus, for instance, the subject of chancroid is allotted less than a page and a third, and two illustrations. The subjects of gonorrhea and syphilis are fully treated, though both subjects seem crowded. No mention is made of American urethroscopes, nor of some of the distinctly American therapeutic measures, such as Beifeld's operation for vesiculitis, for the treatment of gonorrheal arthritis (rheumatism), and vesiculitis. Puncture and incision of the epididymis in acute gonorrheal infection are not recommended on the ground that "they are certain to be followed by complete sterility of the testicle affected." This is quite the opposite to the view held by American urologists.

Acridiflavine is well spoken of for use in gonorrhea. The authors state that a week's treatment frequently suffices to bring about a permanent cure. Here again they differ considerably from American experience. Syphilis is thoroughly discussed, with particular reference to the Wassermann reaction and the dark field illumination. The Wassermann reaction is apparently accepted as being specific, beyond any doubt. While the reviewer believes the book will be found useful for English students and practitioners, it seems highly doubtful whether their American brethren will feel altogether at home with it.

Births, Marriages, and Deaths.

Died.

EATON.—In Philadelphia, Pa., on Wednesday, November 19th, Dr. Albert M. Eaton, aged seventy years.

HAMILTON.—In Great Barrington, Mass., on Sunday, November 23d, Dr. Allen McLane Hamilton, aged seventy-one years.

JAMISON.—In Greensburg, Pa., on Saturday, November 15th, Dr. Marcellus R. Jamison, aged sixty-seven years.

MORGAN.—In Chevy Chase, Md., on Friday, November 21st, Dr. James Dudley Morgan, aged fifty-seven years.

NYE.—In Enon Valley, Pa., on Thursday, November 20th, Dr. Hiram Nye, aged seventy-six years.

POVEY.—In Detroit, Mich., on Monday, November 24th, Dr. William Gilbert Povey, aged forty-six years.

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Original Communications

THE CAUSATION AND TREATMENT OF RICKETS.*

By ERIC PRITCHARD, M. A., M. D., (Oxon.),
London,

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London Hospital for Diseases of the Child.

It is to my mind open to question whether the time has not now arrived for a reconsideration of the whole subject of rickets, its definition, its etiology and its treatment. The following may be taken as a typical definition of the disease:

"Rickets is a chronic general disorder of nutrition occurring during infancy from faulty diet and hygienic deficiencies. It involves the whole body, but its most obvious effects are recorded in the skeletal system."

This definition and the majority of those with which I am acquainted appear to me to confuse cause and effect. If the term is not confined to the bony changes, but covers also all the various forms of malnutrition which ultimately terminate in rickets, the name means little else than a generic one for ill health in infants and young children. Some authorities classify such symptoms as sweating, muscular weakness, laxity of ligaments, delayed teething, spasmophilic manifestations and tendencies to catarrhs as rachitic, even in the absence of the bony changes.

Francis Glisson included in his famous monograph on rickets every symptom and childish ailment which was known in his day.

The view which I propose to present in this address is that practically all varieties of malnutrition occurring during infancy and early childhood tend to terminate in rickets, provided they are sufficiently severe or long enough continued. They should not, however, be regarded as evidence of rickets, unless they are actually accompanied by the typical changes in bone which are characteristic of the disease. Each variety of malnutrition has its own particular etiology and requires special lines of treatment, and cannot be dealt with rationally on the cut and dried lines that are usually advocated for rickets itself.

Briefly stated, the theory which I am proposing to propound is that the essential and central feature of rickets is the want of calcification or mineralization of developing bone, and that this in its turn is due to the existence of requirements for

calcium which for the time being are more urgent than of developing bone. These urgent requirements are the necessity for neutralizing acid bodies in the blood; in other words, to neutralize or compensate an existing acidosis. My argument is that all chronic conditions of malnutrition of whatever kind or from whatsoever cause finally terminate in an acidosis, and that all claims on alkaline bases arising in connection with the neutralization of this acidosis must be satisfied before those of developing bone are attended to.

It is not difficult to understand why all forms of malnutrition tend to end in a condition of acidosis, for in all cases, though in various ways, metabolic or oxidation processes are interfered with and curtailed. Any interference with the due oxidation of food elements to their normal end products, carbonic acid, urea and water, will conduce to the formation of semioxidized bodies of large molecular size and acid in reaction, which must be neutralized as quickly as they are formed to prevent a dangerous rise in the hydrogen ion concentration of the blood.

It is in the satisfaction of these claims for alkaline bases that the injury is done to growing bone. One of the direct causes of an acidosis is a disturbance of the relationship between the caloric value of the food consumed and the actual output of energy, either in the form of heat or of work. If more food is consumed than is required for the physiological purposes of the body there will be an attempt to adjust this want of balance by excreting part of the food in an unoxidized or semioxidized condition. Any condition, therefore, which tends to diminish the efficiency of the human body as a working machine will tend to reduce the physiological demands for food, and so render a preexisting correct diet thereby excessive, or relatively excessive. Most of the recognized etiological factors of rickets are conditions which interfere in some way with the metabolic or oxidizing processes of the body; in other words, which interfere with the proper utilization of food. Any condition, therefore, which interferes with the supply of oxygen will tend in the long run to be a factor in the production of rickets; so also will any condition which interferes with the output of work, as, for instance, the poisoning or degeneration of nerve cells, and anything which unduly interferes with the dissipation of heat, as, for instance, warm rooms or excessive clothing. The withholding of surface stimula-

*Lecture delivered before the Fellowship of Medicine at the Royal Society of Medicine, London, October 4, 1919.

tion such as is afforded by sunshine or currents of fresh air will also have the same effect. Most of the etiological factors of rickets are included in this category of causative factors of an acidosis, and in the light of these explanations I propose now to review some of the theories on the pathogenesis of rickets which have been formulated from time to time and which for the most part have been unwarrantably rejected as unsatisfactory, because although possibly applying in certain cases they fail to do so in all. I shall hope to show that, while there are different theories required to explain the various forms of malnutrition which are prodromal stages in the common terminal result, viz., the production of an acidosis, there is only one explanation of the want of calcification of bone, and that is the urgent requirement of the body to have the acidosis neutralized at the expense of the alkaline reserves of the blood, reserves from which growing bone would otherwise draw its mineral material.

A deficiency of lime in the food is the first theory to be considered. It is clear, apart from any experimental proof, that without lime, bones cannot be formed, but since there is an adequate supply of calcium in breast milk and an excess of this base in cow's milk, it is obvious that want of this element cannot *per se* be the explanation of rickets in the majority of cases. None the less, a deficiency of lime is quite probably the true explanation of a small minority of cases in which certain patent foods are exclusively employed.

The defective absorption of lime is a more reasonable explanation, and color is lent to this theory because in rickets an increased output of lime in the feces can practically always be proved in all cases. It is easy to understand that any available base such as calcium existing in the intestinal contents will be readily seized to neutralize any acid bodies formed as the result of putrefactive or fermentative changes in the bowel. It has been denied that this is the true explanation of rickets, for the reason that the administration of supplementary supplies of calcium salts in rachitic conditions is followed by an equivalent output of calcium in the urine. This to my mind proves nothing, for if under such conditions calcium is absorbed into the blood, it may well be utilized for the neutralization of acid bodies in the urine. It is interesting to note that soap stools are very common in rickets, and these soaps consist largely of fatty acids in combination with calcium, a fact which is very suggestive of the occurrence of an excess of fatty acids in the bowel in the conditions which predispose to rickets. But whether calcium is eliminated in excess or not in the bowel, there is abundant evidence to show that it is eliminated in excess either in the feces, or in the urine, or in both combined.

Intestinal intoxication has been regarded as an important factor in rickets and there can be little doubt that there are many reasons for accepting this as one of the causes. Toxemias of this kind are responsible for serious poisoning of the nervous system, for nerve cell degeneration, and for functional impairment of the organic functions in general and of the muscular system in particular. The fact that severe rickets can occur without evidence

of intestinal intoxication does not militate against the view that it does so in a certain number of instances.

Defective action of the endocrine glands has been suggested by many observers as the *causa causans* of rickets. There is much evidence to support the view that disturbances of the thyroid, parathyroid, adrenal, or pituitary glands are occasionally concerned in the rachitic processes. It is impossible to believe that such disturbances should be entirely absent in the great variety of conditions of malnutrition which ultimately cause unequivocal symptoms of rickets, but it is extremely improbable that in so common a disease as rickets any one glandular disturbance can be regarded as a primary factor. Moreover, rickets is a short lived disease, while disease or disturbance of the functions of any of these glands is liable to persist. That the thyroid apparatus is concerned in calcium metabolism cannot be doubted; moreover, hyperthyroidism is apparently a compensatory phenomenon in septic conditions which may in themselves be a cause of acidosis and rickets. The adrenals undergo degenerative processes in those conditions of malnutrition which follow on deprivation of the accessory food factors (McCarrison).

Deleterious respiratory influences, or bad air (odor of the poor) Cassowitz believes to play a direct part in the etiology of rickets, and bases this hypothesis on the ascent of the incidence curve of rickets after the winter months. Foul air must necessarily depress vital functions and so also must want of stimulation by currents of fresh air (Leonard Hill). Hence it would be contrary to my own theory if want of ventilation did not play an occasional part as a causative agent.

Dr. L. Finlay has conducted some experiments on animals to prove that want of muscular exercise plays an important part in bringing about the rachitic condition. This entirely coincides with my own practical experiences in connection with the management of infants. Exercise creates a demand for energy which is greater than all other organic demands taken in combination. If there is no output of kinetic energy, as in debilitated states, or from restraint owing to tight clothing, the physiological uses of food will be seriously restricted. There will be lessened incentive for oxidation processes, incomplete combustion, and a large output of acids of large molecular size; in other words, with restriction of exercise an otherwise physiological dietary becomes at once relatively excessive.

Within recent years great importance has been attached to the part which the accessory food factors (vitamines) play in the determination of rickets. Three distinctive varieties of malnutrition have been recognized as due to starvation in respect of the three groups of vitamins so far discovered. These are, first, infantile scurvy from want of the water soluble accessory factor "C"; secondly, arrest of growth from want of the fat soluble accessory factor "A," and thirdly, a variety of malnutrition analogous to beriberi and which is due to the want of the antineuritic vitamin accessory water soluble factor "B" contained in the cortical part of cereal grains. This latter form of malnu-

trition arises only in infants in whom decorticated cereal foods are largely employed. According to my view, any one of these forms of malnutrition will ultimately lead to an acidosis and consequently to the rickety condition, but in each case the distinctive features of the special variety of malnutrition will lend special character to the clinical picture.

Hopes have recently been raised that the want of the fat soluble vitamine contained in animal oils is the cause of rickets. If this hope were justified, the distribution of a little codliver oil would free all civilized countries from the scourge of one of the commonest diseases. It is, perhaps, unnecessary to point out that if this hypothesis is true it will be difficult to explain the reason for rickets among well to do children fed on an excess of cream.

Acid conditions of the blood or the excessive formation of acid bodies has frequently been asserted to be the cause of rickets. As I have already indicated, an acid condition of the blood is incompatible with life, and the most delicate and efficient mechanisms exist for the maintenance of a constant and uniform degree of hydrogen ion concentration. No free acids can exist in the blood; they are at once neutralized at the expense of the alkali reserves. The first of these theories was that of Wachsmuth who believed that the trouble in rickets was due to an excessive production of carbonic acid which he believed was capable of withholding or depriving bone of its mineral rights. This theory is unworthy of serious consideration in view of simple physical and physiological knowledge. The lactic acid theory is quite inadequate to explain all the phenomena connected with the production of rachitic changes in the bone. Lactic acid is certainly produced in excess under conditions of restricted oxidation (anoxemia) but this acid represents only one among many acids of large molecular size which are inevitably produced under these conditions. I pointed out as early as 1901 in a paper read before the British Medical Association, at the annual meeting held at Cheltenham, that the relative overfeeding of infants must necessarily lead to the production of a large number of acid bodies which would draw upon the alkaline reserves of the blood and thus tend to produce a condition of acidosis. Since then Stoelzner has elaborated his oxyphathic theory of rickets which is very much the same as my own, although he does not harmonize it satisfactorily with all the known etiological factors of rickets.

An argument commonly urged against the acidosis theory is that it is inconceivable that acid bodies could exist in the blood sufficiently strong to dissolve fixed salts out of bone. This is quite beside the question as far as rickets is concerned, for in this case we are dealing with the withholding of the mineral material from bone which is in process of formation, and not with its extraction from completely developed bone, as must be the case in osteomalacia. Further, it has been argued that if in rickets calcium is used up in neutralizing acid bodies, the amount of calcium in the blood should show a noticeable falling off, a phenomenon which has not so far been capable of demonstration. No

doubt calcium would be among the last of the basic elements which constitute the alkali reserve in the blood to be used up for the purposes of such a neutralization; but in rickets there is an increase of the calcium in the urine proving that calcium is to some extent used up and withheld from its normal destination even though there is no diminution in the blood.

Quite recently it has been shown that in tetany, which may be regarded as evidence of a severe degree of acidosis and a phenomenon of advanced rickets, there is a demonstrable falling off in the calcium content of the blood (1) a piece of evidence which strongly supports my views on the etiology of rickets. In any long continued acidosis it is logical to expect that among other elements iron itself will be seized upon for neutralization purposes, in which event a corresponding amount of this element must be withheld from the developing blood corpuscles. This may explain a coexisting anemia and the compensatory activities of the red marrow and other blood forming centres. On this explanation we can understand the beading of ribs, and the enlargement of the epiphysis of long bones.

Many investigations have been made to discover a bacterial origin of rickets. This seems to me a useless waste of time, for all infective and septic processes lead to a condition of acidosis, and there is no need to search for a specific bacillus of rickets when practically every variety is capable of producing the disease. Chronic infections, such as tuberculosis, syphilis, malaria, and those due to the colon bacillus, almost invariably lead in infants to rachitic manifestations.

From the foregoing it is obvious that many etiological theories are required to explain the causation of the many varieties of malnutrition which are antecedent to the rachitic changes in the bones, but all of them lead to this goal through the common avenue of acidosis.

From a practical point of view it is most desirable that we should recognize what are the common and what are the rare etiological factors which finally lead to the bony changes of rickets. In different countries, and under different conditions, varying factors will be found to predominate. In this country (England), and especially among the urban population, I imagine that catarrhal and other infections play a most important rôle. Impure air, want of sunshine, want of exercise, and want of surface stimulation, also play important parts and conduce to that condition of relative overfeeding which I have insisted on as the essential element in leading to acidosis.

The treatment of rickets naturally resolves itself into prophylactic and remedial measures. Prophylaxis is concerned with the avoidance of these unhygienic conditions which favor the development of the various forms of malnutrition which have already been described. Correct dieting is essential to avoid catarrhal conditions of the bowel, intestinal toxemias and insufficiency diseases, all of which by their respective routes lead to the common goal—acidosis. Excess of food, even though otherwise beyond criticism, is as dangerous as unsuitable food itself, for in the long run it necessi-

tates a short circuiting of the metabolic processes and the production of acids of large molecular size, such as uric, oxalic, butyric, lactic, propionic, and to some extent of such powerful acids as sulphuric and phosphoric, all of which must be neutralized at the expense of ammonium and other alkali reserves of the blood.

Any condition which interferes with oxidation will similarly restrict the completeness of the metabolic processes, and among them must be included want of fresh air, mechanical obstruction of the respiratory passages by adenoids, embarrassments of the respiratory movements, as well as all other conditions which lead to anoxemia. Want of stimulation of the skin surface by cool air, good ventilation, or baths will similarly limit the oxidation processes.

Want of exercise, as, for instance, by the limitation of muscular activities such as those concerned in playing, kicking, rolling, walking, etc., will also predispose to the same result. In fact, muscular exercise is the one great prophylactic against rickets. Unfortunately in the majority of cases of malnutrition which terminate in rickets, active exercise is limited owing to nervous depression, nuclear degenerations, and muscular debility, but none the less every opportunity to ensure free exercise must be provided for all healthy infants. No matter how correctly fed, or how good the other hygienic conditions, infants who are swaddled up in tight clothing so that movement of the limbs is restricted, invariably become rachitic unless the diet is correspondingly reduced.

The avoidance of infections, catarrhal and otherwise, is an essential element in prophylactic treatment, but more easily enjoined than carried out. In healthy, well fed infants, infections, though they inevitably occur, soon run their course, and it must be remembered that it is chronic and not short lived acute attacks that lead to chronic conditions of acidosis.

As for remedial treatment this depends largely on the correct diagnosis of the cause of the acidosis, on the treatment of the acidosis itself, and on the management of the complications arising from the softening of the bone and of the emergencies which are secondary to the acidosis. The more common causes of the acidosis of rickets have been already indicated, and it is unnecessary to describe in detail the specific measures called for in each particular case. The treatment of the acidosis is by no means a simple task, especially in severe cases with air hunger, Cheyne-Stokes breathing, tetany, laryngismus stridulus or convulsions. There are, however, certain important indications which are as follows:

1. To restore the reduced alkali reserves of the blood; 2, to ensure a free supply of oxygen and relieve the embarrassments of the respiratory centres; 3, to raise the blood pressure; 4, to promote the excretory functions of the kidneys; 5, to suspend temporarily the intake of food.

These are the measures which have been empirically proved to be efficacious in such extreme cases of acute acidosis as occur in cholera infantum, diabetic coma, and uremic conditions. The reduced alkali reserves and the fall in blood pressure can

both be relieved by the intravenous or subcutaneous injection of isotonic bicarbonate and citrate of soda. Oxygen can be supplied by inhalations, best by Haldane's continuous method (2).

The excretory functions of the kidneys can be promoted by such cardiac stimulants as camphor, digitalis, strychnine, alcohol, caffeine, etc., or by such direct stimulants as scopolium, turpentine, etc.

The treatment of deformities and mechanical disabilities due to softness of bone need not here be considered beyond referring to the uselessness of splints for the correction of deformities of the legs if these splints interfere with the one grand prophylactic against the cause of all the trouble, viz., the taking of exercise. The treatment of emergencies, such as laryngismus stridulus, convulsions, and tetany, is as a rule satisfactory and immediate if conducted on rational lines directed to counteract the effects of a severe acidosis.

Laryngismus stridulus.—A convulsive crisis of a particular section of the respiratory centre which as a rule rapidly gives way to mild chloroform inhalations. After the subsidence of the acute symptoms, oxygen inhalations, combined with the regulation acidosis treatment, will prevent a recurrence.

General convulsions.—The form these take in rickety infants is generally that which is popularly described as internal convulsions, in which the respiratory centre temporarily ceases to act. As a rule it spontaneously recovers as soon as there is a sufficient degree of asphyxia. Surface stimulation by flagellation or mustard baths is often efficacious, but the provision of cold fresh air is more important still. The aftertreatment is the same as that for tetany.

Tetany.—Apart from the general treatment of the acidosis the management of this condition depends on the washing out of the stomach with a weak alkaline solution and the suspension of all food. The carpopedal contractions are sometimes relieved, as in laryngismus, by mild chloroform inhalations or by wet packs.

In all cases of rickets in which the nervous symptoms are prominent I have found that phosphorated codliver oil (1 in 10,000) affords most excellent results. The phosphorus may help to restore degenerated nerve cells. I cannot, however, regard it as the specific for all forms of rickets, which has been claimed by certain German authorities. In conclusion, I would once again emphasize that all varieties of malnutrition arising in infants from whatsoever causes ultimately lead to a condition of acidosis and the characteristic bony changes.

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1. HOWLAND, JOHN: *Johns Hopkins Hospital Bulletin*, October, 1918, p. 233.
2. HALDANE: *British Medical Journal*, July 19, 1919, p. 70.

A Procedure to Secure Rapid Placental Detachment.—G. Sclavounos (*Presse médicale*, July 31, 1919) injects into the umbilical vein some sterile hot water. This causes the placenta to swell and, reaching the retroplacental area, breaks up the adhesions of the villi. The heat of the water, moreover, excites uterine contractions so that placental detachment takes place in five or ten minutes.

THE ARGONNE INFLUENZA EPIDEMIC.*

BY HARLOW BROOKS, M. D.,

AND

CURTENIUS GILLETTE, M. D.,

New York.

The cases forming the basis of this study were observed in the field and evacuation hospitals of the first Army, then operating in the forest of the Argonne, during the months of September and October, 1918. Active military operations were in progress during this entire period and the loss in days of front line service from this epidemic was a serious military affair at this time. There could be no question whatever as to the highly contagious character of the infection in the army area, as evidenced by numerous examples of direct contact transmission among the troops and especially among the overworked officers and enlisted men in charge of the cases, but it is our impression that the predisposing factors concerned in the spread of the infection at the front were more obvious at least than was apparent in the troops and hospitals, or in the camps at home. Reports from civil and military physicians then in charge at home has also convinced us that the type of the infection in the United States and on the transports was much more virulent than that seen in the area of the first Army.

The first and most important of the predisposing factors we believe to have been exposure. In this opinion we are corroborated by the observations of many of the corps consultants who were in constant observation of the epidemic among the men on the battle line and in the reserve camps immediately back of it. Insufficient blankets, general absence of overcoats and slickers, loss of shelter tents, and of all other protection from the constantly wet and chilly weather were battle factors of necessity but very serious effect in the predisposition to the disease. Protection from the inclement weather was rendered impossible or very difficult because of the almost wholly open action forced on the enemy and under such activity it was probably a military impossibility to prevent or even in considerable degree to mitigate this factor of severe exposure.

The second factor in grade of importance is apparently that of exhaustion. This was present in greater or lesser degree in practically all cases at the front, and it was also a necessary concomitant of the nature of the battle then in progress. Sufficient sleep was unobtainable, not only because of inadequate covering and the almost constant chilly rain, but also because of the constant noise and troop movement. Most of these troops were constantly under at least shell fire, subjected to frequent bombing raids, and perpetually maneuvering in the battle plan.

The third factor of great importance in predisposition undoubtedly is to be found in the inadequate and irregular feeding of the troops. This was also a necessary result of the mobile type of warfare, of the character of the country and of the prevailing weather conditions. Little hot food could

be furnished and the exhausted soldier was obliged to subsist almost entirely on canned meat, taken at irregular intervals and always cold, and on hard tack. The water available was very unsatisfactory although every possible precaution was taken to enforce as thorough chlorination as could be encompassed, but the men actually on the line frequently necessarily secured their water largely from shell holes, streams or springs, instead of from supervised sources.

Still a fourth disposing factor must be considered for those cases which occurred on the fighting line, and that is gassing. During this action, in general gas was not extensively employed. We have learned of no projector attacks, but one may say that gas, principally mustard, was more or less constantly put over in shells mingled with high explosives, not usually in sufficient concentration to necessitate the prolonged use of the gas mask, but enough so that after several days of exposure to the inevitable high dilutions more or less irritation of the respiratory passages resulted. Close observation of many cases has convinced us that this has been a very real factor in predisposition to influenza in this epidemic, as we saw it in the first Army area. The respiratory irritation following inhalation of the gases of high explosives in themselves is also probably a contributory factor of very direct bearing.

Overcrowding in billet, dugout, and bivouac and direct transference of infection from case to case was not apparently an important factor at the actual front. In the field hospitals also I believe this to have been a relatively unimportant matter since, except perhaps under conditions of very great military urgency, the field hospitals definitely attempted to isolate these cases from others and particularly from the wounded or gassed, nor were cases of influenza usually evacuated from the well conducted field hospitals in the same ambulances or trucks as those conveying cases suffering from traumatism. As we must point out, however, no such worthy attempt was made in certain of the larger evacuation hospitals further back and in these we believe overcrowding and direct personal transmission of the infection was favored by slack and indifferent methods of triaging and of warding patients. In some instances no apparent cognizance of the existence of an epidemic infection was evident.

Practically the only conditions under which overcrowding and direct transmission on the immediate front seem to have been likely has been in those rather isolated instances in which men on the line were permitted to occupy, in too large numbers, captured abris or dugouts. In many of these, at times large numbers of fortunate men were packed at night, during bombing attacks or whenever they could secure time for rest, fortunate both because of the greater security from shell fire or bombing, and because of the agreeable warmth from close bodily contact or from fires for which the astute, comfort loving Germans had provided the possibility in the form of numerous small stoves. Protection from cold, from rain and from shells and bombs, and the possibility of some rest were certainly factors quite enough to induce the soldier to

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neglect the danger of possible infection from influenza for the sake of comparative comfort and relief from far more evident dangers and discomforts. We do not believe that infection transmission occurred very seriously as the result of such conditions. Infection from improper cleansing of mess kits has probably been a real factor in many cases.

During periods of great activity when the field hospitals became crowded and it was impossible to evacuate patients properly either because of impassable roads, upcoming ammunition or provision trains, because of the improper provision of transportation facilities, or for other cogent military reasons; it is quite possible that these crowded hospitals spread the infection, but this was not a frequent avoidable circumstance in the field hospitals, most of which were splendidly conducted.

A factor of real importance, however, existed in some instances where patients with influenza or pneumonia were transported in crowded ambulances together with the wounded and gassed patients. This was one of the undoubted factors in the spread of the disease. It was largely obviated later by intelligent evacuation, and by the use of masks. Infection transmission, however, played its most serious rôle in the spread of this disease in badly conducted evacuation hospital triages whereas in certain instances observed by ourselves cases of influenza and even of patent pneumonia were crowded closely together, lying on stretchers, poorly covered and inadequately supplied with clothing in common community with the wounded and gassed patients. We have seen instances where this condition pertained for hours at a time and in which one could only wonder that the spread of disease was not even greater and the occurrence of pneumonia almost universal.

A further error favoring these conditions for the direct spread of the infection was observed in the packed hospital trains, particularly certain trains where in unheated, or inadequately heated cars, patients suffering from pneumonia and influenza were packed in closely with wounded and gassed soldiers. It must not be understood that this criticism pertained to all evacuation hospitals nor to all hospital trains; most did all humanly possible under the circumstances to prevent such conditions, but it must be confessed that some officers and institutions were singularly negligent in these respects. Thus it is seen that many of the possible measures tending to check the spread of influenza were not observed. On the contrary the predisposing factors which in our opinion have been more important, namely exhaustion, exposure and malnourishment, were military incidents which, together with the milder forms of gassing, are almost beyond medical control because of dominant and necessary military reasons. The three classical types of the infection were clearly distinguishable—the catarrhal, the gastrointestinal, and the meningial. By far the greater number of cases belong to the first class, indeed all the cases showed to a more or less degree the symptoms of catarrh of the respiratory tract. The manner of onset was practically identical in all cases. As a rule the immediate onset of the disease was preceded by several days of indisposition,

malaise and depression. The patient at this period was most likely to attribute correctly his depression to the natural exhaustion consequent upon his military exertions and the conditions of life under which he was living. We believe this to have been usually a receptive condition rather than an incubation period. In some cases, and these were apparently chiefly those which were contracted by direct transference of the infection, the onset was sudden and introduced by a chill or by fever. As a rule there were two or three days, though sometimes but a few hours of nasal catarrh, of sneezing, coughing, and of conjunctival injection. Physical and mental depression of a very marked degree was almost invariably present. In the catarrhal or respiratory type of the disease, further progress was practically through an extension or accentuation of these symptoms. The patient's cough became very persistent and annoying, the amount of sputum was, however, scanty and dislodged with difficulty. It was occasionally slightly bloodstained from the violence of the cough, but usually it was found to be clear and mucoid.

PHYSICAL SIGNS.

The temperature, which was often introduced by a chill, would rapidly rise and reach to the level of 102° or even 106° F. by rectum. The pulse rate was not proportionately quickened but it was usually accelerated to a considerable degree. The respiratory rate was increased, even in those patients who as yet showed no demonstrable pulmonary lesion. It was notable in this epidemic that symptoms of pneumonia usually considerably preceded the appearance of signs justifying the diagnosis. The leucocyte count was not usually increased, and a leucopenia might be present while the differential count showed a relative increase of the mononuclear elements, or no change whatever. The urine was entirely negative, except in patients with very high fever, when of course a febrile albuminuria appeared, and though heavy sweats were frequently seen together with marked thirst, the amount of urine was frequently notably diminished and the acidity so increased that patients themselves remarked its acid and irritating character.

Physical examination was largely negative except as to the respiratory tract. The mucosæ of the pharynx, of the nose and of the eyes were hyperemic, frequently very much so, and the soft palate might be suffused to the point of induration and was of a dusky red color. There was a marked increase of the nasal discharge, it was of a clear watery character and the flow of the lacrimal secretion was much increased. Subsequent study of many autopsy records, shows us that the accessory sinuses were probably invariably infected. In the lungs, particularly over the bases, fine crackling râles were found, frequently they were of an almost musical character, as in bronchial asthma. Pain was complained of under deep inspiration and râles were usually most abundant over the bases posteriorly. The percussion note in most instances was even thus early hyperresonant, especially laterally and over the bases. The patient's complaints

were, first of depression, exhaustion, of pains all over the body but particularly in the loins and in the muscles of the calves. He was much annoyed and his sleep broken by the irritating cough and he complained of a "stuffed up nose." Appetite was slight, the bowels usually loose rather than the contrary and the patient frequently summarized his symptoms as being "sick all over." He was chilly and hot by turns, usually very ill tempered and irritable. In our observation, most patients who at this period of the infection were provided with warmth, rest and a light, hot diet, recovered within a very short time. The temperature fell, the pains ceased, the catarrhal symptoms of the upper respiratory tract disappeared and last of all, and usually not sooner than five or six days the râles and pains on deep inspiration vanished. The average length of time in hospital for these patients when taken in the early development of the disease and placed under the essential care was about three and a half to four days, when they might be sent back to their organizations. They were, however, much depressed, weak and should not have been sent to full duty in less than seven days and care should even then have been taken that they are adequately clothed, that in so far as possible they were provided with a dry and warm bed and that they receive a sufficiency of warm food. Certainly under these favorable conditions one might confidently expect as high as seventy five per cent. of the men to be returned to duty within a week. It is, however, the complications that developed which were the most serious in the soldiers who have been under our observation and it must be remembered that of these complications the most serious and most frequent, that is bronchitis and pneumonia, might arise at almost any time in the course of the disease, but especially in those prolonged though mild manifestations which hang on for weeks in patients who were unable to secure the necessary attention, that is, rest, warmth, dryness and proper feeding.

Diffuse bronchitis of a greater or lesser degree was probably present in all patients with the disease, although at autopsy it will be noted that the mucosæ of the larger bronchi were mostly affected, but in the average patient symptoms and signs indicate that it is chiefly in and about the smaller air passages that the most serious lesions originated. The simple bronchitis might persist for a long time under favorable conditions and among these we must include the abuse of tobacco which was a frequent and a forgivable offense with the soldiers.

Bronchopneumonia occurred frequently in these patients. Ofttimes it was slight in degree and extent and the physical examination of the patient might entirely fail to show it or to lead the clinician, unfamiliar with the condition, to suspect more than a persistent bronchitis, a diagnosis frequently justified by the clinical and laboratory findings in the case. When, however, the patient was submitted to a fluoroscopic examination, many cases thought to be but examples of bronchitis showed unmistakable foci of bronchopneumonia. No doubt many of these cleared under favorable, and even in spite of unfavorable, conditions but a great many

under our observation progressed onward to the development of a widespread pneumonia. No particular area can be stated as especially prone to these initial small patches of bronchopneumonia; they occurred anywhere. When they were near the surface of the lung they could be detected quite clearly without any difficulty, but where they were deep seated, no clinical or physical signs diagnostic of the condition might appear especially in those cases which went on to a favorable outcome. On the other hand, those unfavorable cases which progressed on to a clinical pneumonia, commonly at first showed an area of hyperresonance over the involved area with the presence of dry crackling râles and a vocal fremitus suggesting egophany and very often with a whispered voice transmission significantly exaggerated. Utilizing physical examination and the occasional use of the fluoroscope these areas were found to progressively enlarge and to extend out to the surface which then became covered in by a pleurisy, usually of a highly fibrinous character. Pleurisy with marked effusion was unusual in this epidemic.

It must not be forgotten by the physician that many of these cases of slight bronchopneumonia might persist for a considerable period with but very few symptoms and signs, even temperature elevation might be apparently wanting and fever only demonstrable when the temperature was recorded at very frequent intervals. The patient, however, almost always felt more or less ill and he further looked so, a fact which must be taken into full account particularly in young and ambitious soldiers, who in times of activity were very prone to minimize their illness.

In that considerable number of patients in whom the disease went on to the development of clinical pneumonia, as a rule the process was distinctly a progressive one and could be traced either with the fluoroscope or by the ordinary methods of physical examination. A good clinician was commonly highly suspicious of the existence of pneumonia long before it could be demonstrated except perhaps with the fluoroscope. The sputum which had remained throughout clear and mucoid, for the greater part, now began to show from time to time streaks of blood, not the typical rusty sputum of a classical pneumonia, but blotches and streaks of bright red blood. It was only later that the sputum took on a typically purulent and blood stained character.

The cough ordinarily was particularly irritating and annoying. It was usually dry and nonproductive, and its frequency added greatly to the exhaustion of the patients. It seems probable that it may have also contributed materially to the spread of the infection throughout the bronchial tree. Even when the consolidated areas had become definitely demonstrable the patient might not show a typical sustained temperature, but morning remissions were the rule. Similarly the leucocyte count was not increased or, if so, but slightly. Our average count at Revigny was about 7,000 to the c. mm. and the differential count still showed either normal proportions or a relative increase of the mononuclear elements.

Fluoroscopically and from physical findings the cutaneous emphysema, which was most likely to stages was definitely irregular. It was not the classical diffuse involvement of an entire lobe and in most instances where even a very compact process was demonstrable in one lobe there was almost always small foci of infiltration demonstrable in the other portions of the lung, usually on both sides. A striking and peculiar physical sign which occasionally occurred in these patients was that of subcutaneous emphysema, which was mostly likely to appear just below the clavicles anteriorly. In two instances this emphysema became rather extensive and infiltrated the subcutaneous tissues of the neck and down the thorax as far as the diaphragm. Its clinical occurrence suggested the possibility of its being connected with the symptoms of coughing. Certain patients became better at this point. In our opinion, the early detection of these foci and a consequent discreet handling of the case as of a very serious disorder had a very direct relationship to the proportion of recoveries in these cases.

Those patients which progressed in the opposite direction did so by the extension of the peribronchial infiltration more widely out into the parenchyma of the lung and very frequently the lesions coalesced so compactly that the clinical signs, fluoroscope findings and even the postmortem picture were those of a true lobar pneumonia. The complete clinical picture, however, was never that of classical lobar pneumonia. It was, however, only in certain of these patients who had been under constant observation that the essentially bronchial origin of the lesions could be seen. As the process becomes more compact and as it assumed the physical appearance of lobar pneumonia, the temperature course became also more like that in lobar pneumonia and was maintained with but slight falls at a high level. The pulse rate was then usually proportionately quickened and the respiratory curve might be considered as typically that of a lobar pneumonia, but the leucocyte count still remained persistently low and the mononuclear elements still predominated relatively. The urine now contained albumin and casts, it was scanty, high colored and in all probability the chlorides were reduced, though our laboratory facilities did not permit us to make definite observations on this point.

The mortality rate in these cases of pneumonia was high when the process became compact or widespread. A few of them terminated with a typical crisis, but most of those of favorable outcome convalesced by a slow return of the temperature by a lysis, usually of long duration. None of the patients except those with but slight pulmonary involvement recovered or convalesced rapidly. Pleurisy was practically constant in those patients, and in those only, in which the pneumonia was compact and when it had reached to the surface. It was of a highly fibrinous character and the number of cases in which there developed an effusion of marked degree were few. The fibrin, however, was very sloppy and edematous and a pleuropneumonia was almost universal, particularly of the upper lobe of lung which overlies the pericardium on

the left. Serious cases which became generally septic frequently showed a fibrinous pericarditis.

The postmortem findings in those few patients who died early in the disease were simply those of a very diffuse bronchitis, with small occasionally merely microscopic patches of bronchopneumonia. The mucosae of the bronchi were hyperemic, edematous and the smaller tubes were filled by pus which was highly fibrinous. Where the pulmonary infiltration originated definitely about these bronchi, there can be no question that the process is primarily a bronchopneumonia, but in those cases where the bronchopneumonia had coalesced, that is, those which developed the physical signs of a lobar pneumonia, the gross appearance of the tissue was quite characteristic. Oftentimes the line of demarcation was as sharp as in typical lobar pneumonia, but almost without exception the general color of the involved tissue instead of being grey, was bright red except, in the late cases, immediately about the bronchioles where a softened yellow or greyish focus was to be made out. The involved lung tissue was quite firm, sometimes granular but in most instances it contained an abundance of air and would float, though of course there were exceptions to this rule. Although microscopic findings are unfortunately entirely wanting in these cases, there can be no question whatever but that the lesion was not a lobar pneumonia but that of a very compact coalescing type of bronchopneumonia.

In patients who succumbed before coalescence of the foci had taken place the appearance of the gross lesions was practically identical with those of a bronchopneumonia. It is quite certain also that interstitial changes were infrequent and that the standard lesions were entirely unlike those seen in the epidemic of streptococcus pneumonia studied by one of us at Camp Upton during the previous winter and spring. Subsequent review by one of us of 5,000 autopsy protocols of pneumonia cases occurring during the influenza epidemic in the A. E. F. on file at the central laboratories at Dijon, showed the predominating lesions to be similar to the conditions which we observed in the Argonne, and there can be no doubt that the cases throughout the A. E. F. were identical in their pathology. The peculiar degeneration with hemorrhages into the lower portion of the abdominal recti and in the psoas muscles, which most closely corresponds to Zenker's muscle degeneration, was very frequent in our Argonne patients, as was also true of the general epidemic.

The gastrointestinal cases were second in occurrence to those of the catarrhal type. They were very widespread over the entire army area, and have been commonly diagnosed as instances of dysentery, although neither amebae nor dysentery bacilli were demonstrated in the stools, notwithstanding that there were numerous attempts whenever laboratory facilities existed. Certain cases reported as influenza of this type were certainly typhoids and paratyphoids, however. A certain degree of catarrh of the respiratory tubes was present in these patients and there was the same prodromal picture, the same exhaustion but without the intense bronchitis and the bronchopneu-

monia which typified the real respiratory cases. Diarrhea was the predominant symptom. The stools were very frequent, were watery, contained a good deal of mucus but seldom blood. The frequent movements resulted in rapid emaciation, great thirst and severe prostration. Many of the patients also presented the respiratory symptoms and signs of the disease and when they developed pneumonia, the prognosis was particularly grave and the death correspondingly early. The infection was usually introduced with a rigor or chill and for two or three subsequent days fever with a proportionately slow pulse was present. The blood picture was precisely as in the respiratory disease and the contagiousness and epidemic character perfectly clear.

Given rest, warmth and a scant nonirritating diet most of these patients became better without any particular medication. Rest and warmth seem to have been the two chief requisites but the disease was very likely to recur especially when the normal rigors of field service were imposed too soon. The pains in the extremities, in the back and the general feeling of malaise and psychic depression were much relieved by the use of various salicylates. These drugs did not, however, apparently shorten the course of the disease, nor did the use of bismuth salts appreciably assist. The discreet use of opium made the condition much more tolerable.

None of these patients, with intestinal lesions, who did not also show pulmonary lesions died in our series. Of about 20,000 reported patients with influenza in the A. E. F. among the recorded deaths but three were filed as of other causes than pneumonia. This corresponds entirely with our idea, namely that practically all fatalities from influenza of whatever type showed more or less pulmonary consolidation at autopsy. The disease is essentially a respiratory one. The autopsy showed the mesentery edematous; the small intestine apparently negative, and the characteristic lesions confined solely to the colon. The mucous membrane of this tube was very edematous and hyperemic, small submucous hemorrhages were frequent but no ulcerations were seen. It appears to have been simply a catarrhal colitis without any tendency toward the destruction of tissue.

Our customary method of treatment was to administer some such laxative as magnesium or castor oil followed by bismuth sometimes combined with some form of salicylic acid. The usual methods for the prevention of infection transmission through the stools were enforced in so far as possible and we have no doubt as to the probability of conveyance of infection through this medium and by improperly cleaned mess kits and dirty hands. As stated before, most of these patients recovered promptly when simply put to bed, kept warm and dry and allowed to rest.

The meningeal type of influenza was not frequent. But three of these patients came under our observation in the medical hospital at Revigny and only occasional ones in the other hospitals in the first Army. The dominant symptoms were those of a very severe prostration, excruciating and very

persistent headache, slight stiffness of the neck muscles, occasionally some accentuation or irregularity of the knee jerks and an occasional and transient pseudo Babinski reaction. Occasionally a slight and inconstant Kernig reflex was found, practically every case was diagnosed as a possible epidemic meningitis. Lumbar tap showed no apparent microscopic change in the cerebrospinal fluid, which was sterile, but in the patients showing symptoms of cerebral irritation, in our limited experience, pneumonia was likely to develop and with it an early delirium of particularly active character usually developed. In several of these patients true streptococcus or pneumococcus meningitis was found but the so-called influenza bacillus was never isolated from the meningeal exudate.

Other complications than pulmonary and intestinal were very rare in our cases in this epidemic. Recognized otitis media occurred once only, no clinical instances of mastoiditis were seen, and none of other serious clinical infection of the upper air passages or of their communicating channels. Subsequent study of the epidemic elsewhere by one of us, leads us now to infer that in all probability practically all cases of either type were accompanied by extensive infection of the accessory sinuses of the head, but clinical evidence of this fact is almost entirely wanting, not only on our part but also of practically all clinicians and pathologists who had charge of these cases. The universality with which infection of the accessory sinuses of the head, including often the middle ear, was found by the pathologists who looked for it was astounding, and the lack of clinical evidences of such infection was astonishing. We now believe that practically all patients presented this as an initial or early lesions and that this is one of the earliest and most characteristic stigmata of this infection.

We wish to call particular attention to the delirium which occurred in the patients where the more serious cases of pneumonia occurred in this epidemic. It has been very frequent, almost constant in some degree in practically all graver cases. In most instances it has followed the drop of the temperature to the normal. It has not occurred in fatal cases only, for many patients who have recovered have also shown a delirium which has seemed to us to be largely connected with the other dominant symptoms of exhaustion and prostration. A general complaint of mental and nervous instability and inadequacy has appeared in many patients of either type, particularly after the graver types in this epidemic and it has been a factor quite necessary to gravely consider in the question of return to duty, particularly in the instance of officers.

Satisfactory bacteriological study of these cases was impractical in the army area during military activity and the findings variously reported have been so discordant that we have made no attempt to analyze them. If we may judge from the bacteriological studies reported on the cases studied by us we certainly have no justification for calling it either an epidemic or the disease influenza. Subsequent review of the various bacterial studies of the epidemic through the entire A. E. F. and on

file at the central laboratories in Dijon but emphasize this conclusion for all manner of organisms are variously reported by the several investigators engaged in that work. Whatever may be the ultimate conclusion as to the causative organism or organisms concerned in influenza and its complications, the clinical features are sufficiently characteristic to stamp it as a specific and highly contagious infection. We shall conclude our discussion of this aspect of the question with the simple statement that the bacillus of Pfeiffer has not proven its case in so far as the epidemic studied by us is concerned.

We are unable to furnish statistical data in regard to this epidemic, not even as to the precise number of cases studied, neither do we believe that it will ever be possible to satisfactorily study the epidemic from this side in regard to the troops engaged at the front at least, for during the period included in this study, military conditions were such, involving often the rapid evacuation of cases long before complete or even suppositious diagnosis was possible that the records in the field and evacuation hospitals often doing the most careful and conscientious medical work were entirely misleading and unreliable.

In the way of management we wish to point out that the two most essential factors in the treatment of all forms of the epidemic have been rest and warmth. These alone in most early cases will, we believe, strongly predispose to recovery. This is a fact of such general observation that we have found certain divisions in the field making provision for the handling of these patients they have thus been able to return to duty without reporting them back to the hospitals and thus losing desirable soldiers from their organization through reclassification and new assignment.

We wish, however, to emphasize a caution for the medical officer and that is the danger of sending these men back to active duty before recovery is complete. There was a very strong temptation to do this, particularly as under favorable conditions the patients seemed to become well rapidly. We have found, however, that this was accompanied with considerable danger of a relapse which was likely to become complicated by the particularly fatal type of the pneumonia described.

It is needless to say that patients in whom there developed a pneumonia even of very limited extent should be returned to duty with great caution and only when a considerable period of convalescent time had been allowed. That this was generally observed in the A. E. F. is shown in the report of Loncope¹ which reviews the occurrence of pneumonia in the A. E. F. in a satisfactory manner.

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Relation Between Chorea and Rheumatism.—

H. L. Cronk (*Lancet*, October 11, 1919) presents a chart of the incidence of chorea and of rheumatism at each year of age in a series of 250 children with rheumatism and of 200 children with chorea. The two curves run almost parallel, showing a very definite relationship between the two diseases.

THE TREATMENT OF CLIMACTERIC HYPERTENSION.*

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Impressed by the frequent occurrence of high blood pressure in women during and following the menopause and by the paucity of the literature, I was led to present an article on the subject in one of the journals last spring. A few days after its publication, Dr. David Riesman, of Philadelphia, presented a paper on the same subject at the Atlantic City meeting of the American Medical Association.

Briefly, this type of hypertension has its onset at the menopause, or soon after, and it occurs principally in apparently healthy women who are frequently overweight. These patients are active, highstrung, intense, excessively nervous, susceptible to worries and usually well supplied with them, according to their histories; again, they are extremely apprehensive, and if the physician inadvertently frightens, in his efforts to warn the patient of her condition, he has unconsciously added to his difficulties in the treatment.

The not uncommon emotional instability of women at the menopause is, in these patients, excessive, and is readily reflected in a like instability in their blood pressures. The earliest manifestation is a marked rise in blood pressure, discovered not infrequently during a routine physical examination. Later, as the condition advances, the chief symptoms prompting the patient to consult medical advice are gastric and nervous disorders which are the most common. These symptoms constitute the gastric neuroses group, with fermentation and constipation in marked evidence. Nervousness and pains, chiefly in the limbs, are equally frequent; headache and cardiac embarrassment come next in frequency. The blood picture is strikingly normal, a secondary anemia being present only in cases in which there is some complication which could produce it. The kidney escapes damage, as is borne out by repeated urine analyses, functional tests and forced proteid feeding. There is no evidence of peripheral fibrosis, at least for many years after the onset.

ETIOLOGY.

The past medical histories of the patients are strikingly lacking in any of the predisposing or exciting causes of renal sclerosis, arteriosclerosis, or chronic nephritis, and it is this very absence of any tangible etiological factor conducive to these conditions that prompts me to attribute its cause, either singly or collectively, to the following factors:

1. An alteration in the glands of internal secretion, possibly the withdrawal of corpus luteum functioning and its attendant influences upon the thyroid, adrenals, and pituitary.
2. Continued nervous strain caused by constant mental strain and worry, of which nearly all of these patients com-

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plain and which adds still further to their emotional instability. 3. Constipation, which is present in varying degree in practically all of them. Other causes have recently been offered, as overeating, multiple pregnancies, etc., but a careful analysis of over fifty cases in my series, leads me to lay less stress upon them and more on the three mentioned above. Whether it is one or all of these factors, the result is an increased vascular tonicity, spasmodic in nature, recurring at first, but gradually becoming more constant and lasting until finally at sixty years, or thereabouts, the first objective evidences of fibrosis may become discernible.

TREATMENT.

Much good may be accomplished by the proper management of these cases in the alleviation of their symptoms and placing their minds at rest; equally as much damage may be done by approaching the matter from the wrong angle. From the beginning the confidence of the patient must be won and held, sufficient warning being given to make her appreciate the fact that she must cooperate completely if she expects to be relieved of her symptoms; but at the same time we may truthfully give her reassurance that she will be better and that her high blood pressure is not the ominous pressure of Bright's disease, a term which always strikes terror to the heart of the average layman.

These patients tolerate even marked hypertension for years, and aside from the symptoms mentioned above, which, incidentally, can be greatly relieved by proper treatment, they manage to carry on their daily life and activities, until at sixty years or later either the heart gives way from the prolonged strain or a cerebral vessel ruptures and terminates the course of the disease. Of these two terminations, the cardiac break occurs probably more frequently, and as the break may be gradual, we are consequently called upon to treat it and not infrequently discover at that time that the patient has had a high pressure for years.

In the treatment of climacteric hypertension it is well to divide the condition into three stages, which are:

1. The first or larval stage in which high blood pressure and nervousness are the chief symptoms.

2. The second stage, in which the pressure is higher and remains more constant and in which the gastric neurosis, cardiac or pressure symptoms, as headache, vertigo, etc., make their appearance.

3. The third stage comes later in life, i. e., in the sixth or seventh decade and represents what might be regarded as the early evidences of senility.

Patients, of course, are encountered in the transitional periods, but we are called to treat them rather more frequently in the first or second stage. Nervousness and constipation are common in all three stages, the former being more troublesome in the first and second stages.

MANAGEMENT OF THE FIRST STAGE.

Aside from the hypertension, during the first stage the patient may complain also of nervousness and constipation. It is our duty to take a careful history in order to eliminate the possibility of past illnesses, which might have contributed to a ne-

phritis or arteriosclerosis; it is equally as important to search for any possible local focus of infection, and, further, to examine the condition of the peripheral and retinal vessels for fibrosis. Where possible, the finding of normal renal functional tests will be a distinct aid in making the diagnosis. Having carried out these tests and found them negative, we may be reasonably sure that we are dealing with a climacteric hypertension, even though there may be a faint trace of albumin in the urine and, at times, a few hyaline casts. A history of the patient's daily routine and environment will do much toward guiding us with reference to advice.

Rest and exercise.—If we find these patients overcrowding their days with household duties and outside activities, they should be urged to give up a certain proportion of their time to rest and mild forms of exercise, such as walking, horseback riding, or golf on a level course. I have found it an advantage to set aside a regular time for resting each afternoon for from one to two hours, depending on the height of the pressure and the degree of the nervousness. It is also well to have a fixed time for their daily exercise, for they will be much more regular in taking it if the time is fixed for them, and again this must be regulated according to the degree of obesity, etc. They should be asked to do their share in combating worries and cares that they themselves assume and which might be shared by others. Anything that causes strain, mental or physical, should be reduced to a minimum. A rather striking illustration of this has been the stopping of card playing of several of my patients, with an admission on their part that they felt much better for it. They also admitted that they had played for two or three hours at a time for stakes, and that at the end of the game they were completely tired out. Hours of rest at night should be lengthened, and where the nervousness is excessive, it is well to have them stay in bed for breakfast.

Diet.—Ascertain just what the patient eats as a rule for the three meals and then so regulate them as to avoid too great a total bulk, and at the same time make the necessary changes to aid in combating the constipation and the obesity when present. If patients are restless at night, have the large meal taken in the middle of the day and a light supper in the evening. A moderate reduction of proteid food is advisable; for instance, a little fish, chicken or lamb once a day, I believe has absolutely no ill effects. The water intake should be regulated so that the patient receives between one and one and a half litres a day.

Elimination.—The diet and water intake as mentioned above will aid in overcoming the constipation which is usually found to be of long duration, and as a further aid in elimination, the high colonic irrigation with normal salt solution will be found useful. When this is given by a competent nurse once a week, the greatest relief is afforded. An occasional dose of calomel and salts, or of castor oil, is also worthy of recommendation. When the condition is very obstinate, the administration of paraffin oil, night and morning, may have to be resorted to. When the constipation is of the spastic

type, aside from the measures mentioned above it is well to try benzyl benzoate, with the hope of relieving the spasm, as this is asserted by Macht and others to be a valuable remedy for arterial spasm, pylorospasm and tonic spastic conditions of the intestine, owing to the inhibitory and tonus lowering or spasm relaxing action of the benzyl radical upon smooth muscle. The drug is best administered in the form of an emulsion with acacia in aromatic elixir of eriodictyon, as the alcoholic solution alone is unpleasant to take.

For elimination through the skin, the warm cleansing bath every other night, alternating on the other nights with the warm salt bath lasting from seven to ten minutes, is a useful combination bringing about a general relaxation which is conducive to sleep and serves somewhat to lower the very high pressures.

Nervousness.—Many of the general measures outlined above will aid in combating the nervous instability of the menopause. The oral administration of corpus luteum over a period of many weeks has given fair results, but in view of the variability in potency of the drug and of striking results obtained by John Cooke Hirst when administering the preparation by hypodermic injections for the nausea of pregnancy, I am led to believe that this method may be still more efficacious and propose to give it a thorough trial. While speaking of organotherapy, the administration of thyroid extract must not be overlooked, as it is very useful in some of the more obese patients when given in very small doses, say half a grain three times a day. This may be combined with the corpus luteum treatment, when the latter is taken orally.

Of the mild sedatives, the valerianate of ammonia in four c.c. doses, three times a day for several weeks at a time, has given me more satisfactory results than any other. Sumbul is useful but tends to constipate, and the tincture of cannabis indica, while being particularly gratifying in some instances, is rather more often disappointing. Bromides, if they do not disturb the digestion, may be tried. However, some one of the milder sedatives is indicated in all of these cases and should not be omitted even in the early stages.

Early Hypertension.—Should very high blood pressure be reduced in the first stage? In most cases the measures given will prove sufficient in controlling the pressure and preventing its rising. I believe that the majority of high pressures in the first stage should be let alone, in so far as vasodilator drugs, frequent sweat baths, etc., are concerned. It must be admitted that occasionally in the first stage a patient will complain of pressure symptoms, such as headache, vertigo, or tinnitus, in which case the general restrictions may have to be tightened and sweat baths introduced. Too great a reduction of pressure will do far more harm than good in any stage, and, indeed, the patients usually feel better with a pressure of 200 to 230 than they do with a pressure of 180 to 190.

MANAGEMENT OF THE SECOND STAGE.

We see more patients in this stage than in the first, because of the development here of more dis-

treasing symptoms. We know that in the second stage the pressure is higher and more constant and consequently may provoke symptoms; gastric disturbances simulating a neurosis with fermentation are common; constipation is troublesome, and evidences of cardiac weakness from the prolonged strain make themselves manifest.

The general measures given for the first stage serve for the second, with somewhat more rigid rules for rest, exercise, diet, etc., according to the condition of the individual. When pressure symptoms threaten, it is well to inaugurate sweat baths, either cabinet or steam, every other day, regulating their duration and frequency according to the condition and response of the individual patient. No hard and fast rules can be laid down in regard to the regulation but, as a guide, it is well to take the pulse and blood pressure before and after the sweat, examine the heart and record the response of the patient to the treatment. If there is cardiac weakness, more than the usual caution should be observed; in fact, complete rest in bed will be a wiser course to pursue than vigorous sweating, and it is often surprising to see what two or three weeks in bed will do for these patients.

When the pressure remains high and symptoms persist, it may become necessary to reinforce the sweating with the nitrites. Of these the spirits of glonoin is possibly preferable to the pill form, and is given three or four times a day in from one to three doses. Though sodium nitrite is of value it has its disadvantage, owing to its tendency to cause or accentuate an already existing gastric disturbance. Aconite may be tried in selected cases, while benzyl benzoate, judging from the recent literature, seems to offer more promise than any of these drugs. As it is practically nontoxic, it would seem that its chief disadvantage would be in forcing the pressure too low, which, however, could be controlled by the size of the dose and frequency of administration.

Venesection, with the withdrawal of from 250 c.c. to 350 c.c. of blood a day for several days, is useful in some of the more severe and obstinate cases. In order to avoid the pain and discomfort and the troublesome technic of a phlebotomy, I have used a rather simple method for the withdrawal of the blood, venepuncture with aspiration.

A sixteen bore needle is attached to a short rubber tubing, which, in turn, is attached by means of a bent glass tube to the rubber cork of a 360 c.c. bottle. Through another hole in the cork a second glass tube is connected with rubber tubing. The needle is inserted into the median vein, after a tourniquet is fastened around the upper arm, and then the physician or nurse sucks the free tube, thus causing a vacuum in the bottle, into which the blood is drawn. An aspirating bottle and pump may be used for the suction if preferred, though one must be guarded in not using too great suction. This method saves the patient much discomfort and dread and is more easily and quickly performed than is the usual phlebotomy. The results from repeated small bleedings are quite as satisfactory, if not more so, than one large bleeding, because of their longer duration.

For the cardiac weakness, digitalis may be indicated if rest and a moderate reduction in pressure have not offered relief, and when the patient resumes her activities, let the resumption be very gradual and the former degree curtailed. Careful supervision of the form and duration of the exercise is very necessary, but this and other details concerning the management of the cardiac cases are beyond the object and the scope of this article.

With regard to the treatment of the gastric neurosis symptoms which so frequently occur in the second stage, they must of necessity be treated symptomatically as they arise, though it is well to recall that relief of the nervousness will, in the majority of cases, be followed by some relief of the gastric symptoms. This does not free us, however, from our duty to investigate carefully the condition of the gastrointestinal tract, in order to derive more rapid and more satisfactory results. A half hour's rest before and after meals will greatly facilitate the administration of drugs and the regulation of the diet.

MANAGEMENT OF THE THIRD STAGE.

As previously mentioned, this stage occurs in later life and the important feature to bear in mind when dealing with it is prophylaxis. Two great dangers are lurking beyond, even in the patients who have passed through the second stage and have been fortunate enough to have escaped most of the symptoms common to it. Those dangers are cerebral hemorrhage and cardiac decompensation. Drugs, as a rule, are not indicated in this stage, but rather a general supervision of the patient's rest and activities, guarding against mental or physical strain, overdoing, excitement, etc., and guiding the patient finally into the formation of habits conducive to a simple, quiet life.

1726 PINE STREET.

TREATMENT OF THE CHRONIC DISCHARGING EAR.

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The large number of individuals afflicted with chronic otorrhea, its general dissemination and the serious potential menace which it holds to audition and even to life, render this subject of wide interest. The observations embodied herein are clinical and may be considered as applied to patients with chronic otorrhea upon whom a major ear operation, e. g., radical mastoid, is, for various reasons not indicated, inadvisable, or postponed to await the outcome of a thorough course of treatment. The term treatment is intended to include all necessary operations of a minor nature on the ear, nose or throat and nonoperative cases are only those in which a radical mastoid operation is not indicated.

Prophylaxis.—When thinking of this malady we must remember that each case of chronic middle ear suppuration is merely the continuation and result of a primary acute middle ear suppuration, the

duration of which, before it is said to become chronic, is naturally more or less arbitrary, but is usually fixed at two months. An acute middle ear abscess is often inaugurated quite suddenly and as a rule can neither be foreseen nor prevented. Having developed, however, and the discharge established, its subsequent conversion into a chronic otorrhea can be foreseen and frequently prevented by intelligent treatment, or, if indicated, a proper mastoidectomy performed during the acute or sub-acute stage of the abscess.

Treatment.—When considering any remedial measures for chronic otorrhea, we must bear in mind its possible effect not only in stopping the discharge but also upon the patient's hearing. In the nonoperative cases this is especially true, as usually the hearing is quite good and becomes the main question at issue, at least in the eyes of the patient, who often regards the discharge of little or no consequence.

If it was possible to sum up in a phrase the treatment of chronic otorrhea it should be "aeration of the middle ear." The tympanic cavity should have free access to the air, both externally by way of the auditory canal and internally by way of the eustachian tube.

External aeration.—Granulation tissue when present in the canal in the form of aural polyps must always be removed as preliminary to any treatment. When the middle ear appears to contain granulation tissue alcohol may be instilled into the canal at the conclusion of the cleansing and the head held on the side for a few moments until it can act in the tympanum. If the perforation in the drum head be sufficiently large applications of silver nitrate of mild strength to the tympanum may be beneficial. The auditory canal must be kept free of pus and dry at all times. When the discharge is profuse this can be accomplished by irrigations. Boric acid is best for this purpose, a rubber ball syringe being used with only two ounces or so of solution at each irrigation, and repeated as often as necessary to free the canal of pus. At the conclusion of each irrigation the canal must be thoroughly dried. Absorbent cotton should never be worn in the meatus except in the most severe weather, and as the discharge diminishes the number of irrigations can be lessened, until finally as it becomes comparatively scanty they should be terminated. At this stage the pus is best removed from the canal by means of a cotton applicator, and as it is not usually feasible for a patient to receive the constant attention of a physician or nurse it can be effectively performed by himself in the following manner:

A small bit of absorbent cotton is tightly twisted about the square end of a match, thoroughly covering and protecting the sharp corners and edges. The arm opposite the affected ear is passed over the head and with the same hand the edge of the auricle is grasped and pulled upward and backward, the other hand carefully inserting the cotton wound end of the match down to the bottom of the canal, rotating it gently. This procedure should not be accompanied by pain and a few demonstrations will convince the patient of its safety. The

capillary attraction of the fibrils of the cotton will not only free the canal of moisture, but the middle ear as well. It should be repeated as often as necessary to dry the canal. Prior to irrigation or drying the canal the instillation of a few drops of hydrogen peroxide followed by rapid opening and closing of the meatus for a few times will be found to be helpful in removing a thick tenacious discharge. When the discharge becomes slight the occasional insufflation of boric acid powder in small quantities is indicated.

Internal aeration.—Aeration of the middle ear by way of the eustachian tube is quite as important as external aeration. The author does not believe in the practice of closing the eustachian tube when treating these patients; he would recommend that procedure only when the radical mastoid operation is performed. The best functional and surgical results he believes are obtained by retaining the patency of the tube. Occasional inflation of the tube may be practised. Deflected septa sufficiently marked as to cause nasal obstruction should be corrected. Nasal polyps if present must be removed; all diseased conditions of the accessory sinuses of the nose treated, and, if necessary, operated upon; enlarged or diseased tonsils should be removed, together with adenoids if any exist, particularly in the case of children, and the nose should be perfectly free and clean.

Conclusions.—Persons with chronic otorrhea are likely to become accustomed to their affliction and take the discharge more or less as a matter of course. Frequently they assert that the canal has been regularly and properly cleansed. On interrogation, however, and closer examination, it is evident that the cleansing of the canal must have been performed in a most desultory manner. Only a full realization of the serious consequences sometimes attending this complaint will arouse the patients to the importance of implicitly following the instructions given. Both physician and patient should remember that the successful outcome of treatment for chronic otorrhea depends largely upon the thorough, consistent and regular manner with which the patient removes the pus from the canal and constantly keeps it not only clean but dry.

148 WEST FIFTY-EIGHTH STREET.

SHELLEY THE INVALID.

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In curious contrast with the prominence given to Flaubert's and Johnson's epilepsy; with the literary exploitation of Schiller's, Keats's, and Stevenson's tuberculosis, and with the sad notoriety bestowed on Maupassant's, Nietzsche's, and even Wilde's syphilis, the disease that tormented the days of the greatest lyrical poet produced by England has failed to receive any noticeable amount of attention. We have heard all there is to be heard about Byron's lame foot, about Cowper's insanity, about Heine's paralysis, about Carlyle's dyspepsia, about Rossetti's

neurasthenia, and Hearn's myopia; but in the case of Shelley such cleancut studies are lacking. In fact, no attempt has ever been made to determine the character of the ailment which made the poet's life, to borrow his own phrase, "a series of illness." The sea which in a stormy July afternoon washed over his body seemed also to efface all memory of his lifelong invalidism.

A perusal of the available documents shows plainly that the physicians, a good batch of them at that, who attended Shelley in the course of his short and restless existence, were puzzled by his affection. In England, it had been diagnosed as consumption; the surgeon who nursed him at Naples defined it as liver disease; while the last of his medical advisers, the celebrated Vacca Berlinghieri, who first inclined to believe it a purely nervous complication, finally came to the conclusion that the trouble resided in the kidneys.

His friends did not seem to make much of it and blamed Shelley's imagination for most of the symptoms he so vividly described. Hogg and Peacock and Trelawny, while admitting that he was occasionally ill, have dismissed the subject as being only inconsequential "fits," Trelawny declaring:

I often saw him in a state of nudity, and he always reminded me of a young Indian, strong limbed and vigorous . . . and, barring drugs and accidents, he might have lived as long as his father—to be ninety.

Hogg says that Shelley "suffered occasionally from certain painful infirmities, but his stamina were sound, his constitution and general health good."

Medwin, who intimates in his usual irresponsible way that Shelley's trouble would ultimately have proved fatal, concedes that his constitution, although delicate, was good.

There is abundance of testimony that when it came to physical exercise, such as rowing and especially walking, the bard could hold his own against anyone. We may excuse his associates for being somewhat skeptical as to their friend's ailments, when we hear of his covering at a stretch thirty miles of ground on foot. "He beat us all in walking," says Trelawny, no despicable judge, "and his prowess in shooting was such as to awaken Byron's jealousy." "Delicate and fragile as he appeared," states Peacock, "he had great muscular strength." Leigh Hunt, who refers to Shelley's spasms, said that he was tuberculous, corroborating Doctor Polidori's description of 1816, "bashful, shy, consumptive", but Hunt saw little of him in the last years of his life. Shelley himself, who for a long time considered himself a consumptive, changed in time to Doctor Vacca's views and expected at any hour, after 1821, to be cut for the stone.

The incredulity as to his sufferings is easily explainable, as Shelley's apprehensive mind not only magnified existing disorders, but also painted with the colors of reality imaginary ones. Whenever he coughed he would mention that a few blood vessels had just broken and that he was spitting blood. Hogg, who is authority for this story, tells that once young Percy took into his head the idea that he had

caught elephantiasis from an old woman with rather thick legs who had sat opposite to him in a crowded stage coach. A surgeon was consulted who promptly told him he had not got the disease. Shelley was not convinced, however, and was always at most unexpected moments examining his skin and that of others, at times even rolling to the floor and twisting like an eel, his reply to worried inquirers being, "I have the elephantiasis."

Peacock dilates on his continual search for signs of the disease.

He used to draw the skin of his own hand, arms and neck very tight, and if he discovered any deviation, he would seize the person next to him and endeavor by a corresponding pressure to see if any corresponding deviation existed.

The results often bordered on the ludicrous, as once with a party of young ladies who were the victims of the experience and perhaps suspected the youthful perpetrator of other designs. Shelley never had elephantiasis, of course; the frequent ruptures of blood vessels were likewise mythical; but his other infirmities were far from being illusory, as his friends imagined. In fact, suppress that disease and the Shelley we know and love

within whose subtle being
As light and wind within some delicate cloud
That fades amid the blue noon's burning sky
Genius and Death contended

would be no more. He might time and again regret that ill health prevented his accomplishing more, but probably he was wrong. Keats came nearer to the mark when he wished his brother poet to write less. Had Shelley composed only a tithe of what he actually did compose, his fame would stand just as high. His disability seemed to help rather than hinder his literary achievement. Alastor and some of his finest lyrics owed their existence to it, as did also that poignant if monotonous note of complaint which makes Shelley Shelley.

In the case of the Cenci the author said that its composition had kept him in pain as fagots do a fire, and of Hellas that he paid dear for such moments of enthusiasm, but the fact remains that his belief in the shortness of his life incited him to undertake and finish work which would otherwise have progressed but slowly, if at all. He admitted that much to Godwin in their early correspondence, and on December 11, 1817, he says in regard to the Revolt of Islam,

I felt the precariousness of my life, and I engaged in this task resolved to leave some record of myself. Much of what the volume contains was written with the same feeling, as real, though not so prophetic, as the communications of a dying man.

As Voltaire, as Rousseau, as Leopardi, as Heine, as Stevenson, as Daudet, Shelley was to furnish an illustration of the fact that sickness may check all other forms of activity but not cheat a writer of his fling at immortality.

Shelley's poor health was a lifelong affair. Even when a child his appearance was delicate and rather frail. In his Eton days, when he had a raging fever, his fear of being sent to an insane asylum by his father was such that, if we may credit the story told by him to Hogg, he had his friend Doctor

Lind, a physician of Windsor, sent for to prevent the plans from being carried out. Many years afterward, a touching incident of this sickness remained vivid in his youngest sister's memory. When he was still confined to his room, on hearing her playing outside, the poet rushed to the window and threw her a kiss. The charm of his behavior on this occasion, the tender smile, as contrasted with the pale face and bright feverish eyes leaning against the glass, was practically all she could remember of her brother. It was enough—this little episode was like a miniature of the whole of Shelley's life.

As the malady grew on him, references to his ills become abundant in his correspondence. In a letter of January 6, 1811, to Hogg, in the days following his jilting by Harriet Grove, Shelley first complains of feeling dizzy, on account of lack of rest and a slight attack of typhus (?). He was then only eighteen. After this, a lament more or less vague, more or less assertive, reappears constantly in his writings until he could address misery in lines which sound like an echo of an elder and sadder Keats:

Misery, we have known each other,
Like a sister and a brother
Living in the same lone house
For many years.

Shortly after his expulsion from Oxford, in July, 1811, he was down with a short but severe nervous trouble. His condition seems to have grown gradually worse, as on January 20, 1812, Miss Hitchener is told how unwillingly he has taken to the use of laudanum to alleviate his pain. In his letters to Godwin, on February 24, 1812, he excuses his eagerness to rush into print by his physical constitution being such as not to permit hopes of a long life; and on June 3, 1812, he pleads the state of his health for his failure to devote himself more regularly to study. In May he had a sharp attack of fever occasioned by vexation at the unsettled condition of his affairs, and Harriet on June 7th announced to Miss Nugent a projected trip to Italy, "as Percy's health is so extremely delicate that the cold air of this country is not likely to benefit him."

The idea, although not abandoned, was held in abeyance, Shelley's spells of sickness during the rest of the year being followed by quick improvement. On November 7th, John Williams, the publisher, is told from London,

I am much better than when you last saw me. If I can manage today, I shall call on the doctor.

He was, however, depending more on his own exertions for a cure. In his *Queen Mab* he had entered a plea for vegetarianism, the notes to that poem containing the emphatic assertion,

There is no disease, bodily or mental, which adoption of vegetable diet and pure water has not infallibly mitigated.

While in Dublin, in February-April, 1812, Shelley had taken to this diet, but he had given it up to recuperate from the exhaustion caused by the sea-sickness on the return voyage. Now he reverted to it, his letter of December 27th informing Hogg that he is much improved by the régime.

Other troubles contributed to his physical dis-

comfort. The night assault at Tanyrallt on February 26, 1813, had as a sequence an attack of disease "brought on by watching, fatigue and alarm." During the same year Shelley began to complain of an acute pain in the right side and chest, which threw him into convulsions, laudanum being the only remedy which furnished any relief. In after years he used to attribute these spasms to the violence of the man who assaulted him at Tanyrallt, an allusion to whom may be gathered from the famous simile in *Adonais*,

A herd-abandoned deer struck by the hunter's dart.

The next year was filled with no better prospects. The separation from Harriet came in March, 1814, and his mental torture was paralleled by the bodily suffering, an echo of which is found in the stanzas to Mary Godwin in June, 1814, with their longing

To curse the life which is the cage
Of fettered grief that dares not groan
Hiding from many a careless eye
The scorned load of agony.

This entire period was indeed a critical one for Shelley. An attempt at selfdestruction made by him in July is told in detail in Mrs. Godwin's never mailed letters to Lady Mountcashell. Preceding his elopement with Mary during the same month, he could deaden his pains only by drugging himself with opium. When Peacock called on him, he caught up a bottle of laudanum, and said, "I never part from this." Then he quoted Sophocles, "Man's happiest lot is not to be . . ."

Brighter days were near, and the period spent in France and Switzerland, after running away with Mary, was altogether a happy one, Shelley's condition having improved considerably. Although even then, the precarious state of his health was one of the reasons that made the party think in August of seeking a residence in a warmer climate more suitable to him. After the return to England, on October 25th, he reports himself to Mary as "desolate, wretched and dejected"; and on the 28th she hears "that his head aches, and he is not well," although the moral depression is such that little space is given to accounts of physical pain. This winter, according to Peacock, was the most solitary period of the poet's life; and it was also, as testified by successive entries in Mary's journal, one of the most trying to his health.

In the spring of 1815, an eminent physician (probably Doctor Pemberton) declared that Shelley was dying rapidly of consumption. How mistaken he was may be seen from the patient's letter to Hogg in August:

My health has been considerably improved under Lawrence's care, and I am much more free from the continual irritation under which I lived.

A tour along the Devonshire coast helped greatly this improvement, which became more evident after a trip on the Thames in September. Shelley tells Hogg:

The exercise and dissipation of mind attached to such an expedition have produced so favorable an effect on my health, that my habitual dejection and irritability have almost deserted me.

Charles Clairmont, one of the excursionists, expressed himself as follows:

We have all felt the good effects of this jaunt, but in

Shelley the change is quite remarkable; he has now the ruddy, healthy complexion of the autumn upon his countenance, and he is twice as fat as he used to be.

Peacock attributed the notable improvement less to the open air existence than to the fact that Shelley had for the nonce abandoned vegetarianism and taken to well peppered mutton chops.

He lived in my way . . . rowed vigorously; was cheerful, merry, overflowing with animal spirits.

Alastor is often supposed to be the record of those hours when Shelley was struggling with consumption. As a matter of fact, it was written immediately after the Thames excursion. when his spirits were more buoyant than ever, all traces of lung disease, if any were ever present, having been cast off his system. He himself told Southey that the poem was "the product of a few serene hours of the last beautiful autumn."

As Mrs. Shelley puts it:

Suddenly a complete change took place; and though through life, he was a martyr to pain and debility, every symptom of pulmonary disease vanished.

With the winter of 1815-16, the old pain at the side recurred, perhaps more severe than ever. Medwin says that at this time Shelley gratified his desire to study medicine,* latent according to his cousin Charles Grove since 1811, and became a student in the wards of a hospital. This is unconfirmed by any other testimony, and, like many others of Medwin's statements, seems untrustworthy. The spells of sickness made all active exertion impossible, Godwin being told on February 27, 1816,

I was seized last night with symptoms of irritable fever, and my state requires rest to prevent serious effects.

Fear of the cold English spring took him to Switzerland where over three months were spent in comparative happiness and good health. A fall on his knees, however, on July 24th, was sufficient to make him faint and incapacitated him for some moments from continuing the descent from Montanvert.

New trials awaited his return. As the result of Fanny Godwin's suicide in October, Shelley experienced a setback. A few days afterwards, he began to keep an account of the food he consumed each day, and for the first day, October 26th, he records twenty-two ounces. In December, the body of his deserted wife was found in the Serpentine river, Shelley's health bearing tolerably well the strain. "I am well in health," he writes Mary on the 15th, "although somewhat faint and agitated." Out of a weary heart, however, did come in this year the cry that distils tears,

Oh, that like thine, mine epitaph were—Peace!

The pain reappeared with frequent regularity. The Hunts are told on June 29, 1817,

I have so constant a pain in my side, and such a depression of strength and spirits, as to make my holding the pen while I write to you an almost intolerable exertion. This, you know, with me is transitory;

Mary adding a postscript,

*This fondness for medicine seems to have been a trait of the Shelley family. His great-grandfather practiced in the United States as a doctor, a "quack" doctor, according to Medwin; and his grandfather was in association for some time with the notorious "Doctor" Graham, of Lady Hamilton fame.

Today he is worse than I have known him for some time. Perhaps the decrease of heat in the weather has to do with it.

On September 4th she notes in her journal, "Shelley's health declines."

Little by little the old idea of making his home in another country was reshaping itself in the poet's fancy. In September his physician, Dr. William Lawrence, a pupil of the celebrated Abernethy, advised change of air and scene. While consulting him in London, the cold made Shelley suffer, as shown in his note of October 6th to Mary,

This weather does me great mischief. I nurse myself, and these kind people (the Hunts) nurse me with great care . . . I suffered today from violent pain in the side, which prevents me from going out at all.

Well he could say in the *Dedication of the Revolt of Islam*

I am worn away

And Death and Love are yet contending for their prey.

Mary describes him during that winter as "drooping and languid, in pain, and unable to enjoy life." To cap things, Shelley, who caught everything that came his way, contracted purulent ophthalmia while visiting the poor near his residence at Marlow. On December 7, 1817, Godwin is told,

My health has been materially worse. My feelings at intervals are of a deadly and torpid kind, or awakened to such a state of unnatural excitement. . . . Towards evening I sink into a state of lethargy and inanimation, and often remain for hours on the sofa between sleep and waking, a prey to the utmost irritability of thought. Such, with little intermission, is my condition . . . It is not health but life that I should seek in Italy . . . I ought to say I cannot persevere in the meat diet; and on the 11th

The dry and frosty weather fills me with health and spirits.

On February 18, 1818, Mary notes, "Shelley is not well."

On March 12th, the bard left the native land which he was never again to see to

dwell by the azure sea
Of serene and golden Italy.

As soon as they arrived in France, he began to recuperate. Immediately after landing, Leigh Hunt is told on March 13th,

We are all very well and in excellent spirits. Motion has always this effect on me.

From Lyons he writes again on the 22nd, after going into ecstasies over the weather and the skies,

The heat in this city today is like that of London in the midst of summer. My spirits and health sympathize in the change. Indeed, before I left London, my spirits were as feeble as my health.

The descent into Italy was accompanied by constant improvement, as the heat increased, and Peacock hears,

No sooner had we arrived in Italy than the loveliness of the earth and the serenity of the sky made the greatest difference in my sensations. I depend on these things for life.

This impression persisted during the summer, a letter to Godwin from the Lucca baths stating on July 25th,

My health is, I think, better, and I imagine, continues to improve . . . and it is now summer.

On August 17th, Mary wrote to Mrs. Gisborne,

Shelley is tolerably well in health; the hot weather has done him good.

The pain in the side was even then a frequent, if unwelcome guest. From Florence, where he had just arrived on his way to Byron in Venice, Shelley wrote to his wife on August 20th,

As to me, there are occasions in which fatigue seems a useful medicine, as I have felt no pain in my side—a most delightful respite—since I left you . . . It is not very hot—not at all too hot for my sensations.

Under date of September 5th, Mary records in her journal, "Shelley is very unwell from taking poison in Italian cakes," on the 16th being still very sick from the effects. On the 22nd he rushes to Padua and thence to Venice to consult a physician both for himself and little Clara who was dangerously ill. On October 8th, he writes to Peacock from Este, on his way back from Venice,

We have all had bad spirits enough (Clara had died on the 24th), and I, in addition, bad health. I *intend* to be better soon; there is no malady, bodily or mental, which does not either kill or be killed.

His was going to be one.

Attracted by the lovely climate, at the end of November Shelley settled in Naples. The cold made him suffer as much as ever. The English physician who treated him failed to procure any relief, although Shelley submitted patiently to the application of caustics on the side and other "messing" and even put himself to the expense of keeping a stable, the doctor having recommended horseback riding as the best exercise for liver disease.

"At this time," says Mrs. Shelley, "Shelley suffered greatly in health. He put himself under the care of a medical man, who promised great things, and made him endure severe bodily pain without good results. Constant and poignant physical suffering exhausted him, and though he preserved the appearance of cheerfulness, and often greatly enjoyed our wanderings in the environs of Naples, and our excursions on its sunny sea, yet many hours were passed when his thoughts shadowed by illness became gloomy, and then he escaped to solitude, and in verses which he hid from fear of wounding me, poured forth morbid but too natural bursts of discomfort and sadness."

Shelley confesses as much in his letters to Peacock, one of December 22d telling how an excursion to Vesuvius was spoiled by a spasm which necessitated his being conducted "I know not how, to the hermitage." The despair of those days found splendid if sombre expression in the *Stanzas Written in Dejection*,

Alas! I have not hope nor health
Nor peace within nor calm around.

A few days later a more resigned mood came over him, and a letter of January 26, 1819, to Peacock, contains the vain regret,

O, if I had health, and strength, and equal spirits, what boundless improvement might I not gather in this wonderful country.

Trelawny told Mr. William Michael Rossetti that Shelley had again attempted suicide with laudanum in Naples, being saved, as previously in London, by the physician keeping him on his feet in constant motion. Should this be true, it proves how low his spirits were at this epoch and how sincere was the lament

I could lie down like a tired child
And weep away the life of care
Which I have borne and yet must bear.

Better days were forthcoming. In March the Shelleys went to Rome for their second visit; and in his letter of April 6th, he was able to tell Peacock,

My health is materially better . . . I believe, my dear Peacock, that you wish us to come back to England. How is it possible? Health, competency, tranquillity—all these Italy permits and England takes away.

The improvement did not last long; and on April 26th Mary mentions to Mrs. Gisborne their intention of going back to Naples in May as Shelley's health was affected by the air of Rome, and the physician "prognosticated" good results from a summer spent in the southern city.

With the warmth of the spring, Shelley's condition took a turn for the better, and they stayed in the Eternal City until June 10th, when they left for Leghorn. In his letter of July 25th to Hogg, Shelley speaks of his having recovered a certain degree of health until little William's death on June 7th left him in a very weak state. This is confirmed in a letter of June 20th to Peacock from the Villa Valsovano,

Watching and anxiety cast me into a relapse. The doctors (I put little faith in the best) tell me I must spend the winter in Africa or Spain.

On July 6th Peacock is told "My health, whenever no Libeccio blows, improves;" but on August 5th "ill spirits and ill health" are given as excuses for not writing. Later in the month, Peacock is told,

I have been much better these last three weeks. My work on the *Cenci* . . . was a fine antidote to nervous medicines, and kept up, I think, the pain in my side, as sticks do a fire. Since then, I have materially improved. I do not walk enough.

On the 28th, Mary wrote to Mrs. Hunt,

Shelley has not had good health by any means, and when getting better, fate has ever contrived something to pull him back;

and in September to Miss Curran,

He has never recovered from his fatigue at Rome, and certainly frightens me by the approaches of a dysentery.

At the beginning of October, the Shelleys moved to Florence, whence the poet wrote to Henry Reveley, "My health is better so long as the sirocco blows." With the advent of cold weather, the pain in the side returned in all its intensity.

The summer dysentery which had alarmed Mary so much subsided with the approach of winter, and on November 18, 1819, Miss Curran is told,

I have suffered very much from a disease of the climate this summer, and the winter, which awakens my old pains in my side is, contrary to custom, a relief to my sensations.

He was, however, inclined to think well of his trip to Italy, as evidenced by his letter to Leigh Hunt in the same month:

I think I have had an accession of strength since my residence in Italy, though the disease itself in the side, whatever it may be, is not subsided.

Miss Sophia Stacey saw much of him at this time, and various entries in her diary testify to his delicate state of health and to the frequency of the spasms which undermined his energy. In curious contrast with her annotation for December 17th,

He was suffering much from the pain in the side. is Shelley's note addressed to Henry Reveley on the next day:

I have had better health than I have known for a long time—ready for any stormy cruise. When will the ship be ready to sail?

The winter in Florence proved very trying. On January 17, 1820, Shelley wrote to Medwin,

Nothing reconciles me to the slightest indication of winter, much less such infernal cold as my nerves have been racked upon for the last ten days; and on April 5th to Hunt,

Much stress is laid upon a still more southern climate for my health, which has suffered dreadfully this winter, and if I could believe that Spain would be effectual, I might possibly be tempted to make a voyage thither, on account of the glorious events of which it is at this moment the theatre.

A change had been made in January to Pisa, whose mild climate and good water were a great recommendation to Shelley. The city had not appealed to him when he first saw it in May, 1818, his impression, as transmitted to Peacock, being that of "a large, disagreeable city, almost without inhabitants." It gained in favor on a longer acquaintance, was found to be most congenial to his health, and long remained a favorite with him. Years afterwards, he reminded Mary that their roots never struck so deeply as there.

"At Pisa," he wrote to her on August 16, 1821, "I need not distil my water . . . Last winter I suffered less from my painful disorder than the winter I spent in Florence.

Improvement did not follow immediately upon his arrival at the Tuscan city. On April 16, 1820, he tells Medwin,

You will find me a wretched invalid unless a great change should take place;

and on May 1,

I have been seriously ill since I last wrote to you, but I am now recovering.

Fortunately in Pisa, Shelley had come in contact with one of the most famous physicians of the time, Dr. Andrea Vacca Berlinghieri, a man educated in England and France and possessing an international reputation. He refused at first to see anything but nerves in Shelley's complaints and prescribed a simple, natural mode of life as the most adequate treatment. The great service he rendered the poet was in persuading him to give up the drugs to which he had become addicted. But no sooner had Shelley abandoned laudanum that he turned to hypnotism, and Medwin first and Jane Williams afterwards were appealed to in an effort to

Forget lost health and the divine

Feelings that die in youth's brief morn,
in the relaxation of artificially induced trances.

It was by now apparent that Shelley's health depended primarily on the weather. In a letter of May 16, 1820, Peacock read,

I have suffered extremely this winter; but I feel myself most materially better at the return of spring. I am on the whole greatly benefited by my residence in Italy, and, but for certain moral causes, should probably have been enabled to re-establish my system completely. On May 26th he wrote to John and Maria Gisborne,

I had a respite from my nervous symptoms, which was compensated to me by a violent cold in the head; and on June 30th,

I am very nervous, but better in general health.

The capricious pain would not down; and in his noble letter of August 7th to Southey, the confession is made,

I have had sickness enough, and at this moment I have so severe a pain in my side that I can hardly write;

Mary being on September 1st told from Leghorn, where he had gone for a short visit,

I am somewhat better, but my side still vexes me—a little.

In a letter of October 29, 1820, Claire Clairmont is given further details,

I have suffered within this last week a violent access of my disease, with a return of those spasms that I used to have. I am consoled by the persuasion that the seat of the disease is in the kidneys, and consequently not mortal. As to the pain, I care little for it, but the nervous irritability which it leaves is a great and serious evil to me, and which, if not incessantly combated by myself and soothed by others, would leave me nothing but torment in life.

November did not bring any relief, as shown in a note to Mr. Gisborne:

I suffer from my disease considerably . . . I have suffered horribly from my side, but my general health decidedly improves, and there is now no doubt but that it is a disease of the kidneys which, however, it sometimes make life miserable, has, Vacca assures me, no tendency to endanger it.

Shelley, who had for some time thinking of

Seeking alike from happiness and woe
A refuge in the cavern of gray death,

was at this period asking himself with some misgivings,

What thing do you
Hope to inherit in the grave below?

He had reason to grudge against fate. An attack of ophthalmia during this winter made things still worse, as reading and writing, both now forbidden, were to him like necessities of life. On January 2, 1821, he complained to Claire,

My eyes are still weak. I have suffered considerably from my disease; and am already in imagination preparing to be cut for the stone, in spite of Vacca's consolatory assurance.

The recovery from the eye trouble was rather protracted, Vincent Novello, the musician, being informed on February 20th that Shelley's eyes were still inadequate to the fatigue of writing, and Peacock in March that he had been unable to do any reading that winter. The pain in the side had relaxed somewhat, as on January 16th he explained to Claire,

Mine (health) is far better than it has been; and the *relapse* which I now suffer into a state of ease from one of pain, is attended with such an excessive susceptibility of nature, that I suffer equally from pleasure and from pain . . . I can do you no other good than . . . keep up the unnatural connection between this feeble mass of disease and infirmities and the vapid and weary spirit doomed to drag it through the world.

At times, a longing for better health found expression as in the letters to Medwin on July 20, 1820,

How much I envy you, or rather how much I sympathize in the delights of your wanderings. I have a passion for such expeditions, although partly the capriciousness of my health, and partly the want of the excitement of a companion, keep me at home;

to Claire on February 18, 1821,

What pleasure it gives me to hear that you are well: health is the greatest possession, health of body and mind, as the writer, weak enough in both, too well knows; and to Hunt on August 26, 1821,

I am full of thoughts and plans, and should do something, if the feeble and irritable frame which encloses it was willing to obey the spirit. I fancy that then I should do great things.

Even the arrival of the spring was no longer an unmitigated pleasure. As he wrote to Claire on April 2, 1821,

The weather is a medicine for almost any dejection which does not spring from a wholly imperfect or deranged frame. My health is very fluctuating and uncertain, and change of season brings a change rather than a relief of ills. I live, however, for certain intoxicating moments, which are the "ounces of sweet that outweigh a pound of sour," and which no person not deprived of memory need despair of possessing.

Little by little the balmy weather showed its influence.

"My health," he tells Claire on April 20th, "is generally much the same, somewhat amended by the divine weather that has fallen upon us, but still characterized by irritability and depression, or moments of almost supernatural elevation of spirits. My side begins, however, to feel the influence of the relapsing year. I think I have been better altogether this winter; I wish to think so, in spite of the strong motives which should impel me to desire to exist under another form . . . I expect that the exercise of sailing, etc., will do good to my health. I have bought (the boat) instead of a horse which Vacca recommended."

The side remains a constant enemy which must be watched with care. On April 17th, he had written to Henry Reveley, in regard to the effects of his fall into the water, following the capsizing of their boat,

"I am rather feverish, but very well as to the side, whence I expected the worst consequences.

The Gisbornes are bluntly told on June 5th,

My health does not permit me to spend many hours away from home;

which is confirmed in Mary's journal for June 26th, "Shelley not well." Some of Shelley's resigned melancholy was at this time embodied in the self portrait in Adonais,

One frail form,

A phantom among men;

a Power

Girt round with weakness; it can scarce uplift

The weight of the superincumbent hour.

It is pathetic to watch the perpetual struggle between Shelley's desire to believe himself improved and the realities forced upon him by his disease,

"My health is better," he told Claire on June 8th, "since I last wrote. I always tell you it is better, and yet I am never well. I have a great interest and desire to live, and would submit to any inconvenience to attain that object. I take all sorts of care of myself, but it *appears* to make no difference. Anything that prevents me from thinking does me good. Reading does not occupy me enough; the only relief I find springs from the composition of poetry, which necessitates contemplations that lift me above the stormy mist of sensations which are my habitual place of abode.

This loquacity changes to a more laconic form when addressing less intimate friends. "I am pretty ill, I thank you, just now," he tells Mr. Gisborne on June 16th, Mary informing Mrs. Gisborne on June 30th, "Shelley is far from well; he suffers from his side and nervous irritation."

"It was a pleasant summer," said Mrs. Shelley

of this period, "bright in all but Shelley's health and inconstant spirits." Any innovation served to aggravate his ailments. From Ravenna, where he had gone to see Byron, he wrote to Mary, on August 11th,

I suffer much today from the pain in my side, brought on, I believe, by this accursed water. In other respects, I am pretty well, and my spirits are much improved; they had been improving, indeed, before I left the baths, after the deep dejection of the early part of the year.

On the 17th, Mary was able to tell Mrs. Gisborne, The Italian sky gives Shelley health, which is to him a rare and substantial enjoyment.

Even Pisa, where they had settled again in October, could afford no protection against the rigor of the winter.

"The Exotic, as you please to call me," he bewails to Claire on December 11th, "drips in this frost—a frost both moral and physical—a solitude of the heart. These last days I have been unable to ride, the cold towards sunset is so excessive, and my side reminds me that I am mortal."

A note of the 31st confirms this,

I have suffered considerably from pain and depression of spirits—the weather is frightful here.

A more cheerful attitude is shown in his letters in January to Peacock,

Our windows are full of plants which turn the sunny winter into spring. My health is better—my cares are lighter;

and to Mr. Gisborne,

One thing I rejoice to hear, that your health is better. So is mine, but my mind is like an overworked race horse put into a hackney coach;

and in Mary's note of April 10th to Mrs. Gisborne,

Shelley has been much better this winter than any since I have known him. Pisa certainly agrees with him exceedingly well.

The year 1822 thus began propitiously for Shelley. The character of his disease made, however, all improvement purely temporary. The stanzas which he delivered to Edward Williams on January 26th express significantly a hope that

Doubtless there is a place of peace

Where my weak heart and all its throbs shall cease.

In February Claire is told,

The incumbent of my reversion still flourishes, and you must be aware that the sensations with which it has pleased the Devil to endow the frame of his successor are not the strongest pledges of longevity . . . I am better today. I have been very ill, body and soul, principally the latter. I took some exercise in the boat to dissipate thought; but it overfatigued me and made me worse. The baths, I think, do me good, but especially solitude, and not seeing polite human faces, and hearing voices;

and on April 2d,

Ill health is one of the evils that is not a dream, and the reality of which every year, if you neglect it, will make it more impressive. . . . After a long truce, my side has declared war against me, and I suppose I must wait for the general pacification between me and my rebel faculties before it will be quiet for good.

The same note is emphasized in his letter to her of April 11th,

I am not well. My side torments me. My mind agitates the prison which it inhabits, and things go ill with me—that is within—for all external circumstances are auspicious;

Leigh Hunt being told on the same date,

We are obliged to go into the country both for mine and Mary's health, to whom the sea air is necessary.

The change to Lerici, if ultimately disastrous, was in its immediate results most beneficial to Shelley. On May 29th he was able to tell Claire,

I read and enjoy for the first time these ten years something like health. I find, however, that I must neither think nor feel, or the pain returns to its old nest; and on the 31st,

My health is much better this summer than it has been for many years; but the occupation of a few mornings in composition has somewhat shattered my nerves.

Mary confirms this in her note of June 2d to Mrs. Gisborne,

Percy is well and Shelley singularly so; the incessant boating does him a good deal of good.

These pleasant impressions still last when on June 18th he writes to Claire,

Jane brings her guitar, and if the past and future could be obliterated, the present would content me so well that I could say with Faust to the passing moment, "Remain, thou art so beautiful."

A letter of the 29th mourns,

My only regret is that the summer must ever pass.

As the snake hid among flowers, there is a presentment of impending doom. The letter of the 18th contains this statement,

I stand, as it were, upon a precipice, which I have ascended with great, and cannot descend without greater peril, and I am content if the heaven above is calm for the present moment.

On the same day he wrote to Trelawny for some prussic acid or essential oil of bitter almonds, expressing his willingness to pay any price for the poison. Although disclaiming any intention to use it, he concludes,

It would be a comfort to me to hold in my possession the golden key to the chamber of perpetual rest.

No more do we hear about his disease, but a few days afterward, when he had not yet seen his thirtieth birthday, we

hear the sea

Breathe o'er his dying brain its last monotony.

His prophecy to Jane Williams, " 'Twould kill me what would cure me" had been fulfilled. His last poem had closed with the question, What is Life? He had gone to find the answer in that "great mystery" which had puzzled him for so long.

What was that disorder which made him, as he described himself in his London days, "a secluded valetudinarian"? It is clear that the symptoms were those of a chronic disease, and not, as some biographers have intimated, purely temporary indispositions. Tuberculosis may be altogether left out of the question. If it existed at any time, Shelley's outdoor life rid him of it. When he died, his chest was found to present signs of development after the period when normal growth ceases. The case against gallstones is not so plain; but the strongest presumption is that Shelley's poor health was due to an ailment little known in his day, and even to this day perplexing to physicians.

Either gastric or duodenal ulcer, most probably the latter, lay at the bottom of Shelley's trouble. The symptoms mentioned by him tally with those observed by students of the disease. The emaciated, almost cadaverous appearance of the poet is a

clinical sign of great importance. His fondness for acid fruits and salads, puddings, cakes and

Syllabubs, and jellies, and mince pies,
And other such ladylike luxuries

would naturally cause an exacerbation of the pains; as would also his curious habits of eating and his unseasonable hours of sleep. The delight which he felt in extreme heat, causing him to compare himself to the salamander, had its origin in the relief experienced in bright and even intolerably hot, weather. "I revive with the spring," he said once, and Mrs. Shelley has told how he basked in the heat and sunshine at Lerici.

The stay in Italy was in this respect productive of excellent results. The pain was by its own nature of frequent occurrence, but after he crossed the Alps, his general health was incomparably better than in England, where, as Mrs. Shelley declared, half of his existence was consumed in helpless suffering. Leigh Hunt stated that the Shelley of 1822 was the same as of old, "with the exception of less hope"; but this of course refers to the prophet of "the world's great age". "He was looking better," Hunt says elsewhere, "than I had ever seen him; and Lady Mountcashell, on whom Shelley called the day before his death, wrote that he had never been in such good health and spirits as in those his last hours in this world.

If Shelley suffered from either gastric or duodenal ulcer, Leigh Hunt was probably right when, forgetful of Vacca's experience with Mrs. Hunt, he ventured the opinion that his friend was not destined to live a long life. Modern studies have shown that ulcers of this type are only amenable to surgical treatment, and this not always, no assurance being possible, even after operation, that the ulcer will not recur or degenerate into cancer.

Suspect strongly as we may that Shelley was a victim to the same malady as Napoleon, the matter must remain forever unsettled. No autopsy was ever performed on the body. When the waves gave up their prey, the flames were soon to consume it. On the crumbling apart of the funeral pyre, the only thing in sight was the great heart, *Cor Cordium*.

SPONTANEOUS EVACUATION OF A GAUZE SPONGE FROM THE PERI- TONEAL CAVITY BY WAY OF THE BOWEL.

Report of a Case.

By JOHN P. JONES, M. D.,
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We have all seen or heard of cases in which the surgeon has been unfortunate enough to leave a sponge in the abdominal cavity. Usually its presence has promptly made itself known by a variety of disquieting symptoms which have led the surgeon to open the abdomen for the second time for its removal, much to the surgeon's embarrassment and the patient's discomfort. Although such an occurrence is unfortunately not infrequent, I believe it is extremely unusual that

Nature should remove a sponge from an abdomen which has been tightly sutured in four layers, especially when its removal is affected without the aid of surgical interference and in such a way that the patient afterward regains perfect health.

While chief of the surgical service in Evacuation Hospital No. 36, A. E. F., France, such a case came under my observation, the patient having been transferred to this hospital from another after operation. The following is the history:

CASE.—Mr. X, a well developed and nourished white man who had always been in good health except for the so-called diseases of childhood, was admitted to Hospital No. —, February 4, 1919, with the classical symptoms of acute appendicitis. On the following day an acutely inflamed catarrhal appendix was removed through a three inch McBurney incision. The appendix was retrocal and was very difficult to free from adhesions, necessitating the introduction of several gauze packs and sponges into the peritoneal cavity during the fifty-minute operation. There was also an acute perityphlitis with recent adhesions. A very small gauze drain was inserted into and behind the cecum emerging from the lower end of the incision. At the time of sewing up it was stated that the sponge count was correct.

February 6, 1919: General condition of the patient fair, considerable vomiting, and some pain in the belly.

February 7, 1919: Patient still complained of some abdominal pain. Vomited two or three times during the preceding night, had a slight amount of abdominal distention. All liquids by mouth were discontinued. Temperature and pulse record were as follows:

Date.	Temperature		Pulse	
	A. M.	P. M.	A. M.	P. M.
February 5, 1919.....	97.4°	98°	80	72
February 6, 1919.....	98.8°	99°	88	90
February 7, 1919.....	99.2°	99.4°	104	94
February 8, 1919.....	99.8°	98.4°	88	92
February 9, 1919.....	98.6°	98.8°	72	80
February 10, 1919.....	98.3°	98.2°	96	92
February 11, 1919.....	98.2°	98.2°	96	80
February 12, 1919.....	98.4°	99°	84	80
February 13, 1919.....	98.8°	99°	84	88
February 14, 1919.....	99.1°	99.6°	100	104
February 15, 1919.....	99.2°	100.2°	80	96
February 16, 1919.....	98.3°	99°	100	110
February 17, 1919.....	98.4°	99.2°	100	98
February 18, 1919.....	98.6°	98°	92	84
February 19, 1919.....	98.6°	98.6°	96	98

February 9, 1919: Drainage gauze removed and a light wick drain inserted through the skin only. Some nausea was felt by patient during the afternoon, but he did not vomit.

February 10, 1919: No change except patient again complained of considerable pain in the abdomen. Its nature or location was not recorded.

February 15, 1919: General condition of the patient was good; wound perfectly healed. The patient was put on light diet though he had very little appetite.

The patient made a slow recovery, complaining of occasional pains in the abdomen. His general appearance was good though he insisted that he did not feel at all well. He was urged to get out of bed, but he was slow in doing so, and was really not up and about until the fifth week after operation. After this he gradually increased the amount of his exercise but stated that he did not feel well,

could not regain his strength, had occasional cramp-like pains in the abdomen, and had periods of rather obstinate constipation. As his general appearance was good and as nothing abnormal was revealed by physical examination the ward surgeon was inclined to believe the patient was simply lazy.

At times his bowels would move normally every day and at other times there would be periods of several days when it was necessary to give rather large doses of purgatives. The bowel movements were invariably preceded by severe cramplike pains in the abdomen. The stools were usually well formed and of normal color. By the aid of purgatives his bowel movements were fairly regular until April 5th. They did not move from that time until April 11th, though he was given several aloin, belladonna and strychnine pills and one or two doses of castor oil.

During each of these six days he had several attacks of severe cramps in the abdomen, which would last for a few minutes and gradually subside. Their point of maximum intensity was usually the epigastrium, but often they would be diffused over the entire abdomen. The patient was so ill on April 11th that he was confined to his bed the greater part of the day. During that day he was given two large doses of castor oil, and in the early evening he passed an immense stool composed of feces and a gauze sponge.

On the following day the patient stated that he felt like a new man; his appetite was good and he passed two well formed stools without the aid of a laxative. After this his convalescence was rapid and uneventful except for the passing of two small gauze shreds about a week later. His appetite continued to be good, his bowel movements were regular and he gained strength rapidly.

Examination of sponge.—The sponge was saturated with feces. It was rolled and wadded into a comparatively small mass, and on being spread out was shown to maintain its two original longitudinal folds. Unfolded it measured forty by eighty-five cm. It was not disintegrated to any great extent and it tore with almost as much resistance as a new piece of gauze. Pus cells could not be found, and it gave a negative occult blood test. The stain of feces could not be washed out of it.

I think there can be no doubt that the sponge was passed by rectum, as the patient passed the stool into a bed pan, and it was discovered at once by a very trustworthy orderly. It does not seem possible that the patient could have swallowed a sponge of this size during the anesthetic; furthermore it was not of the same size as the gauze squares furnished in this hospital for use during anesthesia. It is presumed that the sponge was left at the side of, or more probably behind, the cecum in contact with the raw surface left by the loosening of adhesions. Granulation tissue soon became incorporated into the meshes of the gauze and the combined action of pressure and a low grade infection devitalized the bowel wall, causing sloughing. The sponge thus found itself in the gut lumen, while the peritoneal cavity was protected by adhesions caused by the irritation of a foreign body.

FACTORS OF SAFETY IN PROSTATIC SURGERY.

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When men of advancing years need surgical relief for urinary obstruction, as the result of hypertrophy and intrusion of the prostate, careful preliminary studies are very essential. A prostatectomy never is an emergency operation, for the prostate can be enucleated either in a one stage or in a two stage operation (bladder drainage by retention catheter or suprapubic cystostomy to be followed later on, when the patient's condition permits, by enucleation of the prostate). There usually is ample time to find out whether the patient can withstand the effects of anesthesia or the shock attending a prostatectomy. These patients, who are commonly termed prostatics, very often present themselves for relief in a debilitated condition and show the effects of urinary obstruction and absorption of toxins. Because of their age, general fibrotic changes in the cardiovascular system and kidneys are usually present. In addition the kidneys almost always show the effects of urinary back pressure which, if not soon relieved, sets up ascending infection of the ureters, kidney pelvis, and the kidney itself.

In order to decide whether a prostate can be enucleated in one or two stages a systematic, routine series of examinations must be instituted. Many patients, especially the hospital types, present themselves when they are already manifesting suburemic or uremic symptoms. In such cases drainage of the bladder, forced fluids, urinary antiseptics, and careful nursing not only save their lives but, as a rule, very soon produce a better general physical condition, with improved kidney function and elimination of toxins. This may be brought about in two months or even in two weeks. The usual physical examination alone can not tell when this favorable stage has occurred. It can be ascertained only by a routine examination and careful study and analysis of the following:

1. The appearance of the tongue.
2. The blood chemistry, with special reference to the retention of creatinine, urea nitrogen, and nonprotein nitrogen.
3. The kidney function by the phenolsulphonephthalein test.
4. The patient's general condition.
5. a, the x ray examination of the entire genitourinary tract; b, the results of a cystoscopic examination; c, a complete urine analysis, preferably of a twenty-four hour specimen; d, the presence of residual urine; e, a twenty-four measure of fluid intake and output.

All of the examinations enumerated above are important and each has a definite bearing on the case; but the first four are the determining factors as to whether or not a prostatectomy can be done, and because these are so reliable for prognosis and treatment, the writer has termed them the factors of safety.

APPEARANCE OF THE TONGUE.

In making the rounds of urological wards one is invariably impressed by the amount of informa-

tion gained from an examination of the tongue. In prostatics it is an index of the ability of the kidneys to excrete toxins resulting from urinary obstruction. An enlarged prostate, because it obstructs the vesical outlet, prevents the complete emptying of the bladder during the act of micturition. Each effort of urination is incomplete and a pool of urine, termed residual urine, accumulates in the bladder. Congestion of the bladder mucosa follows and creates a condition favorable for the thriving of bacteria, notably the colon bacilli, and for the development of cystitis. In patients who do not get early surgical treatment, back pressure of urine results, the ureters become dilated and chronically inflamed, and pyelitis, pyelonephritis or pyonephrosis may develop.

Patients frequently seek relief when the bladder and kidneys have undergone marked pathological changes; clinically, these present suburemic or uremic symptoms. The intoxication produced by retention products from a poorly draining and infected bladder and failing kidneys is vividly expressed by the tongue. The normal tongue is moist, of a reddish pink hue, and coated or not, depending upon intestinal motility. The appearance of the tongue in prostatics who show symptoms of intoxication is absolutely characteristic. It is nearly or entirely dry, and when touched by the finger it imparts a sensation of roughness and dryness. It is also fissured, with definite cracks, and the color is usually a dirty brown or very bright red with a sort of enamel lustre. Such a tongue denotes a serious condition and if unrelieved by an indwelling catheter or suprapubic cystostomy, the prognosis as to life is bad and a prostatectomy is absolutely inadvisable. Some patients may apparently show general improvement under drainage, forced fluids and urinary antiseptics, but if the tongue remains dry and fissured a radical operation is out of the question. This characteristic tongue is practically invariably accompanied by poor kidney function, as evidenced by a low output of phenolsulphonaphthalein and by a toxemia from retention products, as evidenced by high blood values.

E. L. Keyes, Jr., in his work on urology, lays a great deal of emphasis on the importance of the tongue in prostatics and gives an excellent description and illustration.

THE BLOOD CHEMISTRY.

The study of the chemistry of the blood is a very valuable and important method of determining the patient's ability to withstand surgical intervention. The results of poor urinary drainage and absorption of toxins are definitely measured by a study of the blood values. The figures obtained are indicators of the patient's general condition. The following blood constituents, with their normal values, are studied:

Creatinine 0.1-0.5 mg. per 100 c. c. blood
Urea nitrogen 15.0-25.0 mg. per 100 c. c. blood
Nonprotein nitrogen 30.0-45.0 mg. per 100 c. c. blood

The foregoing blood values are increased in prostatics whose bladders cannot drain, and as infection and absorption set in, clinically shown by suburemic or uremic symptoms, the figures become

high. When they do, the patient is a poor surgical risk and the prognosis as to life is serious. The following represents a moderate to a severe rise in the blood constituents and should be compared with the normal values given above:

Creatinine 1.5-4.0 mg. per 100 c. c. blood
Urea nitrogen 40.0-100.0 mg. per 100 c. c. blood
Nonprotein nitrogen..... 70.0-200.0 mg. per 100 c. c. blood

When an examination of the blood shows high figures nothing further than urinary drainage and expectant treatment can be given. A prostatectomy in the face of such figures would prove fatal.

It is interesting to note that the characteristic tongue is always accompanied by high blood values, and as a general rule the study of kidney function shows it to be low. J. Bentley Squier lays great stress on the study of the blood chemistry and usually does nothing more than drain until the blood values decrease approximately to the normal.

THE KIDNEY FUNCTION.

No one would think of performing a major operation on the urinary tract without ascertaining the status of the kidneys. Their function is best determined by the injection of phenolsulphonaphthalein according to the technic of Rowntree and Geraghty (intramuscular injection of one c.c. of phthalein and an estimation of its excretion for two hours in hourly collections of urine). Normally the excretion during the first hour following injection is from thirty to sixty per cent. and the excretion during the second hour is from fifteen to thirty per cent.; graphically the normal phthalein test (red test) is presented thus:

Red test $\left\{ \begin{array}{l} \text{first hour, thirty to sixty per cent.} \\ \text{second hour, fifteen to thirty per cent.} \end{array} \right.$

Prostatics having residual urine must be catheterized at the end of each hour to get all the phthalein excreted. The test should be checked up daily for some time, as technical errors so often occur both in collection and estimation of the urines containing the excreted phthalein with the standard solutions of colorimeters.

When the kidneys are functioning poorly, due to urinary obstruction and secondary toxemia, the output of phthalein is considerably reduced during the two hour collections. The excretion during the first hour may be between five and twenty per cent., and that during the second hour may run between nothing and ten per cent; graphically represented thus:

Red test $\left\{ \begin{array}{l} \text{first hour, five to twenty per cent.} \\ \text{second hour, nothing to ten per cent.} \end{array} \right.$

When the phthalein excretion for two hours is low (five to thirty per cent.) conservative treatment is indicated; such kidneys could neither withstand the effects of anesthesia nor the shock of prostatectomy.

THE GENERAL CONDITION OF THE PATIENT.

One need hardly dwell on the importance of a study of the patient's general physical condition. A failing myocardium, a decompensated valvular lesion, marked edema or generalized anasarca, a cirrhotic liver, an excessively high or a low blood

pressure—all these, of course, are contraindications to radical surgical treatment. Since prostatics are men of about sixty years of age or over, it is obvious that in practically every case the general pathological changes, in varying degree, common to advancing years will be observed. While some degree of any of the changes previously mentioned may be seen, it is of course a question of training and judgment to be able to decide what constitutes or does not constitute a surgical risk. In this discussion the writer aims to emphasize the importance of not being misguided by the apparent comfort or lack of complaints of a patient. It is not enough to make a general physical examination and urine analysis, but the tongue must be closely observed, the kidney function must be carefully studied, and the blood must be studied for evidence of retention.

The trained urologist can anticipate changes in the prostatic condition and by close observation of the tongue can foretell what values the blood will show and what percentage of plithalein the kidneys will excrete.

115 WEST SIXTEENTH STREET.

CLINICAL NOTES FROM FRANCE.

By CHARLES GREENE CUMSTON, M. D.,
Geneva, Switzerland.

HEMOGLOBINURIC BILIOUS FEVER.

From the writings of the French Colonial physicians the pathogenesis of hemoglobinuric bilious fever of tropical countries is now quite clear. It would not be logical not to take the factors of climate into consideration, which like the patient's antecedents, must be looked into. As soon as a European settles in a tropical latitude, he is directly exposed to a defensive struggle of the organism. All of the physiological resources, the renal, hepatic, splenic and digestive functions, are put to the hard labor of adaptation. It is on these physiologically overworked organisms that malaria imprints its tenacious and formidable marks. It upsets the circulatory system, causes morbid changes to take place in the glandular organs of organic defense and repair, produces disturbances in the digestive tract, compromising the physiological secretions. The effect on the nervous system is made manifest by neurotic disturbances, a special hyperexcitability, and at times by a temporary change of the psychic personality. This is a summary outline of the soil upon which hemoglobinuric bilious fever develops.

Clinical observation shows that it is not one of these morbid processes which attack the European as soon as he enters the tropical zone, but that it almost always arises in persons who have made repeated visits to or have been some months in the tropics and have contracted malaria. Blackwater fever is essentially a disease occurring in subjects who have been in the tropics for years and have paid their tribute to malaria or to climate. Up to the present time no specific pathogenic agent of the disease in question has been discovered, so that if the malarial conception of

the process is maintained, it would seem logical to attribute the characteristic accidents of the hemoglobinuric syndrome to paludism.

When the human organism becomes infected with malaria the circulatory system is completely upset, since the matozoon, which multiplies rapidly, lives at the expense of the red blood corpuscles. An immediate anemia indicates an intense deglobulization, while the blood serum is laden with the detritus of the struggle, cadavers of the figured elements and those of the parasite as well, which, perhaps, constitute the origin of the toxin of the plasmodium. When the cell disintegration reached one fifty-seventh of the total mass of the blood, the serum acquires the property of dissolving its own red blood corpuscles; it has become hemolytic. Some writers attribute this serological change to demineralization of the serum. The blood serum becoming hypotonic, the red blood corpuscle absorbs water and gives off sodium chloride; following this, its hemoglobin becomes free and is dissolved in the serum, giving it a red tint (slight hemolysis). If hypotonia is very pronounced there is a complete melting of the corpuscle. This is total hemolysis.

What we now know of antigens and antibodies gives us a more intimate conception of the mechanism of the emission of hemoglobin in the urine. The action of an antigen on the body, in the circumstances the paludal toxin, produces an antibody in the circulating blood which may be hemolytic for the red blood corpuscles of this body. Bordet and Gengou have also shown that this hemolysin is composed of two elements, the one thermostabile, the sensibilisatrice; the other thermolabile, the alexin or complement. The sensibilisatrice is alone permanent in the specific serum; as to the complement, it is less stable and can be deviated by the complex: sensibilisatrice plus antigen.

When there has been considerable parasitic traumatism with a destruction of red blood corpuscles in the neighborhood of one fifty-seventh part of the total mass of blood, the hemolysis appears, so to speak, automatically in malarial subjects. On the contrary, in cases where the resistance of the red blood corpuscles does not reach such an excessively low degree, the complement will be deviated by the complex: malarial toxin plus sensibilisatrice. Hemoglobinuria will not occur, but it is on the point of being produced. Then all that is necessary will be chilling of the body to at once cause an hemolytic outburst, by the appearance of the necessary alexin.

Such seems to be the logical explanation of the pathogenesis of hemoglobinuric bilious fever of tropical countries. But like any other morbid process its gravity will vary. Rupture of the fragile organic equilibrium may only be temporary if a sufficient integrity of the organs of repair and elimination subsists. The spleen, whose efforts in the struggle can be clinically followed, intervenes by its hematopoietic functions. The hematopoiesis throws new elements into the circulation which will fill the place of those destroyed by the parasite. The liver likewise intervenes by the antitoxic func-

tions it possesses; it can even eliminate the dissolved hemoglobin when the amount is not too great.

When the outcome of the process is favorable the leucocytic formula follows a parallel evolution. The number of red blood corpuscles increases at the same time as their hemoglobin content. A manifest hyperleucocytosis appears, characterized by numerous neutrophile polynuclears, and in these circumstances a mild, transitory hemoglobinuria will represent the principal symptom. But if the attacks of the parasite have been more violent and have occurred in a subject weakened by the action of the climate, and if they have succeeded in producing profound changes of the viscera, the evolution will be different. An attack of icterus, with all its symptomatological train, occurs. It may appear suddenly or from the most vulgar causes, such as a chill, overwork or even after a small dose of quinine. It is only too clear that in an intoxicated organism which no longer eliminates, a drug like quinine simply adds its toxic effects to those already present. It is probably to this fact that the genesis of exotic hemoglobinuria has been attributed to quinine, but that is all it implies.

Hemoglobinuria is not of necessity fatal and recoveries are frequent, but the first paroxysm must be looked upon as an important warning. In other instances the disease affects a very rapid progress. The patient lies limp upon the bed, marked icterus is present with dark, scanty urine; anuria may arise. Hiccough is persistent and the vomiting incoercible, the vomitus itself being sometimes hematic, and the patient dies with all the manifestations of uremic intoxication. Such is the pathogenesis of hemoglobinuric bilious paroxysm of malarial origin, but all the cases cannot be explained in the same way. Hemoglobinemia can be realized only with some difficulty since it is only when red blood corpuscle destruction has attained 1/57 of the total mass of blood that the serum acquires the property of hemolyzing its own cells.

In these circumstances it was logical to suppose that other foci which could give rise to the hemolytic phenomenon existed in the organism. In their researches on splenic hemolysis in chronic malaria and advanced cachexia, Rosati and Caporali have shown that in the spleen of malarial subjects hemolytic, and even autolytic, substances are present, which, in the physiological state, cannot be placed in evidence by the technical means employed at present. Gilbert has shown that the spleen is capable of hemolyzing a certain number of red blood corpuscles contained in its parenchyma, although to a very limited degree, and in the normal state it remains within the bounds of physiological hemolysis. In a more advanced degree it increases its hemolytic power by the addition of cell fragility and hemolysinemia.

The part played by the liver in blood coagulability and its action on the red blood corpuscles led Chauffard to discover true hemolytic icterus. The malarial parasite may provoke hepatic lesions which cause the bile to enter the circulation and there it dissolves the hemoglobin by the cholates it contains.

But of all the organs which should be especially incriminated, the kidney stands foremost. The frequency of renal lesions found at autopsy in these cases is notorious and their hemorrhagic nature has been demonstrated beyond a doubt by a number of observers. Berthier has even been able to follow the destruction of the red blood corpuscles within the kidney and at the origin of the excretory tract of the urine. The renal lesions explain why only red blood corpuscles and no trace of dissolved hemoglobin are found in some cases of bilious fever. The malarial parasite produces a true nephritis and it is to these cases that the old term of hematuric bilious fever should be retained in our modern nomenclature. The kidney should no longer be regarded as a simple emunctory; it plays a part in the genesis of hemoglobinuria by itself freeing the hemoglobin. Thus can be explained slight paroxysms of hemoglobinuria without much pyrexia.

To sum up the pathogenesis of the process under consideration, it may be said that there are several ways of forming the hemoglobinuric syndrome, viz.: hemolysis in the circulating blood, renal hemolysis (frequent), hepatic and splenic hemolysis. In some serious cases the entire organism is involved in the hemolysis, and in the clinical evolution of the morbid process, in its geographical distribution and in its pathological manifestations, is encountered the visible, yet mysterious action of malaria, of its specific agent or its toxins.

The best prophylaxis against the affection is quinine, as this drug prevents the development of malaria. Therefore it does away with the soil in which the process develops. The treatment of the attacks of hemoglobinuria is not simple. The exhibition of quinine should be reserved for the mild cases, with high temperature (of the malarial type) without any serious repercussion on the general health and especially when there is sufficient renal permeability. When the hemoglobinuria is intense and the parasite is found in the blood, when urine is scanty or even anuria exists, all leading to uremia, quinine is both useless and dangerous. The same applies to all other drugs. The treatment should be directed to increasing the blood pressure and to remove all obstruction to renal elimination.

To fulfil this end diuretic drinks must be given freely. In Africa there are two decoctions which have a more or less merited reputation, namely, *Cassia occidentalis*, which is employed at the dose of one ounce of the plant to a quart of water, and secondly, a plant of the Combretum genus, called *Pinkélibah*, in a ten per cent. decoction. If these plants are not at hand, very dilute coffee or tea can be used. The essential is that the diuretic drink employed shall not contain any active toxic principle.

Subcutaneous injections of salt solution may be given unless there are advanced renal lesions, especially if there is edema or anasarca. The renal congestion can be relieved by dry cupping over the lumbar region. Cold rectal injections should be given and the vomiting and epigastric pain can be relieved by chloroform water.

Editorial Notes and Comments

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SACCHARIN OR SUGAR

Due to the waste of material during the war we at present have a shortage—a shortage of coal, of sugar, and of many other essentials. It is one of the tolls demanded as a result of the world's quarrels. In Germany during the war many substitutes were devised and used to replace certain necessary commodities. Sugar was an unknown luxury. In France molasses, honey, and other sweets were used when sugar was scarce, and it was a common sight to see bottles of saccharin solution on the restaurant tables. Apparently no immediate harm came from the absence of sugar and the use of saccharin.

Recently careless statements have been made in the daily papers by physicians who assert that on account of the lessened consumption of sugar the health standards of the community have been improved and that hospital records show a decline in the number of patients admitted. It was also stated that this applied more especially to infants. This lazy form of archaic reasoning is analogous to the linking together of night air and malaria. Cause and effect are considered in the light of two events occurring at approximately the same time, and all other incidents are carefully shunted to the background, often requiring the genius of a psychanalyst to extract them from the unconscious. There may be a more direct explanation when it is considered that enormous profits are made from saccharin, a substance which should be used only for medicinal purposes.

Sugar is one of the most valuable foods we have. It is rapidly and economically assimilated and furnishes heat and energy. To deprive the human organism of sugar is to diminish an available source of essential food. In America the per capita consumption of sugar is greater than that of any other country. Americans work harder and are more energetic than the people of any other part of the world, and because of the rigors of winter in a great part of the territory they require a considerable amount of internal fuel to keep their bodies warm. Partially from necessity they have become accustomed to assimilate and use large quantities of sugar to supply the heat and energy they require. If sugar is withdrawn from the diet it must be replaced by some other food or the bodily resistance will be lowered and invading organisms will more easily secure a footing. Infection will thus be invited.

Rosenow has shown by experiments that influenza did not attack persons who had a good resistance, even though millions of the infecting organisms were sprayed over the mucous membrane of the respiratory tract. They did not contract the disease when allowed to come in intimate contact with patients severely ill with influenza. Rosenow proved that lowered resistance due to fatigue or undernourishment was an essential factor in the development of influenza.

It would seem that an adequate amount of sugar should be supplied in order to maintain the health of the community. Merely because saccharin does no harm is not sufficient reason for its being used as a substitute for sugar. Now that the war is over and quarrels for territory have been replaced by quarrels for profits, can it be considered patriotic to do without a food as essential as sugar?

SOME PHASES OF THE PSYCHOLOGY OF FLYING.

The scientific medical study of aviation has advanced in a marked degree. Much is now known about aviation from the medical and psychological aspects and the literature of the subject is rapidly increasing. An address dealing with the psychology of flying was delivered by Dr. Halliday G. Sutherland in the medical theater of the Royal Infirmary, Edinburgh, in June, 1918. Referring to the emotion of fear which is natural to the neophyte in such unaccustomed and perilous surroundings as those of aviation, Sutherland points out that fear is not synonymous with cowardice. An airman

may be, like Ney, the bravest of the brave, and yet experience fear. In fact, the high strung sensitive airman who, while perhaps experiencing fear intensely, yet became an airman in war, dominating his fear by his will, was considerably braver than the man who was temperamentally more or less indifferent to his peril. Again the state of a man's health has much to do with the state of his emotions. A person not feeling up to the mark may dread conditions which when in good health he would regard with philosophical equanimity. As Sutherland says, possibly toxins in the body cause toxic changes in the cortical cells, or it may be that a toxic state of the nervous system alters the nature of all sensory impulses received by the brain. Toxic conditions of the body have their reflections in toxic states of the mind, and so physical disabilities of the muscular, respiratory, and circulatory systems, associated with flying, contribute toward the development of disabilities of the mind.

Fear is mainly a disability because it destroys judgment, and a man under its influence is likely to do the very thing that it is essential to his safety to avoid. There is no doubt that the physical expression of fear is to the airman a very serious disability. The speaker, however, did not lay much stress upon one aspect of fear, that is, the fear of the unknown. Is it not strictly in keeping with the psychology of man that he fears most that of which he is ignorant, and that when he becomes by use accustomed to any pursuit or work however dangerous, even flying, he lapses into comparative indifference? There is no truer saying than that familiarity breeds contempt. It would be instructive to discuss the psychology of submarine work, which is a more fearful undertaking than that of aviation.

Sutherland refers to the expression of fear and draws attention to the fact that animal experiments in America have shown that associated with fear are signs of fatigue in the cortical cells. Some of the outward expressions, largely restricted to the face, are known to all men. Some persons however have gained such control over their facial expression by means of their will power, that while they may be very much afraid they exhibit no signs of emotion. But temperament and physical condition have much to do with the outward expression of fear. The stolid, phlegmatic person is not subject to intense emotion. It is the imaginative individual with nerves on tension who is a prey to the highest flights or depths of emotion and perhaps to fear in particular. To fear greatly one must have a vivid imagination.

The psychasthenia witnessed among airmen differs little from that which affects persons in other walks of life. Indeed some of the gravest symptoms of this condition are seldom met with in airmen, for the reason that they are more fit than their fellow men and also, as Sutherland sagely remarks, the unfit are the first to be killed. The survival of the fittest applies to airmen with especial force. After a period spent in the vicissitudes and amid the harrowing and emotion producing scenes of flying in war time, the nervous system becomes disordered and neurasthenia supervenes, although this condition may be the expression of psychasthenia. Rest and change of scene is the ideal treatment. As for prevention, the maintenance of a high level of bodily and mental health must be the object aimed at. Smoking should be restricted and alcohol absolutely forbidden. The avoidance of any form of selfindulgence should be insisted upon and nothing likely to impair the powers of body or mind should be allowed. These statements also apply to airmen in times of peace.

SYMPTOMS AND DIAGNOSIS OF PRIMARY TUBERCULOSIS OF THE UTERUS.

It is certain that disturbances arising in the genital system of the female may have a particular significance when they occur in subjects having tuberculosis, but in the case of primary tuberculosis of the uterus where the anamnesis offers nothing to arouse suspicion, the difficulty of appreciating their value can be easily conceived. Not many years ago menstrual disturbances were given such importance in this respect that they were regarded as pathognomonic of bacillosis. There may be amenorrhea occasionally, but more frequently unimportant variations in the regularity of the menses are observed. Likewise, the amount or quality of the uterine secretion does not constitute a reliable sign of tuberculosis of the organ, but when after a free flow an elimination of caseous material takes place the probability of tuberculous lesions should be immediately thought of. Search for the bacillus will often confirm the diagnosis. It has been maintained by some that primary dysmenorrhea—occurring with the first appearance of the menses in contrast with secondary dysmenorrhea, which is almost always the result of some affection of the organs of generation—is frequently the initial symptom of a tuberculous focus in the genital apparatus and consequently is of paramount importance in the diagnosis of tuberculosis of the uterus.

One encounters young girls or young women with metrorrhagias which cannot be explained either by

chlorosis or lymphatism. Medical treatment is without avail, while light curettement often has no beneficial result, so that at length the uterine cavity has to be painted with tincture of iodine or a solution of perchloride of iron or chloride of zinc. In a certain number of these patients pulmonary tuberculosis develops later, and for this reason Vincent, of Lyons, had the fungous scrapings removed from the uterus examined bacteriologically. The result was that the fungosities contained characteristic tuberculous elements. The clinical data were consequently confirmed by pathology as to the tuberculous nature of the causative factor of the obstinate metrorrhagias.

From his findings Vincent does not pretend that every so-called essential metrorrhagia or menorrhagia is tuberculous, and the cases he has observed are exceptional, as he himself points out, but the conclusion to be drawn is that the clinician is thus warned of the possible danger of tuberculosis. In a large number of cases the genital lesions may remain dormant for many months, but the tuberculosis may become generalized during this time, making the prognosis serious. Sometimes the generalization occurs suddenly, giving rise to a miliary process; at others, the secondary lesions assume the classic chronic types, and finally, in other instances, the tuberculosis bacillus extends by continuity to the tubes and peritoneum, there setting up inflammatory reactions which later on may serve as the starting point of a general infection.

THE SYMPTOMATOLOGY OF TRAUMATIC OUTWARD DISLOCATIONS OF THE KNEE.

The symptoms of outward dislocation of the knee joint leave no doubt as to the nature of the injury. When the dislocation is complete the asymmetry is only too manifest. The leg is held in marked abduction and external rotation. It joins an obtuse angle with the thigh, the knee is slightly flexed, and the foot lies with its external border on the plane of the bed. Due to the lateral sliding of the tibia, the limb offers a characteristic bayonet shaped deformity. The knee is considerably deformed. This deformity is caused by a marked inward projection of the internal condyle which seems as if about to perforate the integuments, while over the external aspect of the joint there is an angular depression below the tibial plateau which can easily be explored on the surface.

Below the projection of the internal condyle there is, especially in irreducible dislocations, a deep anteroposterior cutaneous sulcus correspond-

ing to the spreading of the joint surfaces and penetrating into the articulation. Here the skin is tense, immovable, and glued to the underlying structures. This cutaneous depression may sometimes be so accentuated that the entire joint surface of the tibia forms a free plateau measuring about four fingers' breadth. This depression may become more marked when adduction is increased. The cutaneous depression has been supposed by some to be due to rupture of the internal lateral ligament followed by attraction of the skin toward the joint by the internal meniscus. Others maintain that the integument is violently drawn over the internal condyle; the cellular tissue having given way, the skin, no longer possessing its normal anchorage, becomes aspirated into the joint cavity. According to other surgeons, this subcondylar cutaneous sulcus is simply due to atmospheric pressure which pushes the skin into the gaping part of the joint. An intraarticular fluid collection is hardly ever encountered and even tumefaction may be absent.

Examination of the joint shows that the patella with its tendon is displaced outwardly, its anterior aspect facing forward and outward. It lies snugly against the external aspect of the femoral condyle; inwardly, on its internal border, the finger can be made to penetrate the intercondylar fossa. Delbet insists upon the fixity of the patella in this position, even when the displacement of the joint is trifling. Not the slightest movement can be imparted to it and it gives the impression of being nailed to the spot. This fixity of the patella is met with in dislocations which cannot be reduced on account of muscular interposition and results from the insertion of the tense intraarticular band which is inserted on the lower part of its external border. If passive movements of the joint are attempted it will be found that the leg can be placed in a position beyond a right angle, but on the other hand no adduction can be obtained.

It must also be remarked that in outward dislocation of the knee the leg need not be abducted, and when it is the abduction has been produced during transportation of the patient. The functional disturbances are those of any dislocation. Pain is not extreme and will disappear when the limb is immobilized on the bed. Functional impotence is complete, the entire limb being inert. Compression of the vessels and nerve disturbances, especially in the domain of the external popliteal, are to be carefully searched for, as they are not uncommon and may be overlooked. Muscular atrophy always occurs early and involves particularly the quadriceps. The diagnosis of outward dislocation

of the knee is made by noting a bayonet shaped deformity of the limb, the situation of the patella on the anterior or external aspect of the external condyle of the femur, the possibility of considerable abduction of the leg while adduction is impossible. As to the signs of irreducibility, there is the absolute fixity of the patella, the infracapsular cutaneous depression, and when an attempt to reduce the dislocation is made an insurmountable elastic resistance is encountered.

PRIZE DISCUSSIONS.

During the war, in order to make place for special medical war material which was of primary importance at that time, we temporarily suspended our department of Prize Discussions. This department for many years had been one of interest and assistance to our readers. Its object was to stimulate an exchange of ideas upon certain essential problems, and it was an invitation to all of our readers to contribute and advantageously exchange ideas. As such it was a success.

When, at the close of hostilities and the war material was discontinued, we resumed the department of Prize Discussions, we attempted to construct the questions in such a manner that the great lessons which had been taught by the war in surgery and medicine and which could be beneficially applied to civilian practice would be discussed.

The department was resumed at the request of a number of our readers. Since it has been restored, however, there has been a lack of spontaneity in the contributions to this department, and in the case of one of the questions submitted the answers were so inadequate that we did not feel justified in awarding the customary prize. This has happened again in regard to the question, *What is the Proper Equipment for a Rural Physician?* the answer to which was to appear in this week's issue. We are going to postpone the publication of the contributions for this question until the first number in January and will extend the time limit for answer until December 27th. If, in the future, satisfactory answers to our other announced questions are not received we will discontinue the department, substituting other material which may prove of more interest to our readers. The time limit for question No. CCI, *How Do You Treat Surgical Shock?* will be extended to January 10, 1920. Every physician should be interested in this subject and many should have ideas that would prove of value to our readers.

News Items.

Influenza in Spain.—Influenza is reported to have appeared again in epidemic form in Spain, and more than 2,000 are ill of the disease in Linares.

Siberian Children Dying by Thousands.—Unless immediate and substantial relief is sent at once, one of every three children in Siberia is doomed to die this winter, according to the estimate of the situation sent to Japan by a relief worker of the Russian Red Cross.

Free Beds at Park Hospital.—The Park Hospital, New York, which has been used for over a year by the Navy Department for the care of sick and wounded sailors and marines, is again prepared to admit free patients to the male, female, and children's wards.

Dr. Henry M. Hurd.—The career of Dr. Henry M. Hurd as first superintendent of the Johns Hopkins Hospital is the subject of a sketch by Dr. Thomas S. Cullen, which appears in this month's issue of the *Johns Hopkins Bulletin* and which is later to be published in book form.

United Hospital Fund Campaign Closes.—The \$1,000,000 campaign for the United Hospital Fund, of New York, closed December 3rd with \$814,483.90 subscribed. Fund leaders hope the amount needed to reach \$1,000,000 will be obtained by an unofficial canvass. The United Hospital Fund represents forty-six nonmunicipal hospitals.

Smallpox Vaccination Urged.—Although health department records show there is no smallpox in New York city, Health Commissioner Cope land has urged that all persons not vaccinated within the last four years be inoculated at once. The suggestion was made in view of the reported epidemic in Ontario.

Baltimore Health Department Appointments.—Health Commissioner Jones, of Baltimore, has announced the following changes in the personnel of the health department: Dr. John F. Hogan, assistant commissioner of health; Dr. Marion B. Hopkins, chief of the Bureau of Food and Dairy Inspection; Dr. Thomas G. Cornelius, food inspector; Dr. C. P. Woodward has severed his connection with the department.

Health Campaign in New York.—A health campaign is being instituted in New York city by the United Neighborhood Houses. Plans have been laid by the association to establish in every community where there is a neighborhood house a health centre which will work intensively along the lines of social hygiene, nutrition, tuberculosis, and maternity protection.

Lieutenant Colonel Swan Appointed to Dominican Post.—Lieutenant Colonel John M. Swan, of Rochester, N. Y., has been appointed Red Cross Commissioner to the Dominican Republic to study the health conditions there and make recommendations. The need for work among the civilian population of the Dominican Republic was felt to be so urgent that the Red Cross appropriated \$10,000 for relief and for a medical survey.

Physicians' Home.—At a meeting of medical men interested in the Physicians' Home, held in October, Dr. Robert T. Morris, of New York, was elected president and Dr. Wolff Freudenthal, a member of the board of directors. It is the aim of the society to appeal to all the physicians of the State as soon as the necessary printing can be done. Annual membership will be \$10; sustaining membership, \$100; life membership, \$500; patrons, \$1,000; donors, \$2,500, and benefactors, \$5,000. A fair for the purpose of raising funds will be given in the spring during the meeting of the State Medical Society in New York city. The home was incorporated in July.

Dr. Ervin Peterson Heads Red Cross Health Work.—Dr. Ervin A. Peterson, of Cleveland, has been appointed director of the newly created department of health service of the American Red Cross. Doctor Peterson was head of the section of school hygiene of the Red Cross Commission for Tuberculosis in Italy, and previous to that was director of medical inspection and physical education for the Cleveland Board of Education.

Personal.—Dr. John J. Gilbride, of Philadelphia, addressed the Lancaster, Pa., City and County Medical Society Wednesday, December 3rd, on Ileus.

Dr. Max Kahn has resigned from the staff of the Brooklyn Diagnostic Institute.

Dr. Mark J. Schoenberg, of New York, has been appointed consulting ophthalmologist to the Presbyterian Hospital.

Seven Army Hospital Papers to Continue.—The number of army hospital periodicals has been reduced from fifty to seven since the signing of the armistice. The following army hospitals still have papers to keep up the morale of the sick and wounded patients: Fort McHenry, Md.; Hampton, Va.; Fort McPherson, Ga.; Presidio of San Francisco, Calif.; Takoma Park D. C.; Fort Sheridan, Ill., and Azalea, N. C.

New York City Vital Statistics.—There were 1,280 deaths in New York city for the week ending November 29th, according to the weekly health index, published by the Bureau of the Census, making an annual death rate of 12.8 in a thousand of population. Deaths under one year numbered 159, a proportion of 12.4. The average for corresponding weeks in 1913-1917, is 1,362 deaths, or a rate of 14.1, and 207 deaths under one year, a proportion of 15.2.

Medical Association of the Southwest.—The Medical Association of the Southwest, at its annual meeting held October 6th to 8th in Oklahoma City, elected the following officers: President, Dr. E. F. Day, of Arkansas City, Kan.; vice-presidents, Dr. G. W. Robinson, of Kansas City, Mo.; Dr. Horace Reed, of Oklahoma City, Okla.; Dr. W. T. Wilson, of Navasota, Texas; Dr. W. H. Deadrick, of Hot Springs, Ark.; secretary treasurer, Dr. Fred H. Clark, of El Reno, Okla. (reelected). Wichita, Kansas, was chosen as the next place of meeting.

Shanghai Medical School Construction Delayed.—Construction of the Shanghai Medical School will be held in abeyance until after the completion of the Peking Union Medical College, it is stated in Part VI of the Rockefeller Foundation's annual report, made public a few days since. Owing to increased cost of labor and materials it has been necessary to revise cost estimates at Peking, the new estimate being \$5,000,000. The work is being pushed as vigorously as possible, and the report states that the faculty at the Peking College is being recruited. A total of \$2,131,588 was expended in 1918 by the China Medical Board; this includes \$1,619,666 for the land, buildings, and equipment of the Peking Union College and \$51,575 for scholarships.

Quarantine against Arrivals from New Orleans.—Quarantine restrictions have been ordered enforced at ports in Cuba against New Orleans on account of plague, according to Public Health Reports of November 21st.

Surgeons Receive 400 as Fellows.—The American College of Surgeons, at its Clinical Congress in New York, received 400 American surgeons in fellowship and conferred honorary fellowship upon distinguished foreign guests. Honorary fellowship degrees were conferred on Sir Anthony Bowlby and Sir Robert Jones, English surgeons; Surgeon General Theodore Tuffier, of the French army, and Dr. Irving H. Cameron, of Toronto.

Wood Alcohol and Blindness.—Owing to the heavy increase recently noted in the number of deaths and cases of blindness resulting from the drinking of wood alcohol by those ignorant of its dangers, the National Committee for the Prevention of Blindness has issued a warning of the tragic consequences that may follow the use of wood alcohol, denatured alcohol, or medicated alcohol for beverage purposes.

Texas Combats Tuberculosis Among Negroes and Indians.—Recognizing the problem presented by its negro and Mexican population, the Texas Public Health Association is carrying on a crusade against tuberculosis among these two classes. A Mexican secretary and a negro lecturer have been added to the field staff of the association, and lectures, health exhibits, and surveys are being instituted in districts with a large Mexican or negro population.

Seek Doctors' Help in Removing Tattoo.—Officials of the Near East Relief have started an inquiry among dermatologists of this country to ascertain if there is a safe and scientific way of removing tattoo marks without leaving a disfiguring scar. Dr. Wilfred M. Post, of Princeton, N. J., who served in Asia Minor with the Near East Relief, has reported that many of the Armenian girls and women who were stolen by the Turks, Kurds, and Tartars were tattooed on their cheeks and foreheads. Those who have escaped are anxious to get rid of the tattoo marks.

Army Base Hospitals To Be Held Intact.—In accordance with the wishes of the military authorities, base hospitals organized by the Red Cross for the army, and which saw war service, will be held intact against future emergencies. These fifty base hospitals are located at important points through the country and their personnel is recruited from the staffs of the hospitals in their vicinity. As a result of their war service, the doctors and nurses are well fitted to undertake emergency tasks. The army is cooperating with the Red Cross by providing each base hospital with a unit of equipment in accordance with military standards, stored in a government storehouse as near as possible to the city in which the base hospital is situated. Red Cross chapters, also, are assisting in the reorganization of the base hospitals for peace times, and will cooperate when base hospitals may be called for emergency service.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,

(Continued from page 907.)

The joint involvement of hemophilia, or bleeder's disease, is of relatively sudden onset and may at first be confused with that of rheumatism where the physician is as yet ignorant of the patient's dyscrasic state and no other conspicuous evidences of hemophilia are present. While the actual physical disturbance is merely a hemorrhage into the affected joint or joints, the condition is frequently accompanied by fever, and there is also sometimes severe local pain, even where the existing joint swelling is but moderate. According to Pratt, 1915, the temperature not uncommonly rises as high as 101° or 102° in these cases. Sometimes in hemophilia arthritic symptoms are observed, especially in damp and cold weather, as precursors of hemorrhage in the joints; in these cases likewise, fever may be present. According to Guillaín, 1911, however, the typical sequence of events in hemophilic joint involvement is hemarthrosis, then joint inflammation, and finally chronic arthritis with retrogressive changes and deformity. The joint hemorrhage in hemophilia may be either apparently spontaneous or secondary to trauma. Cruet, 1908, differentiated a true form of hemophilic joint disease, occurring independently of trauma or following after an interval of five or six hours slight trauma such as a long walk or exertion, and a less specific form of joint involvement following severe trauma, in which the effects of the trauma were merely rendered more marked, by reason of the existing hemophilic state, than they would have been in a normal person. In the latter form the joint manifestations are stated to appear more promptly and to be of greater intensity, their duration, furthermore, being from fifteen to eighteen days, whereas in the spontaneous form it is generally about a week.

Swelling, tenderness, and immobilization in semiflexion are among the typical manifestations of hemophilic joint disorder. Apart from the frequent elevation of general body temperature, there may likewise be noted a local rise of temperature over the affected articulation. Confusion with rheumatic fever is also favored from the fact that large joints, especially the knee, ankle, and elbow, are usually involved, though in some instances hemorrhages into the small joints of the fingers and toes have been observed. Where repeated joint hemorrhages occur, lasting damage to the articulations may result, partial ankylosis and muscular atrophy occur, persistent pain complained of, and the condition mistaken for chronic rheumatism, tuberculous joint disease, or even arthritis deformans. Many mistaken diagnoses have been

made and it is well to make a careful examination before a final definite decision is reached.

One of the chief clinical features differentiating hemophilic from rheumatic joint involvement is the great rapidity of onset noticed in some cases of the former condition. Marked swelling of the joint may even take place within five or ten minutes. A history of slight trauma is also suggestive, and later, the persistence of the swelling in a given joint, as against the migratory tendency of acute rheumatic joint involvement, may prove of differential value. Even in cases otherwise suggesting rheumatic fever, suspicion that this may not be the condition actually present should be aroused by apparent fluctuation, due to extravasated blood. In rheumatic fever the condition present is, instead, mainly a periarticular edema, imparting a different impression on palpation. Appearance of subcutaneous ecchymoses after swelling of the joint has occurred suggests hemophilia. The history is important and should be inquired into as soon as a suspicion of bleeder's disease has been aroused. If severe hemorrhages from trifling causes have occurred, or a family tendency to stubborn bleeding from slight injury is obtained, a hemophilic nature of the joint disturbance is strongly indicated, and the final conclusive test for hemophilia should be carried out, viz., investigation of the coagulation time of the blood. This test will also serve to exclude another condition in which rheumatoid pains in the knees, in most instances accompanied by fever, sometimes occur, viz., chronic purpura. In the latter, as is well known, the characteristic blood defect is a marked lowering in the number of blood platelets rather than a prolongation of the coagulation time. Finally, in the course of the joint disorder various manifestations characteristic of rheumatic fever may be observed which would lead to a diagnosis of this disease rather than of hemophilia, e. g., acid sweats and urine, irregular fever, more severe pain, successive involvement of different joints, and heart complications.

In the treatment of hemophilia with acute joint involvement firm bandaging and rest of the joints until the extravasated blood has been absorbed are generally recommended. Stretching and weakening of the ligaments are prevented by this procedure, and the advent of joint deformity after repeated blood effusions thereby delayed or obviated. General measures consist in the administration of gelatin, calcium salts, ductless gland products, peptone injections, fresh serum, or as an ultimate resource, blood transfusion. For prophylactic purposes, hygiene should be such as will maintain general health at the highest possible level, and precautions taken to ward off all trauma, including even all forms of violent exercise, from the afflicted individual.

(To be continued.)

Treatment of Papillary Tumors of the Bladder in Women.—Howard A. Kelly (*American Journal of Obstetrics*, September, 1919) discusses the approach and management of vesical papillomata and infiltrating cancers of the bladder wall not yet extensive. Direct vision cystoscopy through the air distended bladder is the simplest and most effective means of reaching such lesions. Fulguration is the most rapid way of destroying pedunculate and limited isolated lesions and is often permanently effective. It often fails utterly, however, in disseminated lesions. It always fails in infiltrating lesions and usually aggravates them. Radium is available and successful in all classes of cases, and is especially of value in the group in which fulguration fails. The radium treatments should be applied through the bladder and under direct inspection—not through the vagina. The application is best made with radium emanation, which can be readily introduced in large quantity condensed in a small area, on the end of a small sound. A thorough survey of the interior of the bladder should previously have been made and the distribution of the lesions found plotted out on a chart. Systematic treatment and proper distribution of the applications are thus favored. The patient is placed in the knee breast posture during the treatments. Substantial doses are advisable, e. g., 250 mc. hours each month to an area measuring two by two cm. In small growths the emanation may be applied at a little distance; in a fungating, ulcerated area, more directly. The total dose is best broken up into weekly amounts, the results being followed and controlled. With these measures, the treatment of vesical neoplasms enters upon a new phase of greater hopefulness. It is of the utmost importance, however, to get the patients under examination and treatment at the earliest possible moment. This demands immediate investigation of the slightest urinary hemorrhage. Under treatment the patient must be watched for several months or longer until all trace of the disease has disappeared. Subsequently, all patients require watching at intervals of at first a few weeks and then of months, for several years, in order to detect any recurrence in an early stage.

Treatment of Phlebitis at Mineral Springs.—Carron de la Carrière (*Presse médicale*, September 11, 1919) expatiates on the benefits derived in phlebitis through treatment at certain French resorts, in particular Bagnoles-de-l'Orne. The cases of phlebitis amenable to this treatment comprise all instances of infectious phlebitis, as from typhoid fever, influenza, pneumonia, erysipelas, gonococcal infection, inflamed varicose veins, etc.; surgical phlebitis, postoperative or from trauma; puerperal phlebitis, and diathetic phlebitis, as in rheumatism, gout, or syphilis. Phlebitis due to cachectic states, such as cancer and tuberculosis, is alone excluded. The patient should be taken to the springs as soon as it is safe to move him, viz., when about forty to fifty days have elapsed since cessation of fever; special caution should be exercised in rheumatic, gouty, and varicose phlebitis. The treatment consists in baths in the spring water at a temperature of from 33° to 36° C., the duration of each

bath ranging from a few minutes to fifty or sixty. In some instances light massage and joint movements are cautiously added. Case histories illustrating the highly favorable effects of the mineral springs treatment are presented. Where edema had been present for several months, it began to show reduction after a few baths, and at the termination of treatment had either been markedly diminished or completely disappeared. This occurred even in patients who for months had been obliged to remain constantly in the recumbent position. At the same time pain and joint stiffness disappeared and bodily vigor returned. The cause is obscure. The Bagnoles water has a mineral content of but 0.06 gram per litre. Some ascribe it to an alternate constriction and dilatation of the smaller vascular channels. According to Rabier and Mouren the effects are in part due to peculiarities in composition of the atmospheric air in watering resorts, considerable amounts of the rare gases, including helium and radioactive emanations, being discharged from the springs with the water. Activity of some sort on the part of the baths themselves is shown in that if they are given too warm or the proper duration only slightly exceeded, an excessive stimulating effect results which may even bring on relapse of the phlebitis. According to Hannequin, in fact, it is by awakening a species of mild phlebitis that the baths restore flagging tissue reaction and induce resolution of inflammatory exudates. A slight phlebitic recrudescence after eight or ten days of treatment is a favorable omen as regards subsequent successful results. The Bagnoles cure should be repeated for two or three years even where recovery has followed the first course of treatment.

Arteriovenous Aneurysms and Arterial Suture.—Raymond Gregoire (*American Journal of Surgery*, October, 1919) states that the treatment commonly applied to arteriovenous aneurysm has been the quadruple ligature with or without extirpation. The ideal treatment abolishes the arteriovenous communication and conserves the physiological integrity of the vessels. Three procedures permit this: ligature of the communicating canal, suture of the arterial wall, and endoaneurysmorrhaphy. This ideal is rarely attained. Quadruple ligature and extirpation are often followed by disturbing sequelæ: Cerebral ischemia and paralysis in the carotids; gangrene in the vessels of the limbs; disturbance of muscle function in all cases. Conditions may be restored to a degree of normal arterial tension when a part is at rest, but as soon as a limb is fatigued from work, cramps, pains, and claudication occur. Quadruple ligature, with or without extirpation, is at times the only practicable operation. The indications for the operation are as follows: The seat of lesion, as the vertebral artery; the stage of the wound; and the calibre and importance of the vessels.

The method employed in obliterating the orifice of communication depends upon the ease of the dissection. The dissection is rarely sufficiently easy to permit complete isolation of the vein and of the artery, leaving nothing between them but the canal of communication. Ligature of this communicating

structure is the obvious procedure. A single ligature or more may be placed in the communication. When a true canal exists one suture is placed against the artery, another against the vein, and a division made between the ligature. The zone of adhesion is generally so dense that it is difficult to isolate vessels without opening them at the point of contact. When the dissection is finished, there are usually two orifices, one in the artery and one in the vein. Suture is the method of choice in this type of case. It can be performed on both arterial and venous orifices. There remain the cases where the adhesion of the vessels is such that it seems impossible to liberate them and where the vein is distended and forms a large sac. When a suture can be applied a ligature is avoided. It is necessary to open the sac, find the orifice of the communication, and suture it with an overcast stitch. The principal difficulty to overcome is hemorrhage and temporary hemostasis is required. The tourniquet should not be used, as errors may result. Sutures may be placed outside of the communication; vessels have been left untied with severe post-operative hemorrhages. Temporary hemostasis should be made in the wound itself. The artery should be exposed as near as possible to the lesion. A rubber tube will stop the flow of blood above the fistula. The ligature should be passed over the artery and not over the vein. If the surgeon cannot have the required material for a vascular suture it is often not attempted, but its absence is not a good reason for renouncing suture. Good results have been obtained with ordinary instruments.

Tendon Anastomosis in Partial or Complete Permanent Radial Paralysis.—Mauclair (*Presse médicale*, September 11, 1919) reviews the various operative procedures that have been recommended and describes his own technic, a modification of that of Hoffa. A horseshoe incision is made on the anterior aspect of the wrist, with its transverse portion one centimetre below the skin fold over this joint; division of the palmaris brevis is avoided in making the incision. The tendons of the palmaris longus and brevis and of the flexor carpi ulnaris are then detached as low down as possible, and a dorsal horseshoe incision made, beginning at the styloid processes and extending three finger breadths lower. The extensor tendons thus exposed are now shortened by plication if they seem greatly elongated; shortening by one centimetre is sufficient. Next the palmaris tendons are passed beneath the skin around the external border of the wrist and the flexor carpi ulnaris tendon around the internal border. The flexor tendon is now sutured to the two inner tendons of the extensor communis digitorum, the lower two thirds of the dorsal annular ligament having been divided in order to enable the operator to draw the extensor tendons well toward the flexor tendon. The palmaris tendons are sutured to the two outer tendons of the extensor communis drawn outward. Finally the two outer and the two inner extensor tendons are sutured together at a point slightly above the plication previously executed. While all these tendon sutures are being carried out the hand is held constantly in marked extension by an assist-

ant. The limb is immobilized for two weeks on a right angled or Colles splint, the fingers, however, being moved daily. Sometimes the author adds to the procedure a suture of the palmaris tendons to the extensor longus pollicis. In one instance, in which these tendons were greatly retracted, they were simply sutured to the long extensors of the thumb and index finger and the whole tendinous mass then fastened to the two outer tendons of the extensor communis. The ultimate results of these procedures are very satisfactory, though complete flexion is not always restored and the power of the thumb abduction remains slight.

Local Anesthesia for Thyroid Operations.—Joseph L. De Courcy (*American Journal of Surgery*, October, 1919) states that among fifty-five patients with thyroid enlargement who presented themselves at the hospital there were thirty-five cases of exophthalmic goitre, twenty of adenomata, colloid and fibrous hypertrophies without systemic symptoms. Among the forty-five operations under local anesthesia there was one death. In the simple goitres the hypertrophied portion only was removed. Of the thirty exophthalmic goitre patients operated upon, in twenty one lobe only was removed, while in the last ten both lobes and the isthmus were removed, leaving only a small portion of glandular tissue at each pole. In five of the twenty cases in which one lobe only was removed, the other lobe was removed at a subsequent operation. The fifteen cases in which one lobe only was removed showed marked improvement. Of the fifteen patients in whom both lobes were removed, ten may be classed as cured, with the heart action returned to normal and only a slight increase on exertion. In this group of cases arterial ligation was not used. Of the five patients who were refused operation two had received a number of x ray exposures with no apparent benefit.

The advantages credited to local anesthesia are as follows:

1. There is no need for speed, which is an advantage in a complicated area.
2. Hemorrhage is diminished by the epinephrin which may be added, giving a clear field for dissection. This also serves to lessen the danger of acute thyroidism, supposed to be caused by the colloid freed by the thyroid gland as it is being enucleated.
3. Better protection to the recurrent laryngeal nerve by the possibility of phonation in the conscious patient.
4. Diminution of shock by gentleness of manipulation, which is requisite to true local anesthesia.
5. Diminution of shock by nerve block.
6. The patient can aid the surgeon by holding his breath at critical stages throughout the procedure, controlling the movements of the throat.
7. Avoidance of postoperative vomiting, thereby diminishing the risk of secondary hemorrhage.
8. No extra work thrown upon the kidneys or heart as the result of general anesthesia.
9. The patient can drink freely both during and immediately following the operation, thereby allowing a free flushing of the excretory system.

10. Maintenance of normal blood pressure.

11. Elimination of dread and dangers of general anesthesia, a large factor in establishing confidence in the surgeon, thereby assuring nerve calm and the lack of that fear which every experienced operator dreads, not only in goitre operations, but in other surgical procedures as well.

The principal disadvantage of local anesthesia, that the patient may become uncontrollable if anything unforeseen happens, does not hold if one is accustomed to its use. The preoperative treatment is of great importance. Every patient should remain in bed at least a week prior to operation. Bromides are given by mouth. The patient should be alkalized to lessen postoperative toxicity. Thyroidectomy may be attempted with safety if the pulse, after a moderate amount of exertion, does not exceed 120 beats a minute.

The conclusions are as follows:

1. Early operation whenever possible.
2. Preliminary observation and treatment in all cases of exophthalmic goitre with intensive study of the heart, kidneys and blood are important.
3. If the patient does not respond to internal medication and rest, arterial ligation should be performed.
4. As a general rule thyroidectomy should not be performed when the pulse is over 120 a minute.
5. A greater risk can be taken when local anesthesia is used than is possible under general narcosis, and arterial ligation is less frequently indicated.
6. Removal of both lobes and isthmus gives the best results in exophthalmic goitre and causes less reaction following operation.
7. Thyroidectomies can be done painlessly and thoroughly under local infiltration.

Chemotherapy of Trypanosome and Spirochete Infections.—Louise Pearce and Wade H. Brown (*Journal of Experimental Medicine*, November, 1919) report the therapeutic results obtained with the amide of N-phenylglycineamide-p-arsonic acid in experimental trypanosomiasis of mice, rats, and guinea-pigs. The average curative dose against a twenty-four hour infection in mice and rats produced by several species of pathogenic trypanosomes is 0.2 to 0.3 gm. per kilo of body weight. The activity with which this compound works is relatively rapid in the animals studied, as the organisms disappear from the peripheral blood within twenty-four hours after it is given. The intraperitoneal, subcutaneous, and intravenous methods of injection were equally efficacious. Therapeutic doses were not followed by any organic or functional injury, and the animals showed an immediate and marked improvement in their general condition. The authors obtained excellent results with N-phenylglycineamide-p-arsonic acid in the cure of experimental trypanosomiasis in rabbits, which is more nearly comparable with naturally acquired trypanosomiasis than the infection produced in the smaller laboratory animals. They used five strains of the trypanosomes and determined the curative dose per kilo of body weight in an acute, actively progressing infection of from one to two weeks' duration. They found that beside the single large curative dose, favorable results were produced

when repeated small doses were given, especially when induration and necrosis of tissues had occurred and the animal host was weak and emaciated. Repeated small doses on successive or alternate days have been successful in the immediate regression and healing of lesions and ultimate permanent cures in severe chronic infections. It is also possible when necessary to give increasingly large doses, as the animals show a remarkable tolerance to repeated large doses of the drug.

Intravenous Administration of Digitalin.—A. Gilbert and A. Khoury (*Paris médical*, September 13, 1919) resorted to intravenous injections of the French official digitalin solution—a solution of Nativelle's *digitaline cristallisée*, actually a form of digitoxin—in two cases in which digitalin by mouth and Arnaud's ouabain intravenously had both failed. The effects were so favorable that the authors call attention to this procedure as a new resource in cases of marked cardiac impairment. In various other cases of valvular, especially mitral, disease with decompensation good results were likewise obtained, though where mitral disease was associated with frequent extrasystoles or complete arrhythmia, the rhythm itself was not benefited. No uniform effect of the measure on the blood pressure was noted. In most cases the pressure was unaffected; in others, at the close of the attack of heart weakness, there occurred either a rise of ten to twenty millimetres of mercury, or, in some instances of heart weakness accompanied by high blood pressure, a reduction of ten to thirty millimetres in the systolic pressure. The injections should be given slowly. Dilution of the French digitalin solution with water before injection was found unnecessary. The glycerin and alcohol it contained failed to produce any harmful effect. The doses given were soon increased from the original ten or fifteen drops a day to a daily maximum of twenty-five drops and sixty-two drops in three or seventy-five in four days. The dose most commonly given was twenty-five drops—0.5 mil.—once daily on two successive days. In one instance the dose was increased to 125 drops, administered in two courses of three injections, separated by an interval of five days. At no time were any untoward effects observed, such as those that have been reported from the various "injectable" digitalis preparations. The hemolysis, chill, vomiting, fever, and sudden death ascribed to such products need in no way restrict the intravenous use of the crystallized digitalin referred to.

Iodine in Tropical Diseases, Particularly Trypanosomiasis.—G. Daniel (*Presse médicale*, September 4, 1919) notes that while atoxyl causes the trypanosomes to disappear from the blood and lymph, the meninges are impervious to it and it fails to act on trypanosomes that have already entered the cerebrospinal fluid. Iodine, on the other hand, passes into the spinal canal. The preparation he employs is termed iodosaly. It is made by placing in a flask two grams of metallic iodine, twenty-five grams of phenyl salicylate, and two grams of olive oil, and heating the mixture on a water-bath. Five mils of the solution per eighty

kilograms of body weight are injected intramuscularly in the buttock. The proportion of iodine in the solution may be increased without inducing iodism. Any oil, even castor oil, provided it is not rancid, may be substituted for the olive oil. The injections are painless and are followed in a few hours by a feeling of wellbeing. The author's general plan of treatment for trypanosomiasis is to inject one gram of atoxyl in ten mils of water intramuscularly, or 0.5 gram of soamin in five mils of water intravenously. Next day an injection of five to ten mils of iodosalyl in the buttock is given. The treatment is repeated at weekly intervals. After three or four months the arsenical injections can be discontinued and the iodine treatment reduced to two injections a month. In infection with *Filaria perstans*, Daniel found weekly or fortnightly injections of five mils of iodosalyl efficient; although benefit is soon obtained the treatment must be kept up for one year to remove the risk of recurrence. Hundreds of cases of relapsing fever were radically cured by one month's treatment with iodosalyl. Congo natives came from all directions to receive the treatment for tick fever. Iodosalyl is asserted to be the remedy of choice for tropical affections of the liver, spleen, hematopoietic organs, and lymphatic system.

Diaphragmatic Hernia of the Entire Stomach and Great Omentum.—J. Grant Andrew's (*British Medical Journal*, September 27, 1919) case occurred in a soldier who received a through and through bullet wound of the lower left thorax. No surgical measures were taken at the time, except removal of the bullet from beneath the skin. The patient made a slow recovery and after several months was discharged back into military service. When discharged he complained of much pain after food of any description and of frequent nausea and vomiting. He was thought to be malingering, but was finally invalided with the diagnosis of gastritis. His condition and complaints remained virtually unchanged for two years, except that he had become ill nourished and showed an irregular heart rhythm with slight displacement of the heart to the right. During the entire two years the man had evidently never had any thorough examination, but had been passed on with a snap diagnosis. When he came under the author's care he was recognized as a very ill man and the left chest was evidently abnormal. X ray examination after a bismuth meal revealed the entire shadow of the stomach within the left chest and operation was at once undertaken. On operation the diaphragm was found perforated near the esophageal opening and the whole of both stomach and great omentum was herniated through this perforation into the thorax. The stomach was drawn back into the abdomen, but the omentum was found to be firmly adherent to the pleural walls and the base of the left lung. It was detached as much as possible and then cut free from the lung, leaving a considerable layer in the pleural cavity. The diaphragmatic gap was closed by suture. The stomach was found somewhat thickened, but otherwise normal. Recovery was slow but was complete, even the cardiac arrhythmia having disappeared.

Hypertonic Salt Solution.—Luigi Durante (*Lancet*, October 25, 1919) discusses briefly the rôle of hypertonic salines as they affect the tissues in the presence of infection and recommends the use of the following solution in the treatment of tuberculous cold abscesses:

Magnesium chloride,	2.5 gm.
Distilled water,	100.0 c. c.
Commercial formalin,	0.5 c. c.

The abscess cavity should be emptied, washed out, and then filled with this solution every four days. The amount of solution left in the cavity should be gauged by the capacity of the cavity and by the degree of vascular reaction produced in the given individual.

Vaccination by Subcutaneous Injection.—J. R. Goodall (*American Journal of the Medical Sciences*, November, 1919) sterilizes the arm with iodine and injects the vaccine diagonally with a fine hypodermic needle and syringe into the subcutaneous tissues. The advantages claimed are that this is a clean surgical operation with no open wound needing dressings, and that any bad results must be due to faulty technic. Dangers of secondary infection are practically eliminated. The proportion of positive reactions is high. In only a small proportion of cases did the local and general symptoms cause complete incapacity. It is painless as compared with scarification. Children undergo hypodermic vaccination without difficulty owing to the rapidity with which the injection is made.

Dropsy in Children Due to Fat Starvation.—A. B. Grubb (*Virginia Medical Monthly*, October, 1919) states that while certain digestive disturbances in children are due to an excessive fat diet, evil effects often result subsequently from the giving of a fat free diet for a prolonged period. During the first year the child should have its mother's milk rather than the infant foods low in fats. After it is weaned, proper provision for fats should also be made. A child two years old deprived of butter, cream, and other fats developed general dropsy in two months; this edema disappeared in two weeks when butter, fat meat, and cream were allowed. These cases are analogous to those of edema in prisoners fed on fat free food in Germany.

Effects of the Injection of Atropine on the Pulse Rate, Blood Pressure, and Basal Metabolism in Cases of Effort Syndrome.—Cyrus C. Sturgis, Joseph T. Wearn, and Edna H. Tompkins (*American Journal of the Medical Sciences*, October, 1919) state that in cases of irritable heart and in normal men after injection of atropine sulphate there was generally a preliminary drop followed by an increase in pulse rate. This increase was greater on the average in the irritable heart cases than in the normal controls. There was also a drop in pulse pressure in the majority of subjects, dependent upon a rise in diastolic blood pressure in the majority and on an additional drop in the systolic blood pressure in some of the cases. There was no increase in basal metabolism after the subcutaneous injection of atropine sulphate, but there was a slight fall in three of the six cases studied.

Miscellany from Home and Foreign Journals

Etiology of Appendicitis.—A. Riff (*Presse médicale*, September 18, 1919) lays stress on pre-existing abrasion of the mucous membranes of the gastrointestinal tract as a prerequisite to the development of infection in its tissues. Metchnikoff in 1901 lent support to the parasitic theory of appendicitis, but referred mainly to ascaris and trichocephalus as the parasites concerned. Riff favors, instead, the threadworm theory of appendicitis, originally advanced in 1899 by Still. The threadworm is an habitual resident in the appendix, where it is protected from the fecal current, purgatives and enemas, and even drugs such as thymol. When the appendix is removed, threadworm infection soon disappears completely, provided the patient follows proper hygiene and does not return among his contaminated relatives. Repeated examination of a threadworm patient by the family physician will nearly always reveal a point of tenderness in the right iliac fossa. Conversely, in an individual with actual or suspected appendicitis, the history or examination of fecal material collected directly at the anus usually shows threadworm infection. Examination of a freshly removed and untraumatized appendix often shows punctiform hemorrhages due to the activities of one or more threadworms. Examination of appendices in paraffin sections fails to reveal the worm because it drops out from the sections, but when a fresh appendix is slowly split longitudinally and the fecal material, mucus, pus, and mucous membrane scrapings examined along the entire specimen with the hand lens and microscope, threadworm is to be found in a large proportion of cases. In 1911, at Strasbourg, the author found these parasites in forty-eight per cent. of 152 appendices. In 1916, in Paris, among sixty-three appendices from children less than fifteen years of age, no less than seventy-five per cent. contained it. Appendicitis is thus, in a sense, a transmissible disease and usually develops in several members of the same family. A diagnosis of chronic appendicitis is supported by the finding of threadworm infection in addition. The treatment is surgical, appendectomy removing not only the focus of secondary bacterial infection but also the favorite lodging place of the primary parasitic infestation.

Two Studies of Meningococcus Carriers.—Dennis Embleton and George H. Steven (*Lancet*, October 18, 1919) made a careful investigation of the sites of infection in both convalescent and healthy carriers of the meningococcus and found that in the chronic carrier the parts infected were Luschka's tonsil, the fossæ of Rosenmüller, the posterior wall of the nasopharynx, and the faucial tonsils. The accessory nasal sinuses were not found infected in any of the cases. All of the carriers examined, with a single exception, showed pharyngeal lymphoid hypertrophy, but enlarged tonsils and definite adenoids could not be regarded as the causes of the chronic carrier state since they were present in less than half the men. No relationship could be established between the duration

of the carrier state and the region infected. The presence of lymphoid hypertrophy and nasal obstruction, while not the cause of the carrier state, certainly seemed to favor its occurrence. In the second portion of the communication the authors discuss the types of carriers and the effect of treatment. They were able to divide carriers into the acute and the chronic types, the dividing line falling at the eighth week of carrying. Thus of the acute carriers eighty per cent. were discharged by the end of the eighth week, while the average time of carrying among the chronic carriers was five and a half months. Further, most of the healthy carriers belonged to the acute group, while the case carriers made up the majority of the chronic group. It was found to be extremely rare for a carrier of either group to show a change in the type of meningococcus present. Of all carriers eighty per cent. were found to belong in the acute group, in which the average duration of infection was twenty-four days. All of the commonly used methods of treatment for the cure of the carrier state were tried and it was found that all such treatment tended to prolong the duration of the carrier state, although immediately after the application of the various remedies there was often a fall in the numbers of meningococci found on culture, or a temporary disappearance of the organisms. This prolongation was attributed to the effect of treatment on the other organisms present, most of which were greatly reduced in numbers. It was found that the most effective factor in curing the carrier state was the intervention of an infection by some other organism, an acute cold being almost invariably followed by the permanent disappearance of all meningococci. Other than some such intervening infection the best method of treating chronic carriers was by the provision of open air and exercise.

Sputum Albumin Reaction in the Diagnosis of Tuberculosis.—M. Salomon (*Presse médicale*, September 18, 1919) calls attention to the marked diagnostic value of the sputum albumin test recommended by Roger and Lévy-Valensi in 1911. The sputum is collected freshly in a dry receptacle, an equal volume of distilled or tap water added, the fluid mixed with a glass rod, mucus coagulated by addition of acetic acid, the resulting fluid filtered through paper, and the filtrate tested for albumin by heat or the addition of potassium ferrocyanide solution. The author modifies the original method by mixing the fresh sputum with saturated sodium sulphate solution where heat is to be used as precipitant. In the ferrocyanide method he uses both the chemical and heat. The sputum is first mixed with 0.7 per cent. sodium chloride solution, the mucin then precipitated with acetic acid, the liquid heated to boiling and a drop or two of saturated ferrocyanide solution added. A slight turbidity, devoid of significance, nearly always results; the test is considered positive where a marked precipitate forms and persists on boiling, the latter dissolving the albumoses that may have been precipitated by the ferro-

cyanide. In tests made in 404 patients, the reaction was never negative in cases with tubercle bacilli in the sputum. A repeatedly negative reaction therefore excludes tubercle bacillus excretion; where many cases are to be rapidly sorted out, the test permits of rapid separation of the uninfected from the infected. Coupled with x ray examination, it also permits of discounting the significance of any suspicious rough breathing at the apex or exacerbation of apical pleuritis. The test is constantly positive in chronic lung tuberculosis, but is also often positive in nontuberculous acute inflammations of the lungs, in bronchitis, and in pulmonary congestion due to heart or kidney disease. It is not infrequently strongly positive in tuberculous cases in which the bacilli are difficult to find, and is very useful for the recognition of apical pleuritis, always agreeing in its results with those of the x ray examination in such cases, whereas tubercle bacilli were constantly absent from the sputum. In apical fibrosis, a negative reaction signifies that the lesions are healed, while a positive reaction means that the patient should be kept under observation. In chronic bronchitis, the test is generally negative, and if persistently positive, careful examination for a tuberculous focus in some portion of the body should be made.

A Contribution to the Study of Dark Adaptation.—Percy W. Cobb (*Archives of Ophthalmology*, September, 1919) upon investigation of fifteen subjects, finds that the limit of vision in dark adaptation (the absolute threshold) measured by the least brightness at which gross form may be recognized, is variable within extreme limits expressed by the ratio of 7.4 to one. These limits lie between one and ten millionths of one candle per square metre. The rate of recovery after dark adaptation is disturbed by a standard exposure to light is also variable as between individuals and by no means always in a sense corresponding with the value of the absolute threshold. Recovery to the point of visibility of a test stimulus 4.7 times the individual's absolute threshold is in general slower, the lower the absolute threshold. This seems to be the consequence of the simple fact that the test stimulus so chosen is necessarily farther below the level of brightness of the blinding surface, the lower the absolute threshold. The extreme individual variations in time for this relative degree of recovery are as 4.5 to one and as 2.5 to one for five minutes and fifteen seconds respectively. The time of recovery to the point of distinguishing a test object of standard brightness is to be looked upon as a function of two variables: the individual's absolute threshold and his rate of recovery. For a constant test stimulus 4.7 times the (geometric) mean absolute threshold of all subjects, the extreme variations in time are expressed as 8.7 to one, and 2.75 to one for the longer and shorter blinding periods respectively. The times of recovery are less diverse after a short blinding (fifteen seconds at thirteen candles per square metre) than after a longer one (five minutes), and in the former case recovery takes place on the average in about one-third the time or probably less when all antecedent conditions are equalized.

The occurrence, in the course of dark adaptation, of more or less definite arrests in the increase of sensitivity suggests the independent working of two physiological mechanisms. These halts occur more or less definitely in eighteen out of fifty-two curves studied and appear, when distinct, as terraces on the rising slope of the curve. The practical usefulness of such data as these will depend on a definite photometric knowledge of the minimum light conditions under which the subject may be called upon to see his vision.

Instability of Red Blood Cells Preserved by the Method of Rous and Turner.—Georges Dreyer and A. D. Gardner (*Lancet*, October 18, 1919) cite the common belief in the stability of red blood cells preserved by the method of Rous and Turner and refer to a recent study of the rate of spontaneous deterioration of complement in which a suspension of preserved cells was employed as the standard. The authors then investigated the stability of such preserved cells by measurement of their sensitiveness to hemolysis by saponin. They found that the longer the suspension of red cells was kept, the greater was the hemolysis produced by a given amount of saponin, or the smaller was the dose of saponin which was required to produce a given degree of hemolysis the longer were the red cells kept. It was, therefore, quite evident that the use of such a suspension of red cells was not suited as a standard in the determination of routine complement fixations, or for experimental work. They noted, further, that when a solution of saponin was kept for several days and then compared on the same batch of fresh red cells with a fresh solution of saponin of the same concentration, the old solution was much weaker than the one freshly made.

Tuberculosis among Native Colored Troops.—C. Roubier (*Paris médical*, September 13, 1919) writes concerning the colored troops from Africa used in France during the war. Tuberculosis in these subjects presented a clinical picture somewhat different from that ordinarily met with among Europeans. The tubercle bacillus was but seldom found in these cases, and ulcerative tuberculosis with caseation was strikingly uncommon. Torpid forms and cavities clinically stationary were seen somewhat more frequently. Tuberculosis of the serous membranes, especially pleurisy in its various forms, was fairly common. The lesion most often witnessed, however, was tuberculosis of lymph nodes, e. g., multiple cervical enlargements and mediastinal enlargements frequently of great size, but clinically latent and detected only by radioscopy. These lymphatic caseous foci at times discharge tubercle bacilli into the bloodstream, thus inducing the military or septicemic forms of tuberculosis often met with in these patients. These are not acute miliary cases, but more discrete processes with repeated attacks, running a relatively prolonged course of a few months. The author is tempted to ascribe the occurrence of this special type of tuberculosis to the malarial taint which these patients invariably harbor. According to Crespin, of Algiers, tuberculosis often follows a slow course where long standing malarial infection exists.

The Bacteriology of Mumps.—Russell L. Haden (*American Journal of the Medical Sciences*, November, 1919) reports five cases of mumps in which a gram positive diplococcus was isolated from the spinal fluid, the blood, and a lymph gland. The injection of the organism into the testicle of a rabbit produced severe orchitis in ten days. These findings confirm the earlier reports of similar organisms from cases of mumps, and it appears probable that mumps is caused by a gram positive diplococcus and not by a filterable virus.

Effects of the Repeated Ingestion of Glucose upon the Blood Sugar.—Louis Hamman and I. I. Hirschman (*Bulletin of the Johns Hopkins Hospital*, October, 1919) state that the ingestion of glucose in some way stimulates the mechanism of carbohydrate disposal so that the repeated ingestion of the same amount causes a less marked hyperglycemia. In diabetes this is also noted, although the difference is not so marked as in normal persons. Several patients reacted to levulose as they did to glucose, except that the blood sugar rise was not as noticeable. The authors consider that the difference in the reaction of the normal and the diabetic is a quantitative and not a qualitative one.

The Fate of Bacteria Introduced into the Upper Air Passages.—Arthur L. Bloomfield (*Bulletin of the Johns Hopkins Hospital*, November, 1919), in order to study the details of the spread of bacteria and the development of the carrier state, undertook these preliminary experiments with non-pathogenic organisms before using possible disease producers. A *Sarcina lutea* was selected for the work and doses as large as fifty to a hundred billion organisms were swabbed on the tongue, nasal mucosa, or into the crypts of the tonsils. The organisms were found to remain longer in the nose than in the mouth or tonsil, but even here it was impossible to recover them after twenty-four hours. A study of the reaction of the mouth secretions, mechanical cleansing, and the part the mouth bacteria may play in this rapid removal led to the conclusions that it is the saliva and mouth secretions which exert the prompt bactericidal effect.

The Heart in Bronchopneumonia: Observations on the Activity of the Heart and Its Response to Digitalis Made During the Recent Epidemic.—T. Stuart Hart (*American Journal of the Medical Sciences*, November, 1919) thus summarizes his observations: 1. Individuals with chronic cardiac valvular disease withstood very badly the toxemia of pneumonia during this epidemic. 2. Individuals with normal hearts who developed pneumonia did not ordinarily die from cardiac insufficiency, and the postmortem examinations offer no proof that these hearts were essentially damaged. 3. Digitalis acts on the cardiac apparatus of these pneumonia patients in the same manner as in a similar series of hearts without complicating pneumonia. 4. Digitalis reduced the heart rate only in cases of auricular fibrillation and in cases where it was administered in quantities sufficient to produce an actual auriculoventricular block. 5. The administration of digitalis did not influence blood pressure.

Benzine Poisoning.—Russell L. Haden (*Bulletin of the Johns Hopkins Hospital*, October, 1919) reviews the literature of benzine poisoning, and adds to it the report of a case. The patient was a cleaner in a lithographing factory, who complained of nausea, vomiting, dizziness, weakness, feeling of heaviness in limbs, anorexia, constipation, tremor of fingers and eyelids, and failing memory. The tendon reflexes were active everywhere but were equal. After rest in the hospital the patient was discharged cured.

The Colorimetric Determination of Hemoglobin.—Barnett Cohen and Arthur H. Smith (*The Journal of Biological Chemistry*, October, 1919) describe a method for the colorimetric determination of hemoglobin in blood which combines the procedures of Sahli and Palmer, using the Autenrieth-Hellige colorimeter. This was chosen because of its lightness and convenience in field work. The hemoglobin of the whole blood is changed to acid hematin with hydrochloric acid and compared with a standard in the colorimeter. Best results are obtained when the blood is allowed to stand ten minutes after drawing in a warm place, to permit full development of the acid hematin color.

Meningococcus Pneumonia.—M. L. Holm and Wilburt C. Davison (*Bulletin of the Johns Hopkins Hospital*, November, 1919) report their observations at Camp Coetquidon, France, on the occurrence of postinfluenzal pneumonia in which the diplococcus intracellularis meningitidis was isolated in twenty-two cases. This appeared to be essentially the same type of organism as was isolated from the spinal fluid in cases of epidemic cerebrospinal meningitis, and the authors state that cases of meningococcus pneumonia may arise from contact with cases of meningococcus cerebrospinal meningitis, and vice versa. A survey of the camp for meningococcus carriers at various times showed an unusually high carrier rate.

The Occurrence of Bacillus Influenzae in the Normal Throat.—Agnes I. Winchell and Ernest G. Stillman (*Journal of Experimental Medicine*, November, 1919) found that the occurrence of *B. influenzae* in the throats of normal individuals was as frequent in the period after the epidemic of influenza as it was during the epidemic. From December, 1918, to June, 1919, the proportion of carriers in a group of 150 individuals averaged forty-one a month. In a boys' orphan asylum where no cases of influenza had developed during the epidemic, thirty-nine per cent. of the throat cultures from 190 boys gave positive results. In six persons there were positive cultures on repeated examinations for five months and in thirteen other cases for four months. The authors state that there is apparently little doubt as to the significance of *Bacillus influenzae* as a secondary invader in this type of respiratory infection. Olate hemoglobin agar was used as the medium for the cultivation of the organism from the throat. The medium had a reaction of from pH 7.2 to 7.5. The results reported suggest that the value of all negative results is questionable when the hydrogen ion concentration of the medium is unknown.

Nonprotein Nitrogenous Constituents of Human Milk.—W. Denis, Fritz B. Talbot, and A. S. Minot (*Journal of Biological Chemistry*, August, 1919) have examined seventy-one specimens of human milk and report the following results: Total nonprotein nitrogen, from twenty to thirty-seven mg.; urea nitrogen, from 8.3 to sixteen mg.; amino nitrogen, from three to 8.9 mg.; preformed creatinine, from one to 1.6; creatine, from 1.9 to 3.9; uric acid, from 1.7 to 4.4 mg in 100 c. c. of milk. The values for nonprotein nitrogen, urea, preformed creatinine, and uric acid in milk closely parallel those in blood.

Traumatic Aneurysm of the Common Carotid.—R. Jamison (*British Medical Journal*, October 18, 1919) reports two very similar cases in which bullet wounds of the neck produced traumatic aneurysms of the common carotid arteries, in the one case the artery alone being directly involved, in the other both the artery and the internal jugular vein. Both patients were treated by ligation of the common carotid artery below and of the external and internal carotids above, and in both a section of the internal jugular vein was removed between ligatures. Neither of the patients showed any ill effects or any evidences of disturbance of the cerebral circulation from the cutting off of the blood supply through the ligation.

Reaction of Monkeys to the Inoculation of Measles Blood.—Andrew Watson Sellards (*Bulletin of the Johns Hopkins Hospital*, October, 1919) injected subcutaneously and intraperitoneally the blood from two patients with measles in the pre-eruptive stage and later in the eruptive stage into two monkeys and two human subjects, the latter by the subcutaneous and intramuscular routes. No symptoms developed in the human subjects and one monkey. One monkey showed a slight rash and a moderate leucopenia. Blood from this monkey was injected into a susceptible volunteer with negative results. In order to decide whether the rash in this monkey was due to serum sickness several were injected with normal human and horse serum and some instances a slight rash appeared in eight to ten days after the injection. It was concluded that the reaction in this monkey was not due to the virus of measles.

Delayed Negative Wassermann Reaction.—Guthrie McConnell (*Journal of Laboratory and Clinical Medicine*, October, 1919) defines the "delayed negative" Wassermann reaction as one in which the tube containing the cholesterinized antigen shows no hemolysis at the end of thirty minutes but completely clears by the time of the following examination fifteen minutes later. This reaction occurred in one per cent. of the Wassermann tests performed at Camp Devens during February, March, and April, 1919. A critical examination is made of the histories of patients in which this took place, and it was found that nearly three fourths of these patients gave a positive or suspicious history of venereal infection. The slight additional labor required in shaking the tubes every fifteen minutes may be well worth the trouble, as occasionally the discovery of this reaction gives valuable information.

Antimalarial Influence of Cattle.—E. Roubaud (*Presse médicale*, September 22, 1919) has collected evidence to the effect that cattle exert an important antimalarial influence by drawing to themselves the great majority of the anopheles mosquitoes present in a given locality. Far from producing a harmful effect by contributing to the support of the anopheles mosquitoes in the district, cattle shunt aside and prevent the dangerous relationship which would otherwise inevitably become established between man and the anopheles. In this manner, too, extension of agricultural pursuits in a malarial region tends to improve health conditions.

Primary Causes of Cyanosis.—Christen Lunds-gaard (*Journal of Experimental Medicine*, September, 1919) presents the results of a large number of determinations in the venous blood of carbon dioxide content, oxygen content, and oxygen unsaturation in cyanotic and normal individuals. From these data he concludes that abnormally high oxygen unsaturation of the blood is a cause of cyanosis. Cyanosis is not associated with values of the oxygen unsaturation below about eight volumes per cent. which would suggest that this amount of reduced hemoglobin is the lowest capable of producing a cyanotic color.

Further Observations on the Relation of Aortic Insufficiency to the Wassermann Reaction.—Julien E. Benjamin and Sydney J. Havre (*Journal of Laboratory and Clinical Medicine*, October, 1919) report thirty-three cases of aortic insufficiency found in the examination of 44,018 recruits. Unlike the findings of other writers, the Wassermann reactions were positive in only a small proportion of these cases—eleven per cent., while undisputed histories of rheumatism were given in fifty-seven per cent. of the cases. Questionable histories of rheumatism and of frequent attacks of tonsillitis were reported in fifteen per cent.

Prognostic Importance of the Tuberculosis of the Larynx.—St. Clair Thomson (*Lancet*, October 18, 1919) urges the very great need for careful and frequently repeated examinations of the larynx in cases of tuberculosis on account of the great prognostic significance of tuberculosis of the laryngeal structures. He has followed the after histories of 833 tuberculous patients who have been discharged from the sanitarium for periods of three to seven years. Among the patients who had no laryngeal tuberculosis about sixteen per cent. of those in the first stage died; thirty-eight per cent. of those in the second stage died; and slightly over seventy per cent. of those in the third stage died; or for all of the cases together the mortality was just under forty per cent. Of those who had tuberculous involvement of the larynx, forty-three per cent. in the first stage died; sixty-three per cent. in the second stage; slightly over seventy-eight per cent. in the third stage died; and for all combined the mortality was seventy per cent. While the prognosis was not influenced by laryngeal involvement in third stage cases it was two and a half times less favorable in the first stage when the larynx was involved than when it was not; and only about half as favorable for those in the second stage with laryngeal involvement.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-ninth Annual Meeting Held at Harrisburg, Pa., September 22 to 25, 1919.

The Retiring President, Dr. FREDERICK L. VANSICKLE, of Olyphant, in the Chair.

President's Address.—Dr. CYRUS L. STEVENS, of Athens, in his presidential address said that a review of the transactions showed that each year the State society had urged some measure the adoption of which would have been helpful to the community and in some cases detrimental to the income of the practising physician. The system of medical education in the State was regarded as second to none in the world. Attention was called to the outstanding defect in the treatment of the insane in that institutional care was not insisted upon sufficiently early. While improvement in the sanitation of workshops was marked, much of such work remained to be done in homes. With the settlement of the alcohol question by the enactment of national prohibition, the difficulties attendant upon proper housing should be more easily overcome. Reference was made to the fact that there had been a smaller proportion of venereal disease in the United States Army during the late war than in any other large army in history. In Doctor Stevens's opinion the action of Secretaries Baker and Daniels in supporting the Navy and Army medical officers, to whom such improvement was due, should count much in counterbalancing any mistakes possibly made in their departments. The following quotation from the *California State Journal of Medicine* evidenced the cooperation of the San Francisco Department of Health with the Government: "Suppression of prostitution in San Francisco had proved practical and successful and justified a continuation of the same law and enforcement measures during normal times that were started as a war measure." That health insurance is a live issue was shown by the fact that in eight States commissions had been appointed to study the question. If health insurance was found to be desirable the profession must advocate it and help shape its provisions so that it would be most helpful to the people whom it was intended to benefit and least harmful to any class, especially the medical profession.

Community Sanitation as Based upon the Knowledge of Camp Sanitation.—Dr. WILLIAM G. TURNBULL, of Cresson, Pa., said that to secure for the communities the results obtained in camp sanitation there must be centralization of authority, sanitary officers trained by the central authority, to which body they must be responsible, and the employment of only licensed health officers for communities permitted, with salary sufficient to attract capable men. Of such salary a pro rata share should be borne by the central authority. There should be also a health education campaign to secure the cooperation of the public.

Röntgen Ray as an Aid to Diagnosis of Chest Conditions.—Dr. CLARENCE R. PHILLIPS and Dr. ALLEN Z. RITZMAN, of Harrisburg, presented a comparison of the findings by the usual methods of physical examination and by the x ray. The importance of a knowledge of the history of the case, of the anatomy and pathology of the lungs and heart, and of the ability to interpret the x ray plate was urged in diagnosis. The importance of a knowledge of the history was emphasized in a case in which a child was aspirated for fluid in the chest and in which the history showed operation for sarcoma of the testicle.

Dr. THOMAS KLEIN, of Philadelphia, regarded as unfortunate the fact that there was no clinical symptom at all times pathognomonic of tuberculosis. It was therefore highly essential that in addition to the clinical findings and the x ray the history of the case be given careful consideration. In determining the state of activity in pulmonary tuberculosis this clinical history was the most important factor. He regarded no condition in medicine so difficult to diagnose as that of tuberculosis in an asthmatic. Only by the evidence of the positive sputum should a case of asthma be diagnosed tuberculosis.

Impressions Resulting from Experience in the Pennsylvania Legislative Session of 1919.—Dr. FREDERICK L. VANSICKLE, of Olyphant, the retiring president, pointed out the need of a strong organization of the medical profession which should have an influence upon constructive legislation. He regarded as desirable that the pulse of the medical profession be noted prior to the passage of certain acts relative to the department of health and to medical education, that their application might be attended with as little friction as possible. Attention was urged upon the matter of health insurance upon which the Commission on Health Survey would make another report in two years. Concerning publicity regarding legislative opinion in medical matters Doctor VanSickle believed the profession should maintain a publicity bureau to furnish accredited items to the press.

The Work of the Sanitary Engineer in the Pennsylvania Department of Health.—Mr. C. A. EMERSON, JR., chief of the Engineering Division, indicated the potential service of the division to the medical profession and pointed out the necessity of cooperation between the two organizations in securing ultimate results. The work of the sanitary engineer was outlined as being included under water supply, sewerage, waste disposal, milk supply, and housing; of these the provision of a pure water supply constituted the most important item. There were throughout Pennsylvania 136 filter plants supplying pure water to over 4,000,000 people. Reports of the daily operations of the water purification plants were required by the Engineering Division. The marked need in all municipalities of better housing conditions was referred to. Efficiency of sanitation was said to be

measured by the decrease in typhoid rate. Pennsylvania's death rate from typhoid had dropped since 1906 from 54.8 in 100,000 to 10.1, a reduction of eighty-one per cent.

Dr. EDWARD MARTIN, of Philadelphia, State Commissioner of Health, supplemented the offer of aid made by the Governor and representatives of the Health Department to the medical profession and asked for the cooperation of the profession in matters of the health of the people.

Dr. FREDERICK C. MONKS, of Kittanning, thought that all questions of sanitation might be reached by the State through the trained county medical inspector, and that it ought to be possible to call upon the county health officer to remove a nuisance which the municipal health authority had failed to abate.

SYMPOSIUM ON PNEUMONIA AND EMPYEMA.

Symptomatology and Diagnosis.—Dr. THOMAS G. SIMONTON, of Pittsburgh, drew attention to the position of the nerves in the mediastinum, and their relation to the lung, pointing out that in a beginning pneumonia or septic peritonitis, as a result of irritation of the phrenic nerve, pain might be referred to the tip of the acromion, by reason of the fact that the phrenic, the fourth cervical nerve, sent communicating branches to the brachial plexus, which in turn supplied cutaneous branches to the tip of the acromion. In several cases of pneumonia cited the pain was most severe at this point before a diagnosis of pneumonia was made or suspected. It was stated that autopsies upon patients dying of influenza complicated with pneumonia showed a mediastinitis, peribronchial inflammation, tracheitis, free fluid in mediastinum, pulmonary infarcts, enlarged lymph glands, and gangrene of the lungs. Symptoms of hoarseness, croupy cough, partial or complete aphonia, inspiratory dyspnea observed in pneumonia during the influenza epidemic, were attributed to the fact that the free fluid, swollen glands in the mediastinum, or the peribronchial inflammation caused a recurrent laryngeal or vagus paralysis.

The Management of Pneumonia, Its Complications and Sequelæ.—Dr. LAWRENCE LITCHFIELD, of Pittsburgh, said that pleuritic exudate should be drained only after aspiration was found to be insufficient. Rib resection was then not advisable. Followup treatment should be carried out with Carrel-Dakin washing and caloric feeding. Maintenance of the water supply to the body by intravenous injection of dextrose solution was important if other means were inadequate. Attention was called to the efficacy of atropine in beginning pulmonary edema, to the danger of feeding during the first days of the attack, and to the routine use of opiates. While pneumothorax followed exploratory aspiration or exploratory needling the author had seen death follow double pneumothorax from this cause; also embarrassment of circulation and respiration by a unilateral pneumothorax. Alarming distention of the abdomen due to gastric dilatation might be promptly relieved by the stomach tube. For distention in the intestines pituitrin hypodermically was regarded as a valuable

adjunct to the usual enemas. By the free use of caffeine and epinephrine an almost exhausted organism might be tided over a dangerous point. During an epidemic he regarded Colonel Dunham's nasopharyngeal disinfection as more dependable than vaccines as thus far established. Doctor Simonton's keenest regrets in the autopsy room had been due to undiagnosed complications of pneumonia.

Surgical Complications of Pneumonia and Empyema.—Dr. EVAN W. MEREDITH, of Pittsburgh, said that empyema was by far the most frequent complication of pneumonia, having occurred in several of the base hospitals in from seven to fifteen per cent. of all types of pneumonia. Pneumonia secondary to measles and streptococcic bronchopneumonia had given the largest percentage. Patients dying of bronchopneumonia showed at autopsy involvement of the peritoneum in a large proportion of cases. Suppurative perichondritis of the thyroid cartilage had been observed in three patients; abscesses in the abdominal wall in the suprapubic region were seen in two patients. Arthritis with effusion was a frequent complication. While in pneumococcic empyema the prompt removal of pus was regarded as sound practice, in streptococcic empyema removal of the exudate by open incision was decidedly contraindicated. Local anesthesia with novocaine, one half to two and one half per cent. was the anesthetic of choice in a large proportion of cases. In children the author used ether exclusively.

Acute Alveolar and Interstitial Emphysema in Influenza Bronchopneumonia.—Dr. FRANK F. D. RECKORD, of Harrisburg, presented data in connection with the epidemic influenza at Camp Devens. Of approximately 45,000 men, 14,000 required hospital treatment; in 2,500 pneumonia developed, with a mortality of 800, or thirty-two per cent. It was evident that death from influenza meant death from lung complications. Two strikingly characteristic types of lungs were observed in the cases studied, one where death occurred soon after the onset of pulmonary signs, and the other in patients living ten or more days after onset. Bronchiectasis and interstitial emphysema were of rapid development. The gross appearance of the lungs was markedly different in various localities; this was true also of bacteriology. A striking type of reaction observed was a condition of acute alveolar emphysema with a deposit of a hyaline fibrinous material on the alveolar walls. This was the one distinctive feature in the pathology of influenza pneumonias and its constant occurrence was regarded as indicative of the entity of the initial lung infection. The character of the hyalin fibrin deposit around air vesicles and upon the alveolar walls suggested a pouring of exudate into the alveoli from the bronchioles and alveolar ducts at a time when air was able to pass. Thus the patient was virtually blowing bubbles in his own lungs, into a medium of exudation relatively poor in fibrin. The organism occurring with greatest constancy was the influenza bacillus. While lack of knowledge of the pathogenicity of the influenza bacilli and failure to

produce the disease with pure cultures formed a strong argument against its being the cause of influenza, to explain the constant occurrence of the influenza bacilli in a series such as studied was difficult. The occurrence of the *Bacillus influenzae* in pure cultures in the early stages was believed to firmly establish the existence of an influenza pneumonia. The author's indebtedness to Dr. S. Burt Wobach, of the Harvard Medical School, was acknowledged for use of slides and for assistance in connection with the paper.

Dr. GEORGE R. MOFFITT, of Harrisburg, stated that in a number of cases of measles and pneumonia autopsied there was not found the extensive bronchopneumonia which had been described. In many cases in which death had been sudden there were found from two to three litres of seropurulent fluid in the pleural cavity, with thick plastic exudate filling the lungs. That this could not be withdrawn by pipettes explained failure to discover it before death. Hemolytic involvement of the lung was the rule.

Dr. M. HOWARD FUSSELL, of Philadelphia, observed that the papers demonstrated the lack of unanimity of opinion regarding the epidemic of the fall of 1918. The futility of irritating applications to the chest in the attempt to reduce exudate in the lung he thought was also well known. In the matter of referred pain in pneumonia he called attention to the fact that many abdomens had been opened with the thought of the presence of appendicitis or gallbladder disease, and emphasized the statement heretofore made, that in no case of supposed abdominal condition should operation be performed without careful examination of the lungs. He agreed with Doctor Litchfield upon the value of giving large amounts of water in pneumonia, believing that nothing so reduced the toxemia. Not only was moving air a necessity but it must be literally fresh air. The routine use of opiates was condemned but in selected cases he would favor the administration of a small dose of opium rather than allow the patient to suffer the exhaustion of two sleepless nights. The occurrence of acute gastric dilatation subsequent to the crisis in pneumonia he thought was not so well known as it should be. Careful diagnosis in the late stages of influenza was urged that such cases might not be regarded as tuberculosis.

Diagnosis of Some Common Skin Diseases, Including Cancer of the Skin.—Dr. T. CASPAR GILCHRIST, of Baltimore, wrote upon acne vulgaris and its treatment, giving a new method of treatment of psoriasis with comments on its etiology. There was further discussion upon the diagnosis of macular lues, pityriasis, rosea and tinea versicolor, the treatment of eczema, diet, vaccine therapy, recurrent blisters on the fingers, hands and feet due to ringworm, and impetigo contagiosa. The early diagnosis of cancer of the skin was discussed, its varieties and treatment with radium, also birthmarks on children successfully treated with radium.

Dr. FRANK C. KNOWLES, of Philadelphia, regarded each case of acne vulgaris with its treatment as a law unto itself. Regarding Doctor Gilchrist's statement that syphilis did not itch, it was

to be remembered that the negro itched in practically all forms of skin disease, and to this syphilis was no exception. In psoriasis amelioration rather than cure was to be promised. In pityriasis, which greatly simulated syphilis, diagnosis was not difficult if certain facts were remembered, that it was selflimited, lasting for only three or four weeks. After every war apparently there was an increase in staphylococcal and streptococcal infections of the skin. Impetigo, instead of presenting the usual lesion, was today extremely chronic, exhibiting a large blister which would break leaving an excoriated, weeping surface. In men coming from the other side were noted a considerable number of lesions due to flea bites in France and England, resembling hives and varicella. Their distribution, however, was different, and they cleared up under mild applications.

Dr. JOHN G. BURKE, of Pittsburgh, said that practically all cases of pityriasis which he had seen had been diagnosed as syphilis. The patients had been put to considerable inconvenience, and it had indeed been somewhat difficult to convince them that they were not suffering from syphilis. Pityriasis he thought was best treated by the desiccation or coagulation method advocated by Clark, of Philadelphia. Quicker results and better cosmetic effect than by radium were thus secured. He was not inclined to favor the vaccine treatment of acne or the nonprotein diet in psoriasis. The worst case of acne he had seen was in a man who, with his family, attributed the seriousness of the disease to the autogenous vaccine given by another physician. In pityriasis he had discontinued the use of the x ray.

Doctor Gilchrist, in closing, said, the patient was a medium whose condition favored the growth of the parasite. It was found that in some cases relapse was caused by too much protein; in others, too much sugar; probably in other instances too much fat. Obviously the essential element was to ascertain in the particular patient that which he did not assimilate. Improved results had followed this procedure in his own practice.

SECTION IN MEDICINE.

Address of the Chairman.—Dr. GEORGE E. HOLTZAPPLE, of York, chairman of the section, emphasized the necessity of cooperation for the accomplishment of the best medical work in a community. With a National Department of Health, a State Board of Health, local boards of health, full time health officers and laboratory experts there would be no need for selfappointed enthusiasts who attempted to inaugurate legislation which would rob the physician of his liberty and individuality and his incentive for initiative which had resulted during the past in unparalleled research work upon which has depended medical progress. He felt that the profession should deprecate all forms of social health insurance, lodge and contract practice, except in localities in which medical service could not otherwise be obtained. The appointment of men to political posts, examining for life insurance, and the rendering of surgical service to railroad companies did not militate against the progress of medicine.

SYMPOSIUM ON COMMUNITY SERVICE TO THE INSANE.

Community Organization.—Dr. CLYDE R. MCKINNISS, of Pittsburgh, stated that the cost of maintenance of insane patients in the State hospitals of Pennsylvania during 1918 to be \$2,969,-961.30; in addition the amount expended by county and municipal hospitals was approximately \$1,000,-000. Yearly admissions to the hospitals of the State were about 5,296. In Pittsburgh on May 1st the commitment from police stations had been discontinued and there had been organized a ward in the hospital department of the Pittsburgh City Home and Hospitals for all mental cases coming under the observation of the Department of Charities. As a result of this departure, of 123 patients under observation fifty-two were committed, the balance being returned to their homes. Under the former method there would have been 123 commitments. Since the problem of the insane in Pennsylvania attracted several agencies now working independently it would seem to the mind of the writer desirable that they be brought together in the form of a section of the Pennsylvania State Medical Society. Here plans might be formulated for the extension into every community of the State of an organization to promote better mental health, and to improve the care and medical treatment of the already mentally sick.

The Duty of the State.—Dr. OWEN COPP, of Philadelphia, said that the first duty of the State concerned the welfare of its citizens as the basic condition of prosperity. There was just dawning in the public consciousness the conviction that a governmental policy of inaction in mental hygiene was wasteful of public money as well as of human life and happiness. In this connection the State government had a profound obligation and should recognize that insanity was a disease and therefore a public health problem. The dominant figure must be the physician in general practice, the family physician, who saw the disease in its incipency. Medical education in mental and nervous disorders should be as adequate as in surgery and internal medicine. Community service to the mental patient was regarded as the essential agent in prevention. It was believed that an enlightened State policy under the inspiration of the State Medical Society would evolve an ideal hospital system for the care of mental patients and efficient measures in the prevention of insanity.

Dr. J. ALLEN JACKSON, of Philadelphia, said that the absolute necessity for community service for the mental patient had been demonstrated. While excellent work was done in the neurological dispensaries and psychopathic wards of hospitals, parole patients would not report to the dispensaries and the hospital could not indefinitely supervise them. Whether community organization should be under State or municipal control depended largely upon whether State, or county care was in vogue. In large cities he believed that the department of public health and charities should have a municipal bureau of mental hygiene, with psychiatric centres, or mental clinics. From this bureau patients would be referred to the appropriate department or hospital.

Dr. WILLIAM W. RICHARDSON, of Mercer, said that the State should insist that in the county institutions for the care of the insane there should be installed a resident physician capable of handling the problems involved. He had knowledge of such an institution in which the only medical care was that given by the occasional visit of the general practitioner. He felt strongly that upon so important a matter the State Medical Society should take a determined stand.

Doctor Copp, in closing, said that he regarded it the imperative duty of the general practitioner to inform himself concerning the needs of the mental patient, since he it was who saw the disease in its very beginning. Failing in this the patient was likely to be shunted off to the jail or detention ward instead of being sent to the hospital for the much needed treatment. He urged that the State society take an active interest in this subject which was costing the State millions of dollars.

(To be continued)

Letters to the Editors.

KINEMATIC SURGERY IN MILITARY HOSPITALS.

NEW YORK, December 4, 1910.

To the Editors:

Allow me to correct a statement made in an editorial in the issue of November 1st on Kinematic Surgery in Military Hospitals. You say, "what is known as kinematic surgery, the invention of Professor Putti, of Bologna University." I feel sure that Professor Putti himself would make the correction that I make, because kinematic surgery is the invention of Dr. Giuliano Vanghetti, who has worked on this problem since 1898 and has kept up his good work to the present day. The war has given a great impetus to kinematic surgery and Vanghetti finally had the satisfaction of being acknowledged by the *Societa' Italiana di Ortopedia*, of which Professor Putti is president, as the inventor of a means that will give poor cripples useful limbs, and was honored in a very fitting manner by being made honorary life member of the Italian orthopedic society and by their devoting practically all the three days of the last meeting of the same Italian orthopedic society to an extremely interesting and exhaustive presentation of all the aspects of kinematic surgery.

It is true that kinematic surgery is an Italian invention, not only because Vanghetti is an Italian, but because numerous Italian surgeons, Alessandri, Ceci, Chiasserini, Codivilla, Delitala, De Francesco, Galeazzi, Pellegrini, Pieri, Putti and others have done pioneer work and have rendered kinematic surgery a practical and efficient reality. The first complete treatise on kinematic surgery, which by the way will soon be translated into English, has been written by an Italian, namely, Professor Pellegrini, under the inspiration of Doctor Vanghetti, who since 1898 enunciated the new principles on which kinematic surgery is based; *quoad vitam, quoad functionem, quoad prothesin*.

A. L. SOREST, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Cerebrospinal Fluid in Health and in Disease. By ABRAHAM LEVINSON, B.S., M.D.; Associate in Pediatrics, Northwestern University Medical School; Associate Pediatrician, Sarah Morris Children's Hospital of the Michael Reese Hospital, Chicago; Attending Pediatrician, Mount Sinai Hospital, Chicago; Attending Physician, Children's Department, Chicago-Winfield Tuberculosis Sanitarium. With a Foreword by LUDVIG HEKTOEN, M.D. Illustrated. St. Louis: C. V. Mosby Company, 1919. Pp. vii-231.

The reviewer of this excellent volume of some 231 pages can sum up his impressions in no better manner than by quoting from Professor Hektoen's brief foreword with slight modification, namely, "that the author has come to his task with not only a large experience behind him in the examination by various methods of the cerebrospinal fluid as an aid in diagnosis, but with a highly creditable record in the scientific study of this fluid as well. Evidently he has been drawn to this work on the cerebrospinal fluid because of its attractiveness as a field of research, as well as on account of its importance in diagnosis; and it is to this happy combination of true philosophical interest and first hand knowledge on the part of the author that the book owes its chief merit, namely, thoroughness and freshness in the parts dealing with fundamental problems, as well as in those dealing with practical matters."

The result is a most interesting and instructive volume, which must appeal to every clinician and laboratory worker.

The Pituitary. A Study of the Morphology, Physiology, Pathology, and Surgical Treatment of the Pituitary, Together with an Account of the Therapeutical Uses of the Extracts Made from This Organ. By W. BLAIR BELL, Liverpool. Illustrated. New York: William Wood & Co., 1919. Pp. vii-348.

With the advent of this book an important volume has been added to the growing literature of the endocrine glands. The work is based on extensive researches on the physiological actions of the extracts, the interrelationships between the pituitary and the other organs of internal secretion, the effects of partial and complete removals, the results of experimentally produced infections, the general pathology and the therapeutic uses of pituitary extracts. The result is an exceedingly interesting and readable work, profusely and beautifully illustrated, which must be of value to all students of this fascinating subject. One must be impressed, however, with the fact that the author has intended to contribute to the surgical literature of the pituitary rather than the purely medical aspect of the subject. As a consequence, the brain surgeon will find the book most useful.

Little emphasis is laid on the early nonsurgical conditions of the pituitary, when medical interference might still be capable of checking the spread of the disturbance and thus preventing it from reaching the point at which surgical aid be-

comes imperative. This is probably due to the paucity of our knowledge of these prophylactic opportunities. It is well to remember that the surgeon is called upon when considerable damage has been done, whereas a better knowledge of impending danger might have made this urgent interference unnecessary. Unfortunately the volume under consideration does not attempt to offer this much to be desired information. Doctor Bell has confined himself to the serious discussion of the surgical conditions involving the pituitary, and this he has done exceedingly well. It must be stated, however, that all students of internal secretion will profit by a careful study of this work. For the typographical appearance, the publishers deserve much credit.

The Medical Record Visiting List or Physicians' Diary for 1920. Revised. New York: William Wood & Co., 1919.

This pocket companion, which is intended to save time, energy, and money for the busy physician, has been revised for 1920. The record contains all manner of information, from how to estimate the probable duration of pregnancy to how to witness a will, diagnostic hints, remedies for poisons, tables of weight and measure, and miscellaneous facts. The visiting list proper is designed to give a record of visits, and—an often overlooked item—of accounts paid, obstetrical engagements, vaccinations, deaths, and such special memoranda as the visitor may choose. It is compact and convenient and should prove of value to the busy practitioner.

Births, Marriages, and Deaths.

Died.

BAXTER.—In Oswego, N. Y., on Sunday, November 30th, Dr. Albert Carlton Baxter, aged forty-five years.

CAIN.—In Cambridge, Ohio, on Sunday, November 30th, Dr. Albert Riley Cain, aged sixty-nine years.

COOK.—In Natick, Mass., on Wednesday, December 3d, Dr. Charles Henry Cook, aged seventy-four years.

COOKE.—In New Brunswick, N. J., on Thursday, December 4th, Dr. Henry Gansevoort Cooke, aged eighty-six years.

NEWCOMER.—In Connellsville, Pa., on Friday, November 21st, Dr. George W. Newcomer, aged seventy-four years.

NORWOOD.—In Esperance, N. Y., on Monday, November 24th, Dr. David Norwood, aged eighty-six years.

REYNOLDS.—In New York, N. Y., on Friday, November 21st, Dr. Walter Seymour Reynolds, aged fifty-five years.

SCHLEGEL.—In Brooklyn, N. Y., on Monday, November 24th, Dr. Louisa Schlegel, aged seventy-two years.

SCOTT.—In Washington, Pa., on Sunday, November 23d, Dr. Jesse Yeager Scott, aged seventy-one years.

SPEATH.—In Philadelphia, Pa., on Tuesday, December 2d, Dr. Louis A. Speath, aged fifty-six years.

STRUBLE.—In Kearny, N. J., on Wednesday, December 3d, Dr. James H. Struble, aged seventy-seven years.

WARNER.—In Lebanon, Pa., on Monday, November 24th, Dr. David H. Warner, of Newmantown, Pa., aged fifty-seven years.

WIGHT.—In Marlboro, Mass., on Wednesday, December 3d, Dr. Charles S. Wight, aged sixty-three years.

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Original Communications

MODERN COMMENTARIES ON HIPPOCRATES.

By JONATHAN WRIGHT, M. D.,
Pleasantville, N. Y.

*Hippocratic Shorthand and the Book on the Aliment.**

When King Ptolemy II and his son at Alexandria and King Eumenes II and his son, King Attalus II at Pergammum or Pergamos, some 200 years after the birth of Hippocrates (469 B. C.) began to bid for his books in their rivalry for collecting libraries, they adopted no half way measures. Ptolemy Philadelphus was born on the Island of Cos. Galen (XV., p. 106) tells a story of Ptolemy Euergetes. Having no original manuscripts of the Greek tragedians he sent to Athens for them, assuring the citizens he wished to copy them and that he would return them. The Athenians nevertheless required him to deposit fifteen talents of silver in pawn—a sum Littré (I, p. 272) finds has been calculated at probably more than 64,000 francs. He kept the originals and we hope the Athenians kept the money, though since he is said to have sent back the copies and since he was a sea lord we may doubt if the decadent Athenians kept his money. Josephus tells something of the same story as to the laws of the Hebrews, though with his usual prodigality of figures in money matters and with his profligacy as to the truth we need confirmation when he says Ptolemy sent 100 talents, but he gloats over the gold and silver presents, in addition, which he paid for them. If we are to judge of the reputation of the Jews by what is known of them in history and is said of them today, we need feel no surprise that they got a higher price for the manuscripts and that they sent seventy elders along with the six translators and the laws to bring them back to Jerusalem with much more spoil of the Egyptians. Though Josephus does not say so, we take it for granted that the originals of these documents were returned.

At any rate, in their ardor, these rival monarchs lavished huge fortunes in filling their libraries, Pergammum with 200,000 volumes, it is said, and

Alexandria with much more.¹ The kings or their librarians seem to have been guided by one method of appraisal if we are to judge from Galen, which reminds us of the wisdom of a former mayor of New York. Wouter van Twiller, according to the veracious Diedrich Knickerbocker, not only weighed the account books of rival claimants in a law suit, but counted the leaves and decided for the heaviest and the bulkiest compiler. These old kings would pay more for a big book than for a small one. So when the mandate of Ptolemy went forth to his sea captains to gather in all the books they could find, they not only put Hippocrates's name to everything in the medical line for the highest reward, but they would patch two or three tractates together without respect for the contents or the vexation of future critics. Carnegie has filled the world with his libraries, but these kings long before him scoured the earth and their trading ships sailed the seas for them. They pillaged the papyrus manuscript heaps of all the lands that lay around the Mediterranean dominated by their armies. Ships of commerce carried supercargoes on whose memoranda long lists of books appeared to be procured for the royal collections. Their skippers crossed the midland sea and sailed up its estuaries in search of them, and if they could not outbid the rival captains of the other monarch they stole what they could. So high was the price bid by their masters, so thorough had been the first search for the books of Hippocrates, that it soon became easier to write than to find them.

It was an impossible task to read the rolls delivered from the ships. The physical task of examining them was no small one, even if trustworthy critics had been at hand to separate the spurious from the genuine. The books on *The Art*, or *The Week*, or *The Letters* for them possessed no demerits in themselves to distinguish them from those of an author capable of writing *The*

¹Galen, but little younger than Aulus Gellius, who is more often quoted, in his commentary on *The Aliment* tells us this and Josephus in his *Antiquities of the Jews*, xii, ch. 2, says: "Demetrius Phalerus, who was librarian to the King (Ptolemy II or Philadelphus at Alexandria), was endeavoring if it were possible to collect all the books that were in the world and to buy up whatever was anywhere valuable or agreeable, for he rivalled the king's inclination, who was himself very earnestly set upon collecting books. And when Ptolemy once asked him how many myriads of books he had collected, he replied about 200,000, but that in a little while he should have 500,000." It is well we have Galen's authority, for Josephus, especially when he comes to figures, has no respect for the truth. He revels in "myriads," and from his protestations it is evident he was accustomed to have his word doubted.

*I have made use of the text and translation of E. Littré: Hippocrates, *Œuvres complètes*, 10 vols. (Paris: J. B. Baillière, 1839-1861), and of Kühn's Latin translation of Galen: Claudius Galenus, *Opera Omnia*, 20 vols. (Leipzig, 1829).

Ancient Medicine, The Arts, Water and Places or The Prognostics. So Hippocrates's name for a time seems to have been affixed to everything in the medical line, and so eminent has it remained ever since that it has been a synonym for medical science in the latter half of the fifth century before Christ. To no small degree these piratical marines of Ptolemy and King Attalus are responsible for this isolation of the name of one man, eminent only among many others. One gains from the medical histories the impression Mark Twain gained from the works of Michael Angelo, as exhibited to him by his Italian guide, that the Creator seems to have made medicine in the Periclean Age from outlines by Hippocrates. The fame of Hippocrates in the time of Socrates, his older contemporary, and of Plato, his younger, seems to have been great but it did not monopolize medical thought. In the time of the first Ptolemies before the anatomical school had spread a better knowledge of anatomy it seems to have dominated the world of the successors of Alexander, and even four hundred years later there is nothing in Celsus and little in Galen, aside from his better knowledge of anatomy and physiology, which is not derived from, if it is not frankly owned as a commentary on, the writings of Hippocrates.

To this preponderance of the name of Hippocrates we owe the loss of very much which might dignify the name of many a contemporary or immediate successor. Their work was neglected and it is lost or is gathered under the name of the author whose fame was the highest and whose books were worth the most—more than their weight in gold perhaps—to the royal possessors of the fragments of the huge Asiatic empire, subdued by the mighty genius of Alexander. We learn something of others older than Hippocrates or but a generation or two younger, from Aristotle writing before the Alexandrians, from Pliny and Plutarch after them, and still more from the garrulous and astonishing talent of Galen. Many others, too, give us fragments which convince us that, as there were brave men before Agamemnon so there were wise medical men before Hippocrates, during his life and after it as well. All the books in the world were not destroyed when they were taken from Pergammum or burned at Alexandria by Cæsar or the Arabs. Indeed these calamities, perhaps really great, historians are beginning to say have been much exaggerated by later writers. Many books, perhaps the vast majority of the books of the ancient world, have not come down to us. The ancient libraries doubtless contained very many medical works of which we do not even know the author's name. Many names, without further information, we find in the works which have been preserved to us, yet granting all these indications of a mighty literature, and there are many hints of it I have not alluded to, notwithstanding all this, the name of Hippocrates stood scarcely less preeminent in the second century before our era in the civilized world than it does in the twentieth century after it. It was because of this and because also that of Galen so overshadowed all others that much of the older writings which Aristotle and Theophrastus knew

were not later copied often enough for some of them to survive the Roman conquest, the welter of Byzantine obscurantism, and the scarcely darker ages which followed.

Our greatest embarrassment then seems to have come from the oppressive fame of Hippocrates, though not by any means in a small degree from the endless labors of multitudinous critics, text mutilators and emendators, copyists and paleographers who stretch back past the Dark Ages through the Arabians to Galen himself. We have the Hippocratic collection, but one grows dizzy trying to ascertain what Hippocrates did and what he did not write. Galen may have improved on Erotian and Littre and Daremberg on Kühn and Grimm, to say nothing of the Renaissance translators and commentators. Each modern reader can form an idea, it is true, of what Hippocrates may very well have written and what he probably did not, what bears the unmistakable stamp of genius and what is too silly for words, but as to any certainty what Hippocrates II, son of Heraclides, himself put down on papyrus or parchment or wax tablet in the fifth century before Christ, we are left in about as much doubt as the new criticism has left us in regard to the Bible. The commentators on Hippocrates have written volumes enough, probably, to fill all the space Ptolemy or Eumenes prepared for all the books they could buy, borrow, beg or steal. We are confounded by the assertion but we have to yield to the conviction that we know more accurately what Hippocrates wrote than did Erotian who lived some 400 years only after his death. One groans to find Littre disputing with Galen and scorning the assertions of Erotian, but we have to acquiesce in the acuteness of the apperception of the encyclopedic Frenchman.

What these countless generations of men have written cannot all be true. In trying to write commentaries in this late epoch of the world in an epoch heedless if not unfriendly to Hippocratic lore, if I have to pretend that some which my more illustrious, more learned and more fortunate fore-runners have written is true, why should I not do some pretending of my own? Why indeed should not some greedy ship captain have labeled with the great and lucre gaining name of Hippocrates a memorandum he picked up at Cos or at some other likely place in which occurred some strange words which friendly consultation with a sophist revealed as medical terms? After studying the emendations and commentaries of Galen and the text and translations of Littre on the book of *The Aliment*, as to a less extent with the book of *The Humors*, I feel I should do better to sweep the whole disjecta membra of their speculations together into a basket and remove it to modern life and patch it together in a way that appeals to me at least. I shall get more out of it, and I hope my readers will, in a modern medical students' note book. The Egyptologists think the Berlin papyrus, which possibly was known to Galen, but which was perhaps a thousand years older than Hippocrates, is a student's or physician's note book or a digest of more formal medical works such as are represented by the Papyrus Ebers and the Kahun Papyrus. This sort of compilation we have every reason to believe was a frequent one in

Ancient Greece—a vade mecum for the undergraduate or practitioner, not printed and proof read, as are our own, but the veritable notes of the owner on the lectures or writings of others. So my imaginings as to *The Aliment* may not be so entirely preposterous or so entirely lacking in foundation as may at first appear.

It is no late tractate. It is evidently later than Hippocrates but scarcely later than Aristotle. Galen betrays much confusion of mind in regard to it, speaking of it at times as written by Hippocrates, by Polybus, his son-in-law, by Thessalus, his son, sometimes he suggests it may have been Philotimus or Philiston. I, of course, do not know what they may have been capable of, but certainly no one in medical literature since has offered such a production to the public—detached words, broken sentences, ejaculations, sudden transitions, incoherences. I know of nothing it resembles to much as the note book of a medical student in my young days. To a much less degree, it is true, there may be found in some of the other books—*The Humors*, *The Office of the Physician*, *The Aphorisms* and others, certain passages with these characteristics, but the style of many of them has been held up as a model of perspicuity. We can hardly suppose that the composition in such a book as *The Aliment* or in such passages as make up much of that on *The Humors* was a fashion of writing by a certain school of literature of which we know nothing in Ancient Greece, such, for instance, as Tacitus in Latin or Carlyle in English, an affectation which has rarely been successful in other authors, a style which solicits the close attention of readers by reason of the necessity to supply what is lacking or to straighten out what is complicated in its laconic or involved phrases. Hippocrates has been accused of using strange words or of attaching to them unwonted meanings, according to Galen who seems to lean a little to some such explanation. These books, however, were plainly not written by Hippocrates himself. They go far beyond any such suggestions.

Seneca (6 B. C.-A. D. 65) who lived a generation or two earlier than Galen, (born A. D. 131) remarks upon the innovations made in his time, some of the windows made transparent, some heating pipes carried to all the rooms of the dwellings, and a method of writing invented by which the listener could take down the words as fast as spoken. We have no reason to suppose that the art of shorthand had been invented in the time of Hippocrates any more than the use of glass in the windows, but the art of abbreviation and note taking is forced on any student who receives didactic instruction or even who witnesses daily the demonstrations of clinical experience. The minds capable of absorbing and retaining without these aids such information as is set forth in *The Prognostics* or the *I and III Epidemics*, for instance, or *The Régime in Acute Disease* have been exceedingly rare phenomena in all ages of the world. Perhaps it was his son, Thessalus, the same kind of a physician, Galen says as to the authorship of the *Prorhetics*, but vastly inferior to the great Hippocrates, perhaps it was his son-in-law, Polybus, or some

other lecturer who owed his professional place to his great forerunner and master, being himself devoid of all distinguishing merit and shining across these thousands of years by the reflected light of the great luminary. A happier lot fate privileged him than she hands out to most chair holders who rattle around in their great predecessor's place, and who owe their selection to their unobtrusive and industrious reverence for the master. The pupil reports the teachings of the surviving favorite thus: "Another's blood good; one's own blood good; another's blood bad; own blood bad; one's own humors bad; another's humors bad; another's humors good enough; one's own humors good enough; the agreeing disagreeing; the disagreeing agreeing; another's milk welcome; one's own milk good."

This is the best Littré can do in the way of translating the text. It is bewildering. Perhaps it betrays a state of mind quite as bewildered in the writer as my comrade and I experienced in our attendance at our first lecture, notebooks in hand. It was on physiology and when in a helpless way I pecked at the page which lay on my neighbor's knee, he had written, "Blood is red." I giggled audibly and when I looked again I saw he had written, "You damn fool, stop looking over my shoulder." That first note of the embryo doctor was due to his state of mind and the second betrayed it. Possibly some, though of course not all, these staccato notes in *The Aliment* were due to the same brain storm 2,500 years ago. Galen's comment on the lines I have quoted almost at random is that they are to be construed as drawing attention to the variation in attributes of the humors, distinguishing, we would say, between homologous and foreign sera, any radicle in their complex chemistry being likely to change for better or worse. It is not difficult to get a glimpse of conceptions that are familiar even to us. So it is, Galen says, with variation in simples, the juice of the leaves or the powders of the root of sorrel or cabbage, or the seeds of plants, or the flesh of animals, all have these factors varying in quality and in efficiency for cure or harm. In the patient again scarcely less are these variations due to age, vigor, etc., so also the variations in child bearing and its incidents. There is no definite period or rule to which the child *in utero* gives heed.

Galen says in further comment that Hippocrates was the first to introduce some kind of order into the report of clinical observations and discourse on them, some type around which facts could be grouped as in his books on the *Sperm*, the *Formation and Nature of the Child*. But his successor may not have been so methodical and all these things our worried medical student jots down and Galen tries to ferret out his thought, and why should we not try to put in our own interpretation from our background of experience as well as Galen? Even, he, 500 years after Hippocrates, must certainly often have gone wide of the mark and we need not be abashed at all if we do as badly 2,000 years still later. We can, at any rate, have a fellow feeling for the student toiling along in his notes from general theories to details of the diet,

scraps of physiology and obstetrics, surgery and anatomy, all hurriedly jotted down in student's shorthand. The nine months babe, the doomed eight months child, and the seven months infant, fit for the incubator but born under the lucky number of Pythagoras and primitive man—all these peep out in the isolated nouns and adjectives—the healing time of broken bones and their nutrition, from the nose to the toes—all this put in between dashes. It brings back one's young days—the dusty cushions, the sighs and groans and muttered curses at one's elbow arising from fellow sufferers in the old lecture room, a generation ago. "Back to the clotting of the blood again, you discursive old devil, can't you keep to one thing?" "Blood liquid, blood solid—blood liquid good; blood liquid bad; blood solid good; blood solid bad; all bad and all good according to circumstances." Our old professor of theory and practice used to say of nephritis, "Sometimes they pass too much urine, sometimes too little, sometimes a normal amount; sometimes they get well, sometimes they die, sometimes they linger along indefinitely." The notebooks closed with a snap and wild maledictions arose from infuriated young listeners, who in fierce tension for an hour had been toiling along, hoping against hope of arriving at a goal, only at last to find that the whole race was to end in a fluke. So the Hippocratic lecturer: "The nature of the forces vary. . . . Nature suffices in all for all." Cryptic notes, but later in life, I go back to them both and understand them better.

As we go along through these notes on *The Aliment*, we get more than one intimation that there is in their indication of an epoch in which something was known to the lecturer which cannot be found in the books more commonly ascribed to Hippocrates, his contemporaries and his predecessors. In one of the genuine (II Epidemics) works of Hippocrates we find a differentiation in the blood vessels. We also find in the student's shorthand of *The Aliment*: "Difference in diseases—in the nutriment, in the respiration, in the heat, in the blood, in the phlegm, in the bile, in the flesh, in the fat—" all this we may deduce from the more authentic books and the thought which fills them, but here the notetaker continues: "In the vein, in the artery"—and we suddenly remember that we have seen in the so-called genuine books no distinction between artery and vein. We know that when he goes on: "In the nerve," he means tendon or a nerve mistaken for it—"in the muscle, in the membrane," we see the continuity of thought of analogous structure grouped with the words, *νεῦρον*, but the vein and the artery are beginning to emerge as separated, and we must long await the separation of nerve and tendon, though Alcmaeon was on the track of it long before the birth of Hippocrates.² We realize that new, strange knowledge is coming into the world; that old beating of the veins the Egyptians talked about so long ago, our professor thinks of significance in connection with the channels and passageways of the

body, something going back and forth out of "vases" into the canals, in a complicated way that drives us to despair as we try to get ready for examination, mixed up as it is with coctions and concoctions, age differences and the drawing in of the breath and the sound of it, itself a food like the rest and the pneuma and the loss of equilibrium in the digestive process and the production of humors causing disease: "The beating of the veins and the respiration with its different sound according to ages, its concords and its discords, signs of health and disease—of health rather than disease, and of disease rather than health, for the breath is also a food."

We will be fortunate when we get back to our rooms if we can remember how he coupled this up with maza cakes:

"The kind of food more important than its abundance—enough food better than its qualities of the wet and the dry. The same thing may result from withdrawing and the adding to the food." Galen deciphers it: "They are not the same thing." Litré says it is all very mixed up—evidently the labors of the notetaker threaten to overpower him, but again he stands on terra firma and makes a new start: "Liquid food is more easily assimilated than solid; solid food more easily assimilated than liquid; food which resists change resists digestion; food which gives way to assimilation, gives way to digestion." In this we perceive clearly enough such glimmer as there is of physiological chemistry, and doubtless if the thought of the lecturer had been expanded we would have had more occasion for approximating it to modern doctrine. This and the succeeding paragraphs show more coherency, and we learn that "moist medication has a prompter action than dry and the promptest of all is by smelling. Solid food restores more slowly," and he goes on to say that the muscles, as food, "resist fluidification longer than the rest—pus comes from the flesh, ichor from the blood and other body fluids—pus is the food of the scar; ichor the food of the artery and vein." We see the topics skip around but there is more time left for coherent notes to the student. "The marrow is food for the bone, and that is why callus forms there. Humidity is the vehicle of the aliment."

So in our student's notebook we get a peep at the pulse and the circulation, at generation and gynecology, at medication and digestion, at respiration and surgery, and we see in these and in others, if not the heads of discourse, the directions they took, but who can believe that matters so important were not joined in the original in a coherent fashion, making up perhaps a series of lessons or lectures on the theory of medicine? I might pursue the idea that it is a student's notebook again into a study of the tractate on *The Humors*, though it is much more coherent, at least the coherent passages are much more numerous. Modern oneirocritics have caused us to turn to dreams again, but they have confined themselves largely to pornographic details. Some of us await with some impatience for the return to the methods of study of the visions of temple sleep in diagnosis and therapy, when to dream of fire meant some trouble

²Galen seems to find evidence that Hippocrates had an inkling of the discrimination both of the blood vessels and of nerve from tendon, but he accepts some treatises of the Hippocratic Corpus as genuine which modern critics have rejected.

with the yellow bile, to dream of a rain storm meant that cold and wet were too abundant in the system. These studies and many more interpretations of dreams, not of the Freudian stamp, I hasten to assure the modern student already showing signs of being somewhat sated with the modern revival, may be found in these indications of how the ancient medical student followed the advice of his preceptors in *The Humors*.

In conclusion there are one or two remarks to be added even in this superficial glance at two of the evidently spurious tractates in the Hippocratic corpus. In the more authentic books we find objective description of the phenomena of disease, accessible to the observation in the days of Hippocrates as they are in our own—objective clinical studies in mental acuteness far in advance of our own, but in these later tractates whether student's notebooks or the memoranda of more mature medical men, we find an extension of the objectivity, and this we know was rapidly lost as the sects of theorists arose after the Hippocratic era. Perhaps this is an added reason for believing their compilers were close upon the heels of the immediate disciples of Hippocrates. To some extent we have already had a glimpse of it, but in *The Aliment* these are the jottings of the "Signs: titillations, pain, rupture, intelligence, sweat, sediment of the urine, resting, jactitation, movement of the eyes, delusions, jaundice, hiccough, epilepsy, blood unaffected, sleep; by the aid of these things compared with nature, and everything else; harmful or beneficial, general pain, local pain; appearance of large size, of this (?) rather than of the less, of both for the more or the less; the sweet and the not sweet; sweet for the force, like water; sweet like honey." Who can understand this? Is it a copyist or the shorthand of the student which makes it break down into incoherence? There can be no doubt, laying aside this thought, that they both contain the essentials of Hippocratic doctrine as found in the other books and with the exceptions noted as to some advance in physiological and anatomical ideas, possibly also some evidence of an exaggeration or at least a greater maturity of Hippocratic theory there is nothing in them which is not found in the books all agree were written by the Great Hippocrates.

SYPHILIS AND ITS SEROLOGICAL SIGNIFICANCE.

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It is my intention to bring this important subject before you under two headings: First, the purely clinical, in which I shall briefly discuss the subject from the point of view of diagnosis, therapy, and prognosis, and; second, the immuno-technical, in which I shall endeavor to point out technical situations that require special care. Before the principal subject is approached it is to be understood that the facts in possession of the clinician and the data elaborated by the laboratory

worker should always be collated before a final conclusion is arrived at.

The clinical discussion will take into consideration the facts contributed by the various specialists to serology, in so far as these are known to the essayist. It is evident that the serology accompanying skin lesions differs in its behavior from the phenomena obtained in syphilis of the nervous system. The findings in acute luetic conditions described by clinicians require, for the sake of thoroughness and a better understanding of the immune processes at hand, a simultaneous study of the patient's serology. There are findings that need not be luetic which the serologist occasionally points out, and which make the case at hand much more serious than the clinical symptomatology alone would warrant. If we only bear in mind the apparently simple cephalalgias which upon a lumbar puncture display a pronounced pleocytosis, we at once begin to appreciate the value of a serologist's assistance in all cases, whether simple or complex. Earaches and backaches belong in the same category and are at times overlooked, until a serological study points out the correct situation. The introductory remarks should be emphasized again, that the clinician and laboratory man should work together in studying the clinical side of lues, the trained syphilographer takes into account not only the patient's antecedents, but also has an eye for the future, thus possibly preventing ravages. These the superficial observer would not take into consideration. It occurs to me that the literature citing the spinal fluid findings associated with early dermal lues, gives the papular syphilide as the skin manifestation that shows a greater proportion of spinal fluid involvement than any other form of dermatological syphilis. This presents a stimulus for the student of syphilis of the nervous system to investigate the form of skin syphilide his patient suffered from during the early days of his infection.

The various manifestations of visceral lues require much more study and care in their correct interpretation than the less difficult forms of syphilis of the skin and bones. Heart lues and syphilis of the vascular system is rapidly becoming a specialty, and justly so, for with the exception of syphilis of the nervous system, the vascular system may cause more serious trouble when improperly handled than any other part of the human body. And yet, the question of a positive Wassermann reaction in a patient with aortic disease is by no means settled by the verdict "lues," as many unpleasant therapeutic experiences have proved. The clinician must be versatile in order to be able to gauge the etiological information obtained by a serological study and the therapeutic requirements of a given case.

As the result of my experiences I am prepared to state that a positive Wassermann reaction is sometimes obtained repeatedly in cases without lues, that ultimately showed no trace of the infection at post-mortem, and also, that in some cases of syphilis salvarsan is at times contraindicated, regardless of the presence of lues and a positive Wassermann reaction. This statement may sound paradoxical to the extremists, but it is supported by cases thoroughly

investigated, some of which have been published. I have seen instances where the heroic use of salvarsan could be held directly responsible for a patient's death.

It is the duty of every specialist to note the degree of involvement of a given organ and carefully estimate the amount of improvement possible without attempting to administer salvarsan or anything else *ad libitum*, and not depend upon the serologist to indicate the time when treatment is to be stopped. The ophthalmologist of experience knows to what extent an interstitial keratitis can be improved, and also knows that often the positive Wassermann reaction will continue long after this improvement has been attained. To treat such a patient until his Wassermann reaction becomes negative is at present considered poor therapeutics.

Individual susceptibility is another factor, requiring caution, a good clinical eye and a careful selection of the antiluetic remedy for such a patient. It must be remembered that salvarsan should be given with extreme care to patients with a low blood pressure, as the drug itself on account of the arsenic it contains, tends to lower vascular tone. Exceptionally one will encounter patients who can tolerate enormous aggregate doses of the drug without any manifestations of chronic arsenical intoxication. Such measures are still in vogue when treating certain patients with neural lues, and in my opinion is often overdone, particularly where the frequency of the injections are only a few days apart. This is usually the practise of the adherents of intensive methods, whereas equally as good results could be obtained and are actually secured with smaller doses at rarer intervals.

There are cases on record where patients received twenty to thirty intravenous injections of salvarsan in from thirty to forty days, the physician insisting that regardless of his patient's subjective good health the treatment ought to be continued on account of the serological report. The time is ripe for a more conservative stand to be taken regarding the significance of a positive Wassermann reaction, and I question the good judgment of the position like above taken by those insisting upon intensive treatment. Should a weakly positive Wassermann reaction be considered as a danger signal in a patient who feels perfectly well as a result of a few injections of salvarsan? In view of our present knowledge of this phenomenon, I think not. Can a positive Wassermann reaction be eliminated the same as one would try to eliminate acetone or albumin?

Can we with any degree of certainty classify the substances responsible for this reaction among poisons specific to the activities of the spirochetes, or is it produced by other conditions and has its properties aside from those which would justify its unqualified eradication? Statistics show that in early and in some late syphilitics there is a corresponding diminution in the intensity of the positive Wassermann reaction. On the other hand, if we are still willing to adhere to Ehrlich's side chain theory, we must, *volens nolens*, regard the phenomenon of a positive Wassermann reaction as pointing to antibody formation in the patient, and as such, signifi-

cant of nature's method of combating the malady. Speaking conservatively, both contentions possess many points in their favor, and the clinician who remembers both sides is the one who will accomplish the most good for his luetic patients.

It is well known that certain diseases are not even remotely associated with syphilis, and they repeatedly give positive Wassermann reactions, for instance, scleroderma. In such cases it is impossible to remove this reaction entirely with the antiluetic remedies in vogue, regardless of the intensity of the treatment. This tends to show that a positive Wassermann reaction is specifically not an index to the existence of spirochetes in a patient. Some forms of leprosy also give a strong positive Wassermann reaction; certain liver diseases where lues could be excluded antemortem and postmortem gave a positive Wassermann result. One can obtain complete inhibition with previously tested negative sera when sufficient fresh fluid ox bile has been added to the serum. In the given dose the ox bile as a control would not inhibit hemolysis. These few instances are cited only as an introduction to a further study and as an invitation to clinicians to contribute additional data to our knowledge of syphilotherapy and serodiagnosis.

An attitude like the one stated was bound to come as the result of a blind subservency to peremptory Germanic dicta, without an attempt to investigate the extent of the usefulness of their findings. I do not question for a moment the spirocheticidal qualities of salvarsan nor is the Wassermann reaction devoid of merit. Both, however, used promiscuously, and in the hands of those who go more by what periodicals and books advise, will not obtain the results nor be as useful to their patients as the physician who depends upon personal bedside experience. Many physicians still believe in the *Therapia Sterilisans magna* and continue to administer salvarsan to their patients until all traces of a positive Wassermann reaction are eliminated. It is no longer the patient who is being considered, but the test tube, and frequently the worker in the laboratory who never saw the patient decides the cessation or continuation of therapy from test tube evidence alone. It is unnecessary to emphasize the fact, that as a result of such procedure many patients came to grief, but happily, not in vain, for the lesson left impressions never to be forgotten by those who were fortunate to observe them. In the beginning of the salvarsan therapy of 1911-1912 such unpleasant occurrences resulted, for a time, in a certain amount of skepticism as evidenced by the work of Benario and others. Their voices were promptly drowned by protests from the army of therapeutists who thought they saw in 606 an ultimate cradication of syphilis. They were sadly mistaken. How to render humanity immune to the spirochete is still a future problem. To what extent syphilis can be removed from a patient depends upon the tissues involved, the extent of the damage, and the ability of the physician to discriminate between how much is due to syphilis and how much is idiosyncrasy.

A protean disease like syphilis will mimic in its subjective and objective symptomatology almost

every other known disease. This caused Osler to say that, "To know syphilis is to understand medicine." Thanks to our present day advances in serological methods a great stride has been made towards correct diagnosis and more rational therapy. This applies particularly to the study of syphilis of the nervous system. No special branch of medicine received as much help from the serologist as neurology. To practise neurology today without laboratory aid is almost an impossibility. From beginning to end, including diagnosis, prognosis and therapy, the laboratory worker has his say in the matter, and frequently as a result of an extensive experience, will maintain a position which may be contrary to the clinician's opinion. Of course, the laboratory physician should have had a thorough and extensive clinical experience before he submits clinical opinions. Backed by many thousands of tests in a given class of cases, his opinion is bound to carry weight in some conflicting instances. The laboratory not infrequently possesses evidences of a pathognomonic nature which in some isolated instances are the only certain signs available. In the course of time a mass of unassorted information is gradually accumulated which for a time has had a tendency to obscure the value of each reaction, as well as render less significant and more uncertain an ensemble of serological facts. It is not so long ago that the men using intraspinal methods of treating syphilis of the nervous system, championed its superiority over other methods, simply because the pleocytosis in the cerebrospinal fluid from patients thus treated disappeared with phenomenal rapidity. We all know now that the diminished pleocytosis in such patients is simply a mechanical manifestation, devoid of specificity, and is of little importance as a serological guide to therapy. Pleocytosis is no longer an index to the presence or absence of lues, and only justifies the conclusion that somewhere in the central nervous system the vascular membranes are in contact with an irritant, which need not be the spirochete.

An accumulation of this kind in the central nervous system and its appearance in the cerebrospinal fluid has the same significance as cellular exudates elsewhere. In all such conditions the organs primarily affected produce changes of a local or general nature in the vascular membranes covering them. We have consequently localized or generalized meningitides, the same as we have circumscribed or diffuse pleuritis or peritonitis. The reason for such a rapid subjective and at times also objective relief after a lumbar puncture, lies in the fact that the neural structures are much more delicate in their responses to all kinds of stimuli, no matter how slight, and when the pressure produced by an exudate is partly removed, the sensory apparatus responds at once. The relief from pain is especially marked in all cases where the posterior roots are the seat of a radiculitis, as is very eloquently displayed in tabes of the hyperlymphocytic type.

The study of pleocytosis can be regarded as the first serological phenomenon of significance in laboratory methods tending to add to our knowl-

edge of neurological conditions. Lumbar puncture was first practised in this country by J. L. Corning in 1855, in England by Essex Wynter in 1889, preceding the well known work of Quincke by a few years. It is to be noted that in cases where syphilis is responsible for the pleocytic exudate, the greater the number of cells in the fluid the better the prognosis and the more gratifying and rapid the results of therapy, regardless of the methods employed. In fact, in some cases a lumbar puncture alone is frequently followed by marked subjective improvement as in these patients the pain is relieved by the immediate removal of pressure from the region of the posterior roots. The proportion of polynuclear elements plays a secondary rôle only, and is to be utilized as an additional feature of good prognostic omen. A polynucleosis is usually the accompaniment of recent acute exudates and is rarely found to exceed ten per cent. of the total cell count where the total number is under 100 cells to the c. mm.

As a serological index of therapeutic success, the polynuclear cells are the first to disappear in a patient with neural syphilis, and with them the lymphocytes diminish to about half of the previous count. It is strange, though nevertheless true, that the smaller the original cellular exudate in the spinal fluid, the more difficult it is to bring about normal cellular conditions in that liquid. To remove the pleocytosis by means of a lumbar puncture is not considered in connection with this statement: Emphasis is to be laid upon the fact, that the greater the syphilitic meningitis, and hence the pleocytic exudate, the more rapid and far-reaching the therapeutic results, from a serological as well as from a clinical point of view.

We now come to consider the significance of a globulin excess. As a rule an excess of globulin is accompanied by a pleocytosis, and this is to be expected in all cases, with the exception of three clinical entities. The most common are those cases where local pressure from tumors or pathological bone conditions interferes with the proper functions of the cord. The second and less frequent are cases of combined sclerosis and the third, is a recent disease described by Elsberg and Kennedy affecting the bloodvessels of the conus medularis. The cord compression produced by a kyphosis due to tuberculosis of the vertebrae will also give this paradoxical excess without a cell count. In combined sclerosis we have a disease affecting males more often than females and is encountered as a rule as an appanage of senility. In the Elsberg-Kennedy disease the veins of the conus medularis are engorged and distended giving the lower part of the cord a bluish tinge. The difficulty of differential diagnosis between this disease and a cord tumor is further enhanced by the presence of a globulin excess without cells.

The origin of this globulin excess is still disputed. Those who endeavored to shed a light on this question could tell us no more than that some excesses of globulin, as in syphilis, are due to meningeal activities, in other words, are of hemogenous origin. Those who studied the protein excess found in cord compressions with or with-

out tumors, believe that these special proteins are produced by the action of specific cells composing the pathological focus.

There is ample proof that both contentions are correct, and it is certainly logical to expect nuclealbumen in fluids showing cellular elements of hematogenous origin, as well as to ascribe the excess in cases where there is a tumor and the fluid is colored canary yellow, to special activity of tumor cells, particularly as these yellow fluids do not give hemociderin reactions. The exact chemistry of the protein body found in the cerebrospinal fluid has not been established. The quantity of fluid required for gross chemical study cannot be withdrawn with safety, and it seems to me that there is a field open to the student of immune processes to devise a method based on the principle of specific precipitins which I am sure will help in solving this important and interesting question.

The following is perhaps the most interesting and the least understood phenomenon in serology of the nervous system. I wish to state at the beginning, with emphasis, that the colloidal gold test applied to spinal fluids, whether positive or negative, should not be applied with the intention of establishing or excluding syphilis. A negative colloidal gold reaction establishes only one fact, and that is the absence of general paresis in the patient. Of course general paresis is caused by syphilis, but its presence is confirmed by the colloidal gold curve. This important serological test is, in my opinion, the most instructive of all laboratory aids in use in neurology. It settles the question of etiology, pathology, prognosis and therapy in less than twenty-four hours.

One may ask how a positive colloidal gold reaction could influence the course and the method of treatment. It is my belief, based upon extensive observation, that the patient with general paresis is, as a rule, overtreated. I have had the opportunity of treating paretics with milder methods and found that I can relate a much more satisfactory experience, as the patients are still alive and some are actively engaged in pursuits requiring special mental qualities, the period of so-called lucidity lasting for two and a half years. I certainly deprecate the intraspinal or intradural methods of treating paretics. Some of the saddest examples of therapeutic overzealousness were among cases subjected to these procedures. In treating paretics one should always bear in mind that they cannot be brought to normal in so far as the focal disease is concerned, and the most one can accomplish is a more or less durable period of lucidity and for the time being, so to say, extricate the patient from the class of extrasocial beings. The prognosis is always bad, and the doctor who defers the period of decline, is rendering all the assistance he can offer from present therapeutic methods.

This brief survey of clinical serology is by no means complete and could be elaborated indefinitely, but mindful of the dryness of the subject I believe it to be a better policy to conclude with a few remarks to my laboratory colleagues and give them the benefit of some observations that need not be original or new to them. It is a rather difficult

problem today to offer anything new in the way of technic or method in the performance of the various tests that make up the work of the serologist.

The entire immunotechnical advisory program can be covered by two words, precision and controls. The serological methods, particularly as applied to neurology include the following tests: The Wassermann reaction in the serum and in the cerebrospinal fluid. The cell count, the globulin tests, the colloidal gold curve, friggolability of pleocytosis and the reaction to Fehling's solution. The various bacteriological methods must be considered as a special branch.

The question of precision in performing the Wassermann reaction begins with the obtaining of the specimen. When it is obtained and kept with as much asepsis as possible it should be worked up preferably within the first twenty-four hours. This advice applies still more in the case of cerebrospinal fluids. As the Wassermann reaction, excepting the specimen to be analyzed, is an interaction between titrated biological substances, it becomes at once apparent that these titrations should be carried out with the greatest attention to every detail. Every conceivable control with the view of eliminating errors or peculiarities should be utilized.

In titrating the hemolytic system it is advisable to make use of the complements from more than one guinea pig, as the combined sera from a number of guinea pigs give a better and more uniform result in so far as complementary powers are concerned, than the use of only one animal. Guinea pig serum obtained by cardiopuncture is better than severing the blood vessels in the neck, as it is cleaner and more economical. Attempts to preserve complement from one working day to another is, in my opinion, of much less importance than the preservation of the negative and positive controls in their initial usefulness.

In establishing the dose of antigen it is advisable to use two extracts when possible. One should be prepared with 0.4 per cent. cholesterin. The alcohol for the extraction should be absolute, otherwise the cholesterin subsequently added will always contain a flaky sediment of undissolved material.

The positive and negative sera used for the antigen titration ought to be as fresh as possible, it is therefore best to establish the antigen unit at the end of a Wassermann day, making use of sera that showed the clearest reactions. The established dose of extract ought not inhibit with a negative serum in a fourfold dose. When one is compelled to use a poor complement it is safer to reduce the percentage of your blood suspension to four per cent. or at most 3.5 per cent., than to increase the dose of complement. It is better practise to remain under 0.2 c.c. than to go over it. The antihuman system is used in the U. S. Army laboratories as elaborated by Lieutenant Colonel Craig. It is preeminently adapted for such use, as it tends to minimize the danger of running short of biological supplies, the quantity of serum required for work is less, and it seems to me that it will give a correct reading with sera that are not as fresh as they should be. The cells required for the daily work

are always to be had, as well as the blood needed for the immunization of rabbits, two items that often make the antiseptic method a very difficult reaction.

In performing the tests for an excess of globulin one is left to his choice of the special method. One ought to train his eye to the peculiarities of a given test for globulin, particularly in using the Nonne or the Noguchi reactions. When one decides to make use of the test devised by me the end result should be passed upon twenty minutes after the completion of the reaction. The cells are counted with the Max Levi apparatus, which is exactly the same as the one brought out by Fuchs and Rosenthal.

In working up a specimen of spinal fluid for the colloidal gold reaction one must first make certain that it does not contain red blood cells. The preparation of the reagent is still on a conjectural basis, and one cannot tell beforehand whether a given amount of gold will turn out a success. I make use of triple distilled water and chemically pure reagents. The containers are selected by allowing some successfully prepared colloidal gold to remain in them for a week and if no change in the fluid or no sheen of a metallic lustre is formed on their walls, they are marked as suitable for the work. All pipettes used in colloidal gold work are not used for any other purpose. As the acid chloride of gold (proprietary) contains less gold in its molecule than the one prescribed by Lange, it is necessary to convert the quantity in proportion to form a gold solution of the required strength. To make up a litre of solution 12.75 c.c. are required. It is always best to control the entire quantity of solution made by subjecting a spinal fluid from a known paretic to the test. If it gives a consecutive down grade formula it may be considered as useful. The same procedure is to be worked out with a known nonparetic spinal fluid.

There is another peculiar feature observed, concerning the behavior of the paretic's pleocytosis when subjected to ice chest temperature for twenty-four hours. Whereas ordinary nonparetic fluids are preserved, in so far as their cell content is concerned, the cells in a paretic's fluid tend to diminish in number more rapidly at ice chest temperature than at room heat. This feature was found to be a very constant accompaniment of true paretic fluids. The phenomenon points out the necessity of counting cells in a spinal fluid within a short time from puncture, as keeping them in an ice chest does away with this feature, which for the want of a better name I designated as "irigolability."

8 WEST EIGHTY-SIXTH STREET.

Antineuritic Properties of Certain Physiological Stimulants.—R. Adams Dutcher (*Journal of Biological Chemistry*, August, 1919) was able to relieve the paralytic symptoms in pigeons, in which experimental polyneuritis had been produced, by giving them thyroxin, desiccated thyroid gland, pilocarpine hydrochloride, and tethelin. The relief, however, was not obtained so quickly as when vitamine preparations were fed.

INFLUENZA PREVENTION IN ARMY CAMPS.

With a Special Note on the Rôle of Infected Dish-water as a Transmitting Agency, Based on a four per cent. morbidity and zero mortality Experience, at Souther Field, Georgia.

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Much literature on the subject of influenza has appeared during the last six months, but the army literature has consisted principally of laboratory reports from base hospitals.¹ Little has been published concerning army camps where influenza was comparatively absent, and in regard to the preventive measures adopted at those camps. The low influenza rate, with no deaths, at the Air Service Flying School, Souther Field, Americus, Georgia, during September, October, and November, 1918,² warrants a study of the preventive measures taken. Even though such a study should reveal no new principle, but simply a thoroughness in standard sanitary measures, it would be of value to find that standard sanitary measures, if begun early and if thorough enough, can prevent the transmission of influenza.

At times, the emphasis or neglect of some particular sanitary measures, powerfully influences the spread of a contagious disease. Thus Munson (1) records the relative freedom from measles of the troops on the Mexican border, who obeyed the official instructions to ventilate their tents constantly. This simple measure furnished almost the first indication that a measles epidemic (among troops or among school children) may be checked inexpensively. In 1913, the procedure was established in the Philadelphia schools, that the occurrence of diphtheria in a school child should cause the throat culturing of every one of its classmates. The incidence of diphtheria that year dropped from 3,600 cases, a constant annual morbidity, to 3,000 cases, the next year to 2,600 cases, and has since maintained that low level. Possibly in the case of influenza the factor of infected dishwater, previously ignored in practice, may prove to be a vital one in the transmission of the disease, as indicated by Lynch and Cummings (2), by Carroll (3), and by the record here presented.

The value of influenza masks, emphasized by Dr. Woods Hutchinson, and by many other physicians, civilian and military, is not here disputed, if the subjects to be protected are indoors, or in close contact with each other, thus furnishing coarse droplet infection. The prohibition and absence of such conditions at Souther Field made any observation impossible. The apparently negative value of influenza masks in the open air is demonstrated by

¹The army laboratory reports have furnished the following important indications: a, That cases of influenza in an army camp may change, by reason of rapid transmission (?), from an early mild type to a later severe type; b, that the streptococci, pneumococci, Pfeiffer's bacilli, found in different predominance in different camps, may be in the nature of secondary invaders, with the primary causative organism yet undiscovered, although these secondary organisms may profoundly affect the clinical course of the disease; c, that a clean mouth at the outset of the disease (or at least of measles) before hospitalization, may more or less prevent the pneumonia complication.

²The writer left Souther Field about November 23, 1918.

the relative absence of influenza at Souther Field, during the three months here discussed, no masks being worn except in the influenza wards of the hospital.

GENERAL CONSIDERATIONS.

Souther Field, situated about four miles from Americus, Georgia, was in September, 1918, a command of about 1,250, including six squadrons (aero and construction) of 150 men each, an aviation cadet detachment of about 200 men, a headquarters detachment of about 100 officers (mostly aviators), and a number of small detachments, of which the principal one, the medical detachment, numbered forty men, with its own quarters and mess. The field was a typical aviation field, of semipermanent construction. The men were housed in modern barracks, except an overflow of 150 men in pyramidal tents, housed five or fewer in each tent. The barracks had excellent ventilation, both by air space (500 cubic feet for each man), floor space (fifty square feet for each man), and ventilating apparatus (numerous windows, supplemented by a blower fan). The lavatory facilities were ample. The kitchens were sanitary, with plenty of water, and dishes were used at the messes, instead of field mess kits, which are individual in theory but frequently communal in practice, by reason of a common immersion in dirty dish water. Flies were almost absent. The enlisted personnel was unusually intelligent, consisting largely of trained mechanics. The commanding officer was alert to the value of preventive medicine, and uniformly supported by the medical department. Because Souther Field had had but one aviation death and no deaths from disease, since its inception, the command was quite proud of its record, and disposed to attribute what medically was largely good fortune to the skill of the medical officers of the camp. With such fortunate physical and personal circumstances, the cooperation of the command was always good, and the sanitary condition of the field was excellent.

The hospital at Souther Field was small and without advanced laboratory facilities, because of the relatively small size of the command, but was of modern design and excellent equipment. Its only structural defect, realized after the damage had been done, was the existence of a single kitchen with a single range. On this one range the food was prepared for, a, the patients in the general wards, b, the enlisted personnel of the medical detachment, and, c, the patients in isolation for contagious diseases—in this instance influenza. Similarly the dishes from all these wards were washed in the one kitchen, and unless especially prevented, were washed in the same containers.

Ample warning was received at Souther Field of the spread of influenza southward, so that preventive measures were in full operation when the infection reached the state of Georgia. There was good reason for alarm, as Americus, four miles distant, with 9,000 population, had 300 cases at one time, exclusive of numerous sick negroes, few of these cases reported unless the people were critically ill. The Arles plantation, adjacent to the camp, suffered from eighteen cases at least, as this

number of patients was visited by a physician in a single day. Souther Field also received four incubating cases from among the cadet aviators arriving to the number of twenty-five weekly, from an aviation ground school in Texas, which suffered from epidemic influenza.

PREVENTIVE MEASURES.

Preventive measures were definite, and based on experience by the surgeon in civil public health work, as well as on army experience. The principles underlying the preventive measures taken, and the measures themselves are here briefly stated:

1. The routine attitude of the commanding officer toward his medical department largely determines its efficiency, particularly the ability of the surgeon to devise and execute comprehensive sanitary measures in time of emergency. Initiative, self confidence and courage arise from their routine exercise, and cannot be created and killed at will, by orders from superior officers. The few early days in an epidemic, during which preventive measures are all important, will be utilized by the medical officer to the full or not, according to his habitual frame of mind. (Having long since left Souther Field, and being about to return to civil life, the writer may properly pay a tribute to Major Carlyle H. Wash, the Commanding Officer, for his uniform courtesy to, and encouragement of, his department heads.)

2. Sanitary measures in an army camp, to be effective, require the cooperation of the entire command, and this in turn is dependent upon thorough education of all officers and soldiers, regarding the transmission of diseases. Detailed sanitary regulations cannot be learned thoroughly if simply read aloud or posted on a bulletin board. They should be printed and distributed to every member of the command. This was done at Souther Field. There was no known case of intentional disobedience of regulations by any officer or enlisted man, either in camp or in the town of Americus.

3. Separation (isolation) is the natural and most powerful means for checking the spread of disease, and in the absence of specific serum treatment may be the only effective means. When separation is not absolute the grade of ventilation and the infectivity of the food and food utensils are vital factors.

- a. Every effort was made to effect the maximum separation of individuals. Attendance at theatres, churches, dances, any public gatherings was prohibited. The Y. M. C. A. could be entered only for the purpose of securing stationery and books, with immediate withdrawal, and a maximum allowance of fifty men in the building at any one time. No furloughs were granted except under urgent necessity, and travel on trains and street cars was prohibited. Jitney travel to and from Americus was regulated by the military police, four passengers to an open car. Officers' call was held daily in the open, outside the headquarters building. Permission was given to the men to sleep outside the barracks buildings, and as all bedding was aired daily outside in the sun, about half the command slept in the open, in clear weather. The

proper ventilation of barracks was assured first by an allowance of fifty square feet of floor space and 500 cubic feet of air space for each man, with cots arranged alternately head and feet, and by always keeping the windows open (on one side at least, entirely open). Ventilation of mess halls was also provided, and the tents were ordered opened at top and sides, at all times, day and night, except during rains. Dishwater was ordered to be held at scalding temperature and on October 10th special ventilation and dishwater inspectors were appointed to supervise personally these items. Attention was called to the value of personal cleanliness; floors and the ground around the doorways were ordered oiled; and careless, spitting, sneezing and coughing were prohibited. Handkerchiefs were encouraged, but their clean condition was ordered, with the suggestion that the men wash their own handkerchiefs daily. Common drinking cups were prohibited and the post exchanges were ordered to procure cheap individual cups and to sell them at cost.

b. A detention camp for newly arrived enlisted men and a similar camp for officers were established, with a period of detention of one week. These men were allowed to work in the open air. A detention camp for convalescents was established in a barracks, in which convalescents were held for one week subsequent to recovery.

c. An attempt was made to isolate influenza cases as early as possible, by the institution of sick call, both morning and evening. All men were instructed to report as sick, if sick in the least degree.

d. Gauze influenza masks were not worn, except in the influenza wards of the hospital, where coarse droplet infection was possible because of close contact with patients. The members of the command did not congregate at any time or place, and it was felt that gauze masks were powerless to intercept the germs contained in ordinary air, besides being uncomfortable and soon soiled by use.

4. Few diseases exist which in all cases present pathognomonic signs and symptoms. Influenza particularly exists numerously in mild form impossible of exact diagnosis. At Souther Field all febrile illnesses, of mild degree and indefinite character, were isolated in hospital as influenza suspects.

5. The viability of the influenza germ not being certainly known, nor its capability of transmission through the nose and throat secretions of carriers, the latter should be carefully guarded against, during an epidemic.

a. All officers and enlisted men of Souther Field, married and living by special permission in the town of Americus, had their noses and throats sprayed daily on their arrival at the Field; Dobell's solution was used, later a quinine solution was substituted.

b. The outbreak of influenza in the medical detachment at Souther Field caused extra preventive measures to be taken in that organization, and all men were given a nose and throat spraying three times a day, ten grains of aspirin a day, and a dose of salts, if needed, daily. The influenza ceased to spread coincidently with adoption of these meas-

ures, but there is reason to believe that the assured sterilization of dishwater, also secured on this date, was the principal active preventive factor. This is mentioned later.

6. Sanitary measures are of little value unless thoroughly executed. Because they require time and labor, they will seldom be thoroughly executed without personal supervision. In the case of influenza prevention, the items of ventilation and dishwater should be guarded by a system of supervision of barracks and kitchens.

a. Munson, in reporting on the marked preventive influence of ample tent ventilation, in the case of measles among troops, describes the difficulties he encountered in securing compliance with this simple order among the troops on the Mexican border. The writer at Toliaferro Field, Texas, in February, 1918, was called upon to suppress an epidemic of scarlet fever existing at the time of his arrival there. This epidemic was suppressed principally by closing a large private canteen at the camp, which operated with an insufficient water supply, and by the inauguration of a system of inspection of dishwater after the discovery that the orders previously issued to boil all dishes thoroughly were not being obeyed universally in the camp. At Souther Field the one organization which suffered markedly from influenza showed no more cases after supervision of dishwater was instituted.

HOSPITAL MEASURES.

In the hospital influenza wards all regulations of the Surgeon General were strictly followed; these included the required ward ventilation, one thousand cubic feet air space for each patient, cubicle compartments, gowns and gauze masks for ward attendants. Ward attendants were instructed to keep their hands clean, and away from their mouths, and a basin of cresol solution was placed just inside the door of each ward.

The certain diagnosis of influenza being impossible in cases of slight malaise and fever, these being possible latent cases, in the presence of an epidemic, all of these men were isolated and kept under observation. For the purpose of proper record, and particularly so as to include as influenza all possible cases of illness, a hospital order was issued requiring an official diagnosis under certain conditions of temperature, malaise, and bronchitis.

The one complicating pneumonia case which occurred was perhaps noteworthy because the patient's bed was situated in a ward not especially designed for contagious diseases, and possessing no windows at one end, and in the adjacent wall on one side for a distance of twelve feet. The ward was utilized to full allowed capacity (nine beds) and the patient in question was placed in this poorly ventilated corner and further separated from fresh air by the cubicle sheet between him and the next patient. The patient was moved out to the porch and no bed thereafter allowed in this particular corner.

PROGRESS OF THE EPIDEMIC.

The first case of influenza at Souther Field appeared on September 14th, and the last case during

proved, but it is certainly suggestive. The writer during twelve years of public health work in Philadelphia and two years' experience in army service has learned that results are obtained in epidemiology as they are in operative surgery, by knowledge, and by precise and thorough measures. Although the possibility is acknowledged that influences here unrecognized contributed to the absence of influenza at Souther Field, the conviction is just as strongly expressed that the cooperation of the commanding officer, the education of the command by circulars, the earliness of preparation, the thoroughness of separation of individuals, the assured sterilization of dishwater, and the faithful work of the junior medical officers all operated to check the spread of the disease at Souther Field.

In this connection it is proper to mention particularly the service of Captain Carl J. Rollefson, medical corps, in charge of the medical wards of the hospital. This officer, absolutely dependable, worked day and night. The zero mortality in the hospital, and prompt isolation of incipient cases at sick call, were largely due to him.

The great epidemic of 1918 has produced but little army literature, concerning preventive measures, from camp surgeons and camp sanitarians. Most of the reports to date have been from base hospitals, concerning pathology and treatment. Possibly, if reports of those camp surgeons whose camps were relatively free from influenza were given comparative study, the principal epidemiological factors would be established with some degree of certainty.

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BENZYL BENZOATE

A Résumé of the Work Done by Various Observers on the New Nonnarcotic Antispasmodic, Succedaneum for Opium, Papaverin, etc.

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During the past summer my attention was called to the usefulness of benzyl benzoate in several classes of cases in which the treatment at present leaves much to be desired, and the endeavor was made to become acquainted with the references at hand. The difficulty encountered in doing this stimulated a desire to go into the matter more deeply than was at first intended, and resulted in the accumulation of reprints and personal information of the greatest interest. When the result of this investigation was brought into orderly form, its publication was suggested to assist others who, like myself, could scarcely help being interested in so important an addition to the materia medica.

The experience of any one man with a remedy, which has been available for so short a time, would

count for little in favor of a product or against it, and, as time has not yet permitted a complete report from a number of clinicians who are using benzyl benzoate at my suggestion, it is therefore necessary to use the available material, and to give a promise of more when the reports of my colleagues come in.

For my notes on the history and chemistry of benzyl benzoate, I am indebted to I. V. Stanley Stanislaus, Ph. D., while the pharmacology has been collated by Dr. David Macht, reference to whose writings will be found in the bibliography. In discussing the therapeutic indications and doses, I have incorporated my own experience with that of other writers to whom I have given due credit. As I have already intimated, I hope to present additional data in the near future.

HISTORY.

Benzyl benzoate is an ester of benzyl alcohol and benzoic acid. It is found in nature in some of the balsamic resins, either alone or in combination. It is found in balsam of peru (1), associated with benzyl alcohol, cinnamein and benzyl cinnamate. It is probable, therefore, that the beneficial effects obtained from the administration of balsam of peru, in asthma, phthisis, and other chest conditions are largely due to the presence of benzyl benzoate (2).

The balsam of tolu also contains benzyl benzoate associated with benzyl cinnamate. Balsam of tolu contains an oily liquid, composed mainly of benzyl benzoate (3). The effect of this balsam is not unlike that of the peru balsam, when used in the same conditions, and since in the manufacture of the syrups used medicinally the resinous part is rendered inert, it is reasonable to credit its therapeutic effect in great measure to benzyl benzoate.

Styrax contains benzyl benzoate, as do many of the volatile oils of delicate fragrant flowers. Hyacinth, gardenia, jasmine, tuberose, ylang ylang, and orange blossom contain it, and it is also found in the oil of champaca, a variety of guaiacum wood. It is probably even more largely distributed in the plant world, but the difficulty of its volatilization with steam suggests the difficulty of its extraction from the plant (4). Cinnamein is said to consist mainly of benzyl benzoate (5).

CHEMISTRY.

Benzyl benzoate may be obtained by the fractional distillation of the oily portion of peru balsam, collecting the fraction (Fremy) passing over about 320° C. Synthetically it may be made in laboratory quantities in one of the following ways: 1. By treating benzaldehyde with sodium. 2. By treating nitrosobenzoyl-benzylamin with alcohol. 3. By treating benzaldehyde with sodium hydroxide (6).

In the large scale operations one of two following methods may be employed: 1. By treating benzyl chloride and anhydrous benzoic acid with phosphorus oxychloride. 2. By treating benzyl chloride and sodium benzoate with soda ash, in the presence of a catalyzer.

Pure benzyl benzoate should be free from chlorine. It consists of a clear colorless liquid at ordinary temperatures, solidifying below 20° C., and

is neutral to litmus. The solidified body has a melting point about 17° C. It is practically odorless, or very faintly fragrant. Benzyl benzoate which is chlorine free and contains not less than ninety-seven per cent. of absolute ester, boils between 320° and 325° C. with a specific gravity at 25° C. of 1.1151. The residue from the ignition of a ten gram sample should weigh not more than 0.1 mg. The acidity of a ten gram sample in forty c.c. of alcohol (which has previously been neutralized to phenolphthalein) titrated with N/20 sodium hydroxide and calculated as benzoic acid is about 0.039. The ester is almost insoluble in water or glycerine, soluble in alcohol, ether or chloroform and in war olive oil. A product responding to these tests is considered pure and adapted for therapeutic uses. A less pure product is used in the arts as a solvent, in the manufacture of perfumes and in coating the wings of aeroplanes.

Benzyl benzoate has a formula: $C_{13}H_{12}O_2$, and the following structure:

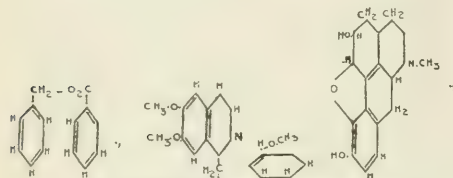


FIG. 1.—Structure of the benzyl benzoate formula.

The benzyl skeleton found in papaverin, an alkaloid of opium, is also found in benzyl benzoate. A close examination of the skeleton formulae will show benzyl benzoate to contain two benzyl skeletons, while morphine, another opium alkaloid, does not contain the benzyl group skeleton. The benzyl group has the formula $C_6H_5CH_2$; its skeleton has the formula C_6H_5C ; and structurally is as follows:

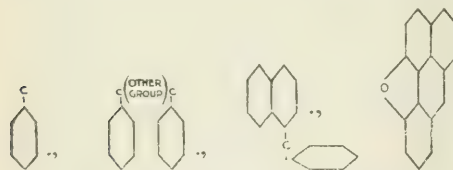


FIG. 2.—Skeleton formula of the benzyl group.

PHARMACOLOGY.

Prof. David I. Macht, following the studies of the effect of opium alkaloids on the smooth muscle of the ureter, which he reported (7), grouped the action of the opium alkaloids by dividing them into two classes:

A. The pyridin-phenanthrene group, exemplified by morphine, of which all the members, excepting benzyl morphine (peronin), proved stimulating to the contractions of the uterine rings, increasing their tonicity.

B. The benzyl-isoquinolin group, exemplified by papaverin. The members of this group inhibit contractions and lower the tonus.

The author subsequently (8) sought to find which of the component groups of the alkaloid morphine and of papaverin were responsible specifically for their physiological action. After a series of experiments, which he reported, he ascribed the stimulating action of morphine to the presence of the pyridin group in the morphine molecules, while the inhibitory action in the papaverin molecule he ascribed to the presence of the benzyl grouping found therein. The author has further tried the effect of a mixture of the opium alkaloids, and found the effect of the benzyl-isoquinolin members predominated in most cases. This, in the author's opinion, explains the anomalous inhibitory action of the benzyl morphine (peronin) on the contraction of the isolated ureter.

The structures on which the experiments were carried out included intestine, uterus, gallbladder, urinary bladder, biliary ducts, vas deferens, excised bronchioles, and arterial smooth muscle. These experiments confirm the action ascribed to each of the two groups of opium alkaloids. Furthermore, the experiments seemed to prove conclusively that it was the benzyl part of the papaverin molecule to which the inhibitory and tonus lowering action was due. These observations led the author to surmise that there was a possibility of exhibiting these inhibitory and tonus lowering effects by a benzyl grouping in a simpler form. A search was made for simple, nonalkaloidal and nonnarcotic compounds containing the benzyl group in the molecule and devoid of toxic results when administered to animals (9).

The two well known benzyl esters—benzyl benzoate and benzyl acetate—were tried; as both are insoluble in water they could not be studied on excised tissue. They had to be tried on intact animals. Both these esters produced the same pharmacological effect as papaverin with lesser toxic effect. Metabolic studies further demonstrated that the benzyl group of both esters was largely converted in the body into hippuric acid and excreted as such in the urine.

The comparative low toxicity of both esters and the striking papaverinlike effects on various viscera led the author to experiment on himself, with no untoward nor disagreeable symptoms following their ingestion by mouth. With their consent, he tried these agents on suitable patients. The anticipated pharmacological results were excessive peristalsis and excessive spasms of smooth muscles. Many cases were experimented with, mostly, however, with benzyl benzoate.

The oral administration was followed by remarkable pharmacological results and beneficial effects were produced in conditions summarized by the author as follows: 1. Excessive peristalsis and intestinal colic in cases of diarrhea and dysentery. 2. Spasm and colic of the uterine smooth muscle (renal colic). 3. In spasmodic gallbladder contraction (biliary colic). 4. In uterine colic or contractions of the uterus. 5. In vesical colic or contractions of the urinary bladder. 6. In one case of spastic constipation with powerful tonic contraction of the intestine. 7. In a few cases of pylorospasm. 8. In many cases of hypertension or ar-

terial spasm. 9. One of the most striking effects occurred in cases of bronchial spasm or true asthma. Administration of these two esters by injection has also been tried, and a number of physicians who collaborated with Doctor Macht reported their observations to the effect that these benzyl esters promised to become therapeutically useful. Benzyl acetate, owing to its pungent fruity flavor, was found objectionable.

THErapy.

The therapeutic indications of benzyl benzoate may be stated in brief as follows: Intestinal colic, diarrhea, spastic constipation, biliary colic, ureteral calculi, spasm of seminal vesicles, uterine colic, pylorospasm, true bronchial asthma, arteriosclerosis, with high blood pressure, excessive arterial spasm, dysmenorrhea, and in conditions which would require an antispasmodic nonnarcotic sedative.

CLINICAL RESULTS.

In a variety of pathological conditions of the gastrointestinal tract benzyl benzoate was tried out by Dr. T. R. Brown and Dr. E. Gaither in the gastrointestinal clinic of the Johns Hopkins Dispensary. In another series of cases the patients were treated under the supervision of Dr. Julius Friedenwald. Other cases were followed by Dr. D. I. Macht and others both in the Johns Hopkins Hospital and outside.

Diarrhea.—In about forty cases of excessive peristalsis, both acute and chronic, and in some cases of acute enteritis, a few doses of twenty per cent. solution of benzyl benzoate were found to act as efficiently as opium, completely relieving the condition.

In two cases of so-called senile diarrhea, both patients who were over seventy years old, were promptly relieved by benzyl benzoate in two days.

Dysentery.—The number of dysentery cases (10) treated, while not large, showed very favorable therapeutic results. One striking case of amebic dysentery was reported. The patient, a man thirty-nine years of age, contracted the disease at Manila in 1902, and had suffered from it ever since. He had been treated without much success, with opium, ipecac, bismuth and quinine among other drugs. Dr. A. Hebb's examination showed ulceration of the bowel with spastic stricture. Patient was emaciated and weak and stated that he had six to ten stools daily and four to six at night. Stools contained brown mucus streaked with blood. Tenesmus was severe. He was given twenty per cent. solution of benzyl benzoate and aromatic spirits of ammonia in thirty drop doses in water three times a day. Three days later the patient said that no other treatment since the beginning of the disease had had as good an effect as the benzyl benzoate. The number of stools markedly decreased, and defecation was much less painful. Patient, feeling very much better, was given simple gentian mixture as control; he returned in a few days, and said that his stools had increased.

The patient was given some more benzyl benzoate; this again checked the diarrhea, which indicated the specific effect of the ester in this condition. In connection with dysentery Doctor Macht, in

collaboration with E. Fisher, found the benzyl esters very toxic for certain lower organisms *in vitro*. This would indicate that the benzyl benzoate may act beneficially, not simply by checking the excessive peristalsis, but also by a specific protozoocidal effect on the amebæ (11).

Intestinal colic or enterospasm.—In a considerable number of cases of enterospasm, or cases where enteralgia was complained of, benzyl benzoate treatment by mouth was very successful. In patients, treated under the supervision of Dr. T. R. Brown, the therapeutic result was the same, whether the enterospasm was due to postoperative adhesions or was of a vagotonic character.

Pylorospasm.—A number of pylorospasm cases were treated very successfully with benzyl benzoate. In a striking case, where the patient complained of stomach trouble with much gas the test breakfast showed hyperacidity. The x ray showed the stomach enormously dilated, filling up the left hypochondrium, epigastrium and the umbilical region. The stomach was divided by constricting fissures into four parts of unequal size, one portion two inches above the other; one fissure along the region of the duodenal cap was enormously dilated and definitely obstructed. There was hyperperistalsis but nothing going through. Diagnosis of pyloric obstruction was made. Twenty per cent. solution of benzyl benzoate and thirty drop doses every four hours were given. A fluoroscopic examination showed that from October 28, 1917, to November 2, 1917, the contraction was less marked, and the fissure near the duodenal cap obliterated. Progressive treatment with benzyl benzoate was kept up until January 11, 1918, when the following x ray report was read: "Stomach normal in size; patient believed to be much improved."

Irrespective of the etiology of the condition, relief was afforded by benzyl benzoate in functional spasm of the pylorus; in spastic pyloric contraction due to irritation from a duodenal ulcer, and slight relief was noted even in spastic conditions produced reflexly by a carcinomatous growth. Dr. Roger P. Batchelor reports a case of duodenal ulcer where it was impossible to palpate the abdomen. The patient was given a dose of benzyl benzoate, and shortly afterward the sedative effect was sufficient to enable him to examine the patient's abdomen carefully.

Mucous colitis.—A large number of cases (10) of mucous colitis were treated with benzyl benzoate. The following seen by him is a good example: The patient, a woman, aged sixty-five, had been complaining of abdominal pains and repeatedly summoned physicians who were compelled to give hypodermic injections of morphine for the relief of the pain. During one of her attacks, the author injected benzyl benzoate with marked relief. On another occasion, during the attack, the author injected the patient with morphine 0.25 grain. The patient stated that the relief from the morphine was not as great as after benzyl benzoate. The patient was ordered benzyl benzoate; five minim doses, dissolved in olive oil in capsules, were taken three times daily. Since the exhibition of the drug, attacks have diminished until now the patient has not had any for months.

Spastic constipation.—The antispasmodic effect of benzyl benzoate is well demonstrated (10) by its successful employment in the treatment of spastic constipation. Benzyl benzoate was actually found to relieve constipation due to a spasmodic condition of the bowels. A number of cases are recorded.

Biliary colic.—In twelve cases of biliary colic recorded (10), ten patients were treated by mouth and two were treated by injection. The results in almost all cases were more or less successful. Benzyl benzoate was found to be equally as efficacious as opium in such cases, without producing any narcotic effect.

Dysmenorrhea.—The author (10) has reported about twenty-five cases of spasmodic dysmenorrhea or uterine colic in which the patient had been treated by mouth with benzyl benzoate. The results were more or less successful in every case, and striking in some. One patient who had suffered tortures at her menstrual periods was repeatedly relieved by taking one or two doses of twenty per cent. solution of benzyl benzoate. Professor W. W. Russell had two patients in whom pessaries and surgical treatment were of no avail, and opiates were but partially efficient. Benzyl benzoate treatment gave remarkable relief.

Dr. Jennings C. Litzenberg (12) of the Institute of Anatomy, University of Minnesota, reports the use of benzyl benzoate in forty-three cases of dysmenorrhea. He summarizes his findings as follows:

1. The cause of dysmenorrhea is still unknown.
2. The treatment has been unsatisfactory.
3. Antispasmodics are logically indicated, for in spite of doubtful etiology the painful spasm of the uterine muscle is incontrovertible.
4. Benzyl benzoate has an antispasmodic action, and is practically nontoxic, which gives it preference over atropine.
5. This series is too small to permit conclusions, but is given for what it is worth. Of forty-three cases presented, in 81.3 per cent. the patients were relieved of painful menstruation.
6. Pain was absolutely eliminated in 61.7 per cent.
7. Pain was greatly relieved in 18.5 per cent.
8. Pain was slightly relieved in 4.6 per cent.
9. Pain was not relieved at all in 13.9 per cent.
10. These results, while not conclusive, warrant a test by the profession of the value of benzyl benzoate in dysmenorrhea.

Doctor Litzenberg states (12): "We hope that the promise of this drug may lead many physicians to try it, and that we may soon have numerous reports, for it is only by an analysis of a very large number of cases that we can determine the real value, and fix the limitations of benzyl benzoate as an antispasmodic in painful menstruation."

He prefers benzyl benzoate to atropine which he had used for several years in doses of from 1/150 grain to 1/50 grain. He feels reluctant to place so potent a drug as atropine fourteen times a year in the hands of a patient. Further, he says that frequently it must be given to the point of tolerance in order to get the antispasmodic effect.

Doctor Litzenberg mentions the testimony of five patients (12). The statements of three are here reproduced as typical: 1. Patient No. 7 asserted that she was relieved entirely after the second dose and was able to eat during the first twenty-four hours,

which she had been unable to do for several years. 2. Patient No. 16 said that after taking the medicine she could do a good day's work, and life was worth living. 3. Patient No. 29 was one of the few persons not within the class of college women and nurses especially selected for study. She was a forewoman in an iron factory, compelled to be on her feet all day; but after taking the benzyl benzoate she was able to keep working throughout the menstruation.

The favorable results from the use of atropine gave the logical basis for the use of an antispasmodic in dysmenorrhea and induced Litzenberg to use the benzyl esters as an antispasmodic in dysmenorrhea in place of atropine; benzyl benzoate having the further advantage of being practically nontoxic. He says that atropine produces its antispasmodic effects by paralyzing the autonomic nerves supplying unstriated muscles, but the benzyl esters seem to act only on the muscle cell itself.

Labor pains.—Benzyl benzoate is indicated in labor pains for the purpose of inhibiting uterine contractions. In two patients threatened with abortion, the administration of benzyl benzoate suppressed the uterine pains (10).

Miscarriages.—In two cases of miscarriage in which the expulsion of the fetus had already begun and the patients were bleeding, benzyl benzoate administration tended to increase the flow.

Contractions of seminal vesicles.—Dr. W. A. Frontz (10), of the Brady Urological Institute, suggested the use of benzyl benzoate in contractions of seminal vesicles. In two patients so afflicted benzyl benzoate was given by mouth to relieve the condition. Both patients reported much benefit, and requested the renewal of the medicine.

Ureteral colic.—Whether due to a calculus (Dr. Charles Austrian) or to ureteral strictures, the patients were greatly (10) relieved by taking twenty per cent. solution of benzyl benzoate. Cases of artificial colic which followed therapeutic dilatation (Dr. Guy L. Hunner, Johns Hopkins Hospital) were very satisfactorily relieved by benzyl benzoate. In others, however, the results were not so marked.

Vesical spasms.—For the relief of spasmodic contractions of the urinary bladder, benzyl benzoate (10) gave considerable success. In one case the patient said that it seemed to be helping her so much and was the only thing that ever did help.

Bladder.—In another case considerable though not complete relief was obtained with benzyl benzoate. The patient was a woman, a morphine addict, with extremely irritable bladder, clamoring for the narcotic to relieve the excruciating pain.

Enuresis.—When this condition is due to hyper-irritable bladder and sphincter, the value of benzyl benzoate has been demonstrated in a number of cases.

Circulatory conditions.—In cases of high blood pressure of whatever source, both diastolic and systolic readings were markedly lowered by benzyl benzoate given by mouth. This was true not only of true spasmodic angiospastic conditions, but also the high blood pressure of nephritics. Dr. H. Mosenthal reports several cases showing a lowering

of the blood pressure (10). Thus, for example, in one case, after the administration of benzyl benzoate (fifteen drops three times a day) by mouth, the blood pressure fell from 200-140 to 180-115; in another, from 320-160 to 255-140; in another, 194-100 to 178-80, and in another from 215-145 to 190-135.

Angina pectoris.—A number of cases of coronary spasms (angina pectoris) seemed to be benefited by the benzyl treatment (10).

Bronchial spasm.—Very interesting experiences (10) were collected in about forty cases by several physicians collaborating with Doctor Macht regarding the antispasmodic action of benzyl benzoate in bronchial spasm or true asthma. Some of these cases were in children studied by Dr. T. G. Shipley, of the Harriet Lane Hospital for Children; others, by Dr. Harry Goldberg and Dr. John Ruhräh, outside. Results in some cases were striking.

Asthma.—One asthma patient, a medical student, in the habit of injecting himself with adrenalin for the relief of the attacks, was compelled to enter the private ward of the Johns Hopkins Hospital. Benzyl benzoate, twenty per cent. solution in twenty-five drops doses by mouth, was given him by Doctor Macht. In a few days the patient left the hospital relieved of his asthma. He came to the author (10) for more of the drug for the prevention of recurrence of the attacks.

Wheezing respiration.—A woman patient with typical signs of asthma, wheezing respiration, dyspnea, numerous râles, was given benzyl benzoate twenty per cent. solution, in twenty drops doses, three times a day. In a few days she returned, stating that the bad spells had stopped. She continued using the drug for two weeks, when the asthma cleared up entirely.

In a recent contribution (13) Macht gives an account of nine clinical cases of asthma in which benzyl benzoate was tried. His deductions may be summarized as follows: 1. Pure benzyl benzoate and benzyl acetate are not adapted to injections as they are somewhat irritating. 2. In most cases the intramuscular injections are not necessary. 3. All the therapeutic results can be obtained by giving the drug per os.

The analysis of the results of all the cases on hand Macht summarizes as follows: 1. That benzyl benzoate treatment of asthma was beneficial in seventy-five per cent. of the cases. 2. In some cases the results were striking, and equaled only by the injection of epinephrine. 3. In a few other cases, in which epinephrine failed, relief was obtained by benzyl benzoate administered by the mouth. 4. A number of the cases failed entirely to react to benzyl benzoate treatment. 5. This was not surprising, in view of the fact that asthma includes a variety of conditions, and dyspnea, when due to other causes than bronchial spasm, will not be relieved by the benzyl treatment.

In the nine cases cited, Doctor Macht employed a twenty per cent. solution of benzyl benzoate, which was exhibited in twenty drop doses four times a day, except in the case of a baby one year old, in which five drop doses were exhibited, and

in a chronic asthmatic, who received thirty drop doses. The author concludes as follows: "The history recorded above will suffice to illustrate the therapeutic action of benzyl benzoate in asthma. The number of examples can be multiplied, both from the author's experience and data furnished by other physicians who reported to the author."

Here the author mentions the names of the following: Dr. R. M. Rackemann, of Boston; Dr. Harry Goldberg, Dr. S. A. Dodd, Dr. Charles Austrian, Dr. A. Chattard, Dr. G. Weltereck, Dr. A. H. A. Mayer and others of Baltimore, Dr. S. Solis Cohen, of Philadelphia, and Dr. W. A. Dunkel, of New York, and others.

"All data so far in hand concerning the benzyl therapy of asthma seem certainly to show that benzyl benzoate is an invaluable drug in the treatment of that condition. It should be understood, however, that not every case of asthma is benefited by this drug, and this is not at all surprising, as the term asthma is applied to a large variety of conditions, and even bronchial asthma is etiologically not a single entity, but is produced by a great many factors. It was natural, therefore, to find that not all cases of asthma responded to the treatment. It may be stated, however, that wherever there were signs of bronchial constriction or spasm, benzyl therapy produced relief in almost every case. I collected records of at least 200 such cases."

In another article (14) Macht reviews eleven clinical conditions treated with benefit by the benzyl esters. He mentions a series of dysentery cases which were studied for him by Professor Haughwout, of the University of the Philippines, with most remarkable success (F. G. Haughwout, P. T. and M. A. Asuzano: Protozoological and Clinical Studies on the Treatment of Protozoal Dysentery with benzyl benzoate, to be published in the *Archives of Internal Medicine*).

Among the other interesting cases cited by Doctor Macht, he mentions that he found that the administration of benzyl benzoate by mouth markedly lowered the blood pressure, both the systolic and diastolic, the effect in practically all such cases being more lasting than that produced by the administration of nitrites. Indeed, patients who did not respond to the nitrite treatment often responded with a falling blood pressure after administration of benzyl benzoate. I have been giving benzyl benzoate by mouth to a large number of nephritics over long periods of time. No deleterious effects on the kidney functions have been noted in any of these; the hypertension, however, has been greatly improved in most of them.

Irritating coughs and arteriosclerosis.—Dr. S. Solis Cohen (15) found benzyl benzoate of value in various forms of asthma with dyspnea, and in arteriosclerosis with excessively high blood pressure. He also found it of great use in a particularly irritating cough known in Philadelphia as "Hog Island whoop." Where one did not care to use morphine, benzyl benzoate was a distinct palliative.

DOSE AND ADMINISTRATION.

Dose.—Benzyl benzoate is given in 0.3 to 0.5 cc. (five to seven minims). Macht has employed ben-

zyl benzoate in cases of asthma, ureteral colic, biliary colic and arterial spasm in adults in doses of twenty to thirty drops of a twenty per cent. alcoholic solution four times daily. In a child of one year old he used five drops of the solution. Litzenberg employed in dysmenorrhea (13) benzyl benzoate in doses larger than those recommended by Macht to obtain the best results. He used a twenty per cent. emulsion of the ester, in one to two teaspoonful doses every two hours. He prefers the emulsion, since the patients bitterly complained of the taste of the alcoholic solution.

Where benzyl benzoate causes gastrointestinal irritation it can be dissolved in olive oil and dispensed in capsules. Herbivora can apparently stand larger doses than carnivora. Thus, animals were given as much as twenty c.c. per kilo of weight without bad effects. Very large doses might produce convulsions and respiratory paralysis. Before asking a concluding question, I should like to mention an observation made by Dr. Arthur H. Hopkins, at a recent meeting of the Philadelphia County Medical Society, on the use of benzyl benzoate in the spasmodic stricture of the esophagus; his results in this condition were highly gratifying to him. Doctor Hopkins expects soon to present further data on the use of benzyl benzoate.

CONCLUSION.

While the results so far attained do not seem to be more than relatively conclusive, the apparent nontoxicity of the drug seems to warrant a more extended and thorough trial at the hands of the profession. Where, therefore, an antispasmodic of the opium type is indicated, for its relaxing action on the unstriated muscle fibre, would it not be fair to try out benzyl benzoate in conditions such as dysmenorrhea, asthma, diarrhea, arteriosclerosis and esophageal and pyloric strictures?

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4020 SPRUCE STREET.

THE NATURE AND TREATMENT OF ACNE VULGARIS.*

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Acne vulgaris is a hyperkeratosis of the skin associated with a disturbance of the carbohydrate metabolism and usually accompanied by gastrointestinal derangements. The acne bacillus, if it is an etiological factor, becomes active only upon the development of a favorable soil for its growth.

The patient usually presents a characteristic picture. The cheeks are round, full and relaxed. The mouths of the pilosebaceous follicles, especially on the nose, are dilated and prominent. Comedones, papules, pustules, indurated masses, cysts and scars stud the skin of the face, back and chest. There is always a seborrhea of the scalp. The tongue looks swollen, glazed and the lateral borders indented. The mucous membranes of the throat appear edematous and the pharyngeal vessels prominent. A slight conjunctivitis is often found and occasionally a blepharitis. Evidence of a carbohydrate fermentation is detected in the feces and the blood shows a hyperglycemia and often a low alkali reserve. By recognizing the various factors mentioned, a plan of treatment has been devised by means of which satisfactory results have been obtained and it is intended to epitomize in this paper the procedures followed. These may be considered under two headings: first, the restoration to normal of any systemic derangement, and, second, the correction of the abnormal local structure and function.

CONSTITUTIONAL TREATMENT.

The general treatment of acne includes all the procedures employed for the detection and correction of abnormal functioning of the internal organs. A careful history should be taken, especially regarding the gastrointestinal and menstrual functions. A thorough physical examination is advised and the laboratory should be employed for the examination of the feces, urine and blood. The twenty-four hour urine is tested especially for the presence of sugar, acetone bodies, indican and urobilinogen; the total acidity and ammonia content determined, and the microscopic constituents studied. The routine stool examination should include fermentation tests and a microscopic examination of stained specimens.

Diet.—The diet is made almost carbohydrate free even in those cases with an acidosis. Sugar, candy, cake, pies, pastries, puddings, jam, jelly, cocoa, potatoes, cereals and sweet fruits are forbidden. Hard, irritating and fried foods are interdicted as they interfere with proper digestion. Spices and condiments, alcoholic and stimulating beverages are also prohibited as they tend to cause reflex dilatation of the cutaneous vessels and thus increase the congestion of the skin. To summarize, it may be stated that the diet should be low in carbohydrates, nonirritating and plain. Milk, cream, fermented

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milks and vegetables should constitute the main foods. Meat or fish once a day, cheese, cool soups without flour, fruit that is not sweet, and six slices of bread, each half an inch thick, complete the diet and suffice to provide ample nourishment as well as satisfy the patient's appetite and whims. Meals should be eaten slowly and at stated times during the day and the food masticated thoroughly. Large quantities of water should be taken at regular intervals during the day to aid elimination through the kidneys and the skin. Most acne patients should be overfed and those who are under weight should be advised to drink three eggnoes daily independent of meals.

Care of the Gastrointestinal Tract.—The cutaneous condition is almost always accompanied by disorders of the gastrointestinal tract. Most of these patients suffer from gastric hyperacidity and nearly all of them are constipated. The hyperacidity of the stomach is overcome by the reduction of the carbohydrates, irritating and stimulating foods in the diet, general tonic treatment and the administration of alkalies.

For the constipation exercise, abdominal massage, diet, colon irrigations, enemata, cathartics and yeast are employed. There are many acne patients who complain of headache, drowsiness, inaptitude for work, tachycardia, shortness of breath, attacks of weakness or mild syncope, and other symptoms of autointoxication. For these patients colon irrigations of two to three gallons of hot water with or without bicarbonate of soda, administered at bedtime for one week, then every second night for a fortnight, and finally every third night for a month or longer give relief.

Another class of acne patients complain of frequent and incomplete evacuations of the bowel. Here the rectal injection and retention overnight of three to four ounces of warm olive oil, followed in the morning by a teaspoonful of Carlsbad salts by mouth, result in complete bowel evacuations and the removal of inspissated masses which, if not removed, provide foci from which toxins are absorbed. These measures are usually employed for one month.

For those patients with vagotonia who complain of spasmodic pains in the lower portion of the large intestines before and after defecation atrophine is prescribed.

As a routine measure a teaspoonful of the rhubarb and soda mixture containing ten drops of the fluid extract of cascara sagrada is given two or three times a day after meals. This simple remedy is of great service. Yeast is employed in daily doses of one to three small, compressed cakes. Its continued ingestion for at least six weeks diminishes fermentation, prevents constipation and stimulates phagocytosis. Cultures or tablets of the *Bacillus acidophilus* are administered when the carbohydrate fermentation is marked and those containing the *Bacillus bulgaricus* when protein putrefaction is also present. Salol, trimethol and ichthyol may be used as intestinal antiseptics.

Internal secretions.—There is a tendency to regard acne as a manifestation of a disorder of the endocrine glands. This belief rests mainly upon

the fact that acne tends to appear about puberty and apparently becomes milder as the patient grows older. Besides, in some female patients the eruption becomes more marked during the menstrual period. In such instances where the patient states that the eruption is apparently worse during the menstrual period or when she states that a so-called blemish, a pustule, usually on the chin, appears two or three days before the advent of the menstrual period, corpus luteum frequently prevents the aggravation of the symptoms.

Anemia.—When the hemoglobin content of the blood is low, rest, fresh air and iron are prescribed. Startin's mixture or Bland's pills compounded with strychnine and aloin are very efficient and avoid the constipating effect of iron. Cod liver oil is given during the cold seasons of the year for its nutritive value. All measures conducive to good health are employed. Plenty of fresh air, sunlight, bathing and sleep is important. Exercise is of value but overexertion should be avoided.

Arsenic.—This drug is contraindicated in the treatment of acne. The lesions of acne result from a hyperkeratosis of the skin, and as arsenic stimulates the growth of the horny cells its employment for this condition increases the number of the lesions and makes the cure more difficult to obtain.

Vaccine.—The injection of the stock acne vaccines produces no change for the better in the appearance of the skin. On the other hand, in some cases when numerous large pustules and furuncles are present stock mixed staphylococcic or autogenous vaccines cause the disappearance of the suppurative lesions.

LOCAL TREATMENT.

Acne is essentially a hyperkeratosis. Associated with this there occur engorgement of the vessels and more or less cellular infiltration in the upper corium; accumulations of a watery sebum and cellular detritus in the dilated mouths of the sebaceous follicles, destructive changes in the sebaceous glands, and a fatty degeneration of the hairs. The hyperkeratosis is most marked in the mouths of the sebaceous follicles and the heaping up of the concentric layers of horny cells produces the comedones. The development of infiltrations around the comedones in the upper part of the follicles result in small papules. Pustules depend upon a secondary infection by staphylococci. Occlusion of the follicular outlets gives rise to retention cysts and the deep indurated masses follow the formation of deep perifollicular infiltrations. The skin is thickened, anemic, atonic, greasy and the muscles relaxed.

Evidence of acne may be found in individuals of all ages and, although there are some cases that apparently become milder with time, treatment should never be postponed but initiated as soon as cutaneous lesions appear. The permanent cosmetic disfigurements that one sees so often are reminders of faulty or delayed treatment. The scars indicate sites of atrophy resulting from prolonged pressure on the tissues of the corium by comedones and infiltrations.

The local treatment of acne should, therefore, include measures to remove the thickened horny tissue and the grease and cell detritus; to improve the cu-

taneous circulation and tone, and to prevent and remove infection. For purposes of description it is convenient to present the local management of acne under two headings: first, the therapeutic measures employed by the physician in the office; and, second, the care of the skin by the patient.

OFFICE TREATMENT.

The cure of acne demands faithfulness and perseverance on the part of both the physician and the patient. It is also emphasized that few patients will be cured unless the physician personally treats the skin. The patient should lie on a table with the affected part exposed to a good light. The skin is scrubbed with benzine to remove dirt, grease and cell detritus and to aid in loosening comedones. This is followed by the mechanical extraction of comedones by firm, steady pressure applied with a comedone extractor. At each seance as many comedones as will come away readily without injury to the surrounding normal tissue should be removed. The smaller pustules are opened by tearing away their tops with a sharp skin curette and the larger and more deeply situated pustules are incised and their contents evacuated. A small sharp cataract knife serves best for the incision of the deeply situated pustules and masses. Scars do not follow these incisions, but failure to incise and drain the lesions often results in the development of disfiguring scars. The incision of the deeper indurated masses permits the escape of purulent and caseous matter. Where this does not occur no harm is done, but, on the contrary, resolution is stimulated. At times much benefit may be derived from the promotion of hyperemia through the application of suction cups. This procedure relieves the congestion, whips up the local circulation and improves the tone of the skin. Subsequently the skin is cleansed with alcohol and tincture of iodine applied to the interior of the ruptured and incised lesions.

The ultraviolet rays emitted by the mercury-vapor lamp are then employed. The technic consists in the placing of the quartz filter at a distance of two feet from the skin. The eyes being protected by wads of cotton, a general exposure of ten minutes is given. When the face is treated, first the middle then each lateral aspect is exposed to the rays. Applications are administered at intervals of five to seven days; the distance between the filter and the skin is gradually decreased to ten inches and the length of exposure increased up to twenty minutes. The action of the rays is that of an artificial sun burn. The tone of the skin is improved, phagocytosis is stimulated, and the absorption of the infiltrations hastened. The reaction is followed by a decrease of the grease on the skin and an exfoliation of the hyper-keratotic tissue. The röntgen rays are of value in obstinate cases, especially when there is a tendency to keloid formation, but should be administered only by one who is proficient in its use.

HOME TREATMENT.

The following instructions are dictated to all patients: At night before going to bed wash the affected skin with hot water and soap, then with cold

water and soap, and then extract as many black-heads as will come away easily. Then shake the white lotion, pour some into a saucer and with a piece of flannel rub it well into the skin for ten minutes. After this apply more lotion and allow it to dry on overnight. Several times a day wash the face with cold water and soap. Do not use powders, greases or other cosmetics.

The hot water is advised for its cleansing and the cold water for its tonic effect. The kind of soap recommended depends upon the character of the lesions. In mild cases with only a few comedones anyone of the mild commercial soaps will do; in moderately severe cases, the tincture of green soap with or without the addition of sulphur is recommended for its more cleansing, antiseptic and peeling effect. At times a thick lather of sulphur soap allowed to remain on the skin overnight enhances the exfoliation. Hand sapolio employed once or twice a week is recommended in severe cases to augment the exfoliation of the layers of horny cells and the stimulation of the atonic skin. The employment of sapolio also aids in removing comedones and opening pustules. Sulphur, ichthyl, mercury, resorcin, salicylic acid and tar constitute the medicaments suggested for the local treatment of the condition. However, the best results are obtained by using sulphur in the form of a lotion and rarely as a cream. Fatty preparations should rarely be employed in this already over greasy condition. Sulphur is most commonly prescribed in the following form:

Zinc sulphate,	3i-3iv
Rose water,	3ii
Mix and add.	
Potassium sulphate,	3i-3iv
Rose water,	3ii
Mix.	

The amount of sulphur which is added depends upon the type of lesions present. The efficiency of this lotion is increased by the addition of two drams of milk of sulphur and the lotion thus formed is commonly designated "compound lotio alba." If the lotions are made as indicated they should be white in color and have the odor of rose water and not yellowish and foul smelling. Alcohol may be substituted for part of the rose water for its cooling and drying effect.

Vlemminckx's solution has hastened improvement in very obstinate cases when the compound lotio alba even with the addition of resorcin had failed. When prescribing this solution detailed instructions as to the methods of preparing it should be given to the pharmacist. The sublimated sulphur, the quicklime and water should be mixed in an iron pot, boiled and evaporation continued until 120 c. c. remain of the original 200 c. c. The disadvantages of this solution are its rapid deterioration and foul odor. It should be employed in fresh solution, a new preparation being made at least once a fortnight. Applied at first diluted one part in six parts of water, its strength is gradually increased as the skin becomes less sensitive.

When furunculous lesions develop, good results have been obtained by painting them twice a day with a ten per cent. solution of ichthyl. When a quick local effect is imperative a forty per cent.

resorcin paste is applied until the skin is denuded and the subsequent irritation allayed by painting with Unna's zinc gelatine paste.

For the boggy and indurated masses and folliculitis of acne keloid which at times accompanies acne vulgaris the following ointment is recommended:

Sulphur ointment,	5iii
Red oxide of mercury ointment,	5iiss
Zinc oxide ointment,	q. s. ad 5i

Every case of acne is accompanied by seborrhea of the scalp and this should be treated at the same time. In the treatment of this latter condition precautions should be observed not to use mercurial preparations excepting those containing the red oxide. All other forms of mercury combine with sulphur and produce a black pigmentation of the skin.

SUMMARY.

1. Acne vulgaris is an important manifestation of a constitutional disturbance.
2. The hyperkeratosis follows faulty carbohydrate metabolism.
3. The proper treatment of the condition demands an intelligent investigation of the general condition of the patient and the restoration to normal of any systemic derangement.
4. A reduction of the carbohydrates in the diet is of prime importance.
5. The functions of the gastrointestinal system usually require correction.
7. Arsenic is contraindicated in acne.
8. The local therapy includes all measures to remove the hyperkeratotic tissue.
9. Seborrhea is always present and this should be treated.

161 EAST SEVENTY-NINTH STREET.

HEALTH PROTECTION AND SICKNESS.

Prevention in the Mohawk-Brighton District of Cincinnati Under the Social Unit Plan of Community Organization.

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For not less than the past fifty years we have known the contributing and specific causes of the sicknesses which determine most of the disabilities and premature deaths of people at all age groups of both sexes and of each of the nationalities represented in any community of the United States. Application of this knowledge, however, cannot depend solely upon its possession by those trained solely in the treatment of the sick, if results are to be obtained in any way commensurate with its importance to our national existence. Those responsible for health development and prevention will continue to be limited in their successes to such conditions as may be corrected by use of the police power of the state until the householder and taxpayer appreciate that community health is a personal problem worthy of as much understanding

and action on their part as they devote to the earning of their livelihood.

At present the obvious cause of failure, of even the most liberally organized and intelligently directed governmental agencies for health protection, is the lack of means of approach and contact with the people who need the technical services and the education, upon which the reduction of sickness and death rates depend. While great strides have been made in popularizing the subject of personal and public health protection by the use of all the devices of educational publicity, the fraction of the people reached by these means of approach remains small and will depend commonly upon temporary interest of the people, excited by some unusual endemic or epidemic prevalence of diseases. The facts of cause and prevention are abundant. The technic of applying remedial measures is established. There are trained agents for medical and allied services ready at hand. Organization on the basis of a public service imposed upon an indifferent public is provided in varying degrees of excellence, and still the chief obstacle is that those who suffer most are unable, with their present knowledge and lack of means of group expression, to ask for the extent and quality of service which they require.

Whatever the spirit and organization which a community succeeds in developing, a desire for self help, education and self direction will add more than any resources now in sight to the betterment of health. Initiation of activities following a definite call by the people for services will in the long run, and even in terms of early results, produce more lifesaving than plans for public benefit, however perfect they may be theoretically, which have originated mainly in public offices and are carried out without a knowledge of the intimate personal and family needs by those who are largely out of touch with the aspirations and anxieties of the people they serve.

Whatever the evidence of the qualitative or quantitative success or failure in the field of health and preventive medicine which may appear from the study of the full experiment in social organization in the Mohawk-Brighton district in Cincinnati, its contribution to progress will probably be judged by the degree of contact there has been established between those with knowledge and those needing it, and the extent to which the householders, parents, and wage earners of this section of the city have understood and acted upon the information which they have received through their own agents and as the result of a conscious effort to solve their own problems.

CONCLUSIONS BASED ON THE REPORT.

It must appear to anyone who will take the trouble to inquire as to the facts from the people of the Mohawk-Brighton district, that they have had a determining voice in selecting and controlling all of the health education, preventive medicine, and sickness service features of the community organization. It is equally evident that once the people's representatives decided to have certain types of services, whether this decision was reached by their own initiative or as the result of tactful persuasion and education by those of wider experience, by

those outside of the district, responsibility of the execution of the problem was under the control of the physicians' council, the nurses' council, and the social workers' council. Inquiry develops practical unanimity in the opinion of physicians of the district, that the medical needs of the district have been better met than before, that medical practice has been benefited, and that if all taint of donation of services were removed by the assumption of costs by those who are served, there would be no further reserve in the willingness to praise and approve of the organization and its results.

In view of the fact that neither the duration of the social unit experiment nor the size of the population unit dealt with are of such proportions as to permit of a reliable statistical foundation in morbidity or mortality data as a basis of comparison between the health of the district before and since the organization of the unit or between the health of the district and that of other approximately equivalent population groups in Cincinnati or in the city as a whole, conclusions must be based on opinion rather than upon recorded figures of work done.

The accomplishments which are tangible and serve as important evidence of a substantial improvement over the results obtained by the average or even by unusually well administered health services in the large cities of the country are as follows:

1. The reaching of a large proportion of all expectant mothers needing prenatal advice beyond the third month of pregnancy.

2. Early and continuous supervision of all babies born in the district as well as adequate care for the mothers during the period immediately after confinement.

3. Medical examination of all the children of the so-called preschool age with the result that a large proportion of the physical defects discovered were brought under suitable corrective treatment, insuring the children's reaching school age without the handicaps now found to be a heavy burden falling upon them when they first come under the strain of discipline and education at the age of six.

4. So far as experience goes, probably all of the active cases of pulmonary tuberculosis in the district were discovered, reported and brought under guidance, and that the patients who could safely be left in their homes received the benefit of nursing and social service direction of a high grade.

5. Besides nursing for those unable to provide it through their own financial or home resources, treatment was supplied to the sick of the district under the direction of their own physicians.

6. In time of emergency during the influenza epidemic, the educational and nurses' service was prompt and efficient in reaching every case and adequate care was given within the limits of medical knowledge. (This statement is made in spite of the fact that any assertion of statistical proof of a lower death rate for the district was a result of the superior and more efficient nursing service given in the Mohawk-Brighton district is open to honest protest as containing fallacies due to the lack of proper controlled comparisons.)

7. The correction of gross sanitary violations and

the improvement in general cleanliness of premises has been obtained by a cooperative action through the citizens, landlords, and tenants, without recourse to police and court action.

8. The mothers and fathers of the district have become educated to an alertness and understanding interest in the relation of health and its maintenance to their children's and their own welfare, which makes them readily accessible to teaching in these directions without recourse to extravagant and spasmodic propaganda with all its features of error and lack of proportion.

It is my opinion that extension of the services of the medical nursing and social worker groups to include periodical examination of children of school age, of the adult population, and particularly of those engaging in hazardous trades and industries in groups too small to justify medical services at the hands of individual employers, as well as the inclusion in the program of education and diagnostic service for mental and venereal diseases, would be desirable and profitable for the people of the Mohawk-Brighton district. Furthermore, in order that a still wider range of professional service might be available for council, for service and for specialist consulting advice, and for the sake of including a sufficient amount of population to permit of reliable statistical comparison of results, I believe it to be of the utmost importance to plan an early and considerable expansion of the district under organization, preferably up to a population unit of 100,000, but certainly at least up to one of 50,000. The asset which an organized, readily approachable, interested and selfinformed group of people presents to the practitioner of medicine and to the health officer in their respective fields is of greater value from an educational point of view than can be expressed in terms of mortality or morbidity rates.

In common with other students of the social unit plan and after conference with them, I have recommended that a committee be created in the field of medical practice and preventive medicine to act in an advisory capacity to the social unit experiment and to study the whole community organization: that such a committee should be affiliated through a paid executive with other advisory committees in the other fields of social effort; and that the deliberations and conclusions of such a group of advisory committees should be given wide publicity among the respective groups and in the country at large.

The following statement of fact and the opinions expressed are based upon study of the reports and official records of the social unit work program and plans and upon a personal investigation of the conditions as they existed in the Mohawk-Brighton district in Cincinnati in August, 1919, supplemented by conference with evaluators, who had at other times during the summer of 1919 visited the district to study various other services contributing to the health of the community.

The Mohawk-Brighton district of Cincinnati lies in the centre of a section of the city whose population is largely industrial. It contains approximately 12,000 residents. The population is divided fairly

between Protestants and Catholics. In February, 1919, there were 1,447 foreign born residents.

District.	Cincinnati.
Area—167 acres or .261 square miles.	Area—4,589 acres or 70.4 square miles.
Population—12,000, approximately.	Population—414,248.
Density of population to the square mile, 45,900, or to the acre, 71.8.	Density of population, 5,800 to the square mile, or 9.2 to the acre.
Nativity—Of the 1,447 foreign born, 1,242 were born in Germany, Rumania, or Hungary.	Nativity—56,859 foreign born; 43,413 colored people in Cincinnati as a whole.
128 colored people in forty-three families.	

Thus we see that the proportion of foreign born in the Mohawk-Brighton district was twelve per cent., whereas for Cincinnati as a whole it was 13.7 per cent. For the Mohawk-Brighton district, the proportion of colored people was 1.1 per cent.; for Cincinnati as a whole, 5.4 per cent. Comparison by age groups reveals no essential difference between the population of the city as a whole and the population of the Mohawk-Brighton district. The Mohawk-Brighton district is a mixed residential, small business and factory district with paved streets, with water carriage sewage and storm water system, and a good water supply with the rest of the city. The canal, which traverses one end of the district, is a potential source of nuisance from offensive odors and from exposure of floating fecal deposits to transmission by flies. Careful research and inquiry failed to give evidence of mosquito breeding in the canal. The smoke nuisance is of esthetic importance rather than sanitary. Garbage collection is usually in metal covered cans and removal is in covered wooden wagons at sufficiently frequent intervals, twice a week, except in unusually hot weather when offense results on days when collection is omitted. Manure is allowed to collect in some premises and fly breeding is excessive at these places, which are, however, rare, as are the few premises where pigs and chickens are kept in an unsanitary manner.

Housing on the whole is good, there being no important degree of overcrowding, with the exception of a few tenements in one street. The buildings are generally low and often separated with front and rear spaces, the streets being of good width. The back alleys are often offensive from the remaining catch basins and privies, which, however, are being steadily reduced by health action. No private wells or water supplies are recorded. The only offensive trade in the district is the slaughtering of cattle, which is carried on with only local nuisance from smell within short distance from the plant. Food distribution and sale in stores or eating places are under inspection and grading, with the result that the industry appears to be carried on safely for the consumer. There is no systematic medical supervision of food handlers.

The area of the district is, except for a small steep hillside, low and flat, with considerable dampness in winter, but with a good surface drainage. Ponding of water does not occur. Conditions are similar or better in most parts of Cincinnati, but certain densely congested areas of colored popula-

tion present serious overcrowding to a dangerous degree, which does not occur anywhere in the Mohawk-Brighton district. The population concerned, the number of children born, the incidence of the diseases which may be considered and used as indices of community health are so small and the period during which services have been provided which may be considered to bear causal relationship with reduction and disease or death is so brief that presentation of statistical evidence as to mortality and morbidity rates appears unprofitable, and might lead to unjustifiable conclusions.

The medical, nursing and social services supplemented by verbal and printed educational propaganda in the subjects listed which properly come up for consideration were initiated on the following days as a result of action by the general and occupational councils:

Infant welfare	December 17, 1917
Prenatal care	February 1, 1918
Maternal services	April 1, 1918
Preschool examinations	April 8, 1918
Tuberculosis supervision	April 8, 1918
General medical examinations	November 1, 1918

Medical services are directed by the medical council composed of twenty-six of the thirty-eight physicians living or practising within the district representing the local medical profession through a paid executive selected by the physicians' group. Sixteen of these physicians are employed on part time at three dollars an hour, in professional work, examining children and adults at the centre. Rarely and only in emergencies is treatment given by these physicians at the centre. The care of the sick is not considered to lie within the province of the services so far called for by the citizens' council. Private hospital or dispensary care is arranged for as need arises and the individual case demands. The family physician is always informed if any need for treatment is discovered in one of his patients. Full freedom of personal choice of physicians is scrupulously protected and encouraged.

The social unit physicians do not do school medical inspections. All physicians employed in preventive work are selected by a committee of the medical council which is reelected every two months. The medical executive is now giving about five hours a day to the work. No physician's visits are made to the homes even of the needy, this service being provided by the district physicians of the health department. The field work is done by six nurses and a nurses' assistant. Each nurse serves all nursing needs in her district, whether prenatal, maternal or infant care, tuberculosis or general sickness, but she does not supervise or control the acute communicable diseases nor does she take part in school nursing. All nurses serve all nursing functions, and are trained in special types of services by the supervising nurse, or by others with special experience and from without the district.

The X Ray Treatment of Retinal Glioma.—Kaname Kusama (*American Journal of Ophthalmology*, September, 1919) reports three cases of glioma of the retina treated by x rays and radium. In each case the ocular growth was checked, but metastases occurred causing death.

TREATMENT OF BURNS.*

By A. W. HENDERER, M. D.,
Buffalo, N. Y.

A review of the literature of the treatment of burns leaves one without a definite course to follow and by way of apology for presenting the subject to you I offer the following reasons:

1. That the profession has taken too lightly the treatment of burns and without proper consideration.
2. That it is one of the most frequent, distressing and fatal accidents with which we have to deal.
3. That the profession has been satisfied to apply some ointment or solution and wait for the patient to get well or to die and that little or no scientific treatment has been applied.

The purpose of this paper is to emphasize the necessity of recognizing burns as a surgical condition and that treatment should be along surgical lines. The literature shows that burns have been treated with nearly every pharmaceutical preparation on the market and by methods from one extreme to the other, e. g., by the continuous bath and by the open air treatment. All of the treatment was empirical and after the hobby of someone, but without surgical consideration. The most that had been done for the patients was the application of cocaine in an ointment or the administration of morphine. During the war the subject of the treatment of burns had a great stimulus as had many other topics in surgery and medicine and to Dr. William O'Neill Sherman credit is due for the presentation to the profession of his magnificent work done at the war front and at Pittsburgh. His paper (1) on the work done gives a beautiful description of the wax treatment.

With the newer methods there is little difference in the treatment of burns of various degree and I shall not describe the different forms but adhere to the treatment only. The first consideration of the treatment is the attention to shock and here we are dealing with one of the most profound forms of shock, for some patients die within a few hours from the time of the accident. In severe burns the patients are in a state of severe shock and require morphine. Pain being the main cause of the shock, all means of its elimination should be resorted to, and morphine, scopolamine, hyoscine, and other drugs should be used. In addition to this stimulation may be necessary. Digitalis and pituitrin may be used. Shock is expressed by an acute acidosis and it becomes necessary to combat this condition.

In a recent case the acid index in the urine was eighty-six against the normal maximum of forty, and with the administration of alkalies the index dropped to normal and the patient who had been delirious returned to a normal state of mind and again became delirious as the acid index rose. There is also an apparent relation between the acidosis and the temperature of the patient. Sodium bicarbonate by mouth and Fischer's solution by rectum were used in this case. Any alkaline treatment will answer. The question of acidosis in

burns is important and as far as I know none have given this condition consideration, although Warbasse has called attention to the condition of shock in burns.

Our next serious consideration is that of toxemia. Parmenter some years ago likened the toxic symptoms of burns to ptomaine poisoning and that well describes the clinical picture. Weiskotten, of Syracuse, lately reported on the autopsies of patients who had died of burns and showed that for three days the toxin from a burn has a definite action on lymphoid tissue; and in fatal cases there are definite lesions in the adrenal glands, liver, heart and kidneys. According to Weiskotten, the changes were more marked in patients who lived longer than those who died on the first day. In the heart there were lesions that were similar to those following diphtheria, scarlet fever, and other severe infections. His conclusions are, that there are more or less definite lesions in the heart, suprarenals, liver, kidneys, and lymphatic tissues. That these lesions, together with those found in other tissues, indicate, in this class of cases, the presence of a more or less specific poison in the circulating blood. Where the toxins originate is a question, but it does seem that there is a definite relation to the toxemia and the retained and altered serum which is absorbed. It would, therefore, seem logical that the treatment should embody some method to prevent the absorption of the toxins from the serum.

The method which I have always employed has been to scrub the burn and this is by no means new with me, although many men have not heard of it and some are greatly shocked when this treatment is attempted. The treatment of a severe burn would be to at once administer an anodyne, viz: a full dose of morphine. Cover the damaged area with a clean towel or absorbent cotton, get the patient to the hospital as soon as possible, administer an anesthetic and remove the damaged tissue by scrubbing the burned area with ordinary hand brushes until the surface appears to be covered with normal tissue. In scrubbing the burned area all layers of skin may be damaged and come away. The object is to remove all of the destroyed tissue.

What does one hope to accomplish with this method? In the first place the tissue is doomed and if not removed by the surgeon nature will remove it by a process of ulceration which means, absorption of toxic substances, and the areas of burn are enlarged by the extension of the ulcerations through the proteolytic action of the leucocytes until the sloughs are cast off and the healing process is established. By scrubbing the surface this is accomplished at once and has a definite result; and in place of a foul smelling sloughing and leaking area, we have a clean surgical wound. The process of repair is established at once and the absorption of the rapidly forming toxins is prevented. A patient who has been treated by scrubbing is very much more comfortable than one who has been dressed with ointments or solutions, and the discharge is often nil as compared with the drenching which results when the patients are treated in the old way.

*Read before the Buffalo Academy of Medicine, May 7, 1919.

The scrubbing should be done as soon after the burn has occurred as possible but the length of time is not necessarily a contraindication, as I have scrubbed burns three days after their occurrence with happy results.

CASE I.—Mr. S. was caught in a bath room with the door jammed by an explosion of gas and was a prisoner for some minutes until he broke the window and escaped. He received burns on both arms and hands, head, face and neck; the tip of his nose and the edges of the ears were burned off. This patient was seen three days after the accident. He had a temperature of 102° F., was delirious and his face was swollen beyond recognition. He was anesthetized and the parts scrubbed, even to the denudation of the eyelids. Next day the delirium was lessened, temperature nearly normal, and the swelling diminished. The patient left the hospital in less than two weeks and was back to work in about a month.

Many of the patients who have inhaled fire are really cases of acidosis and sepsis and treatment of the general condition would improve their condition. The technic of the operation is of some importance. It should be done with surgical cleanliness, a number of brushes used and a stream of normal salt solution played over the wound during the procedure. Brushes are changed frequently and asepsis should be employed as much as possible. The wound may then be dressed with a thick covering of petrolatum on gauze on which a small amount of bismuth subiodide is sprinkled. The wound may be covered with wax, as will be described later.

I doubt whether the burn is sterile as is the opinion of some men. Most of the burns will show infection regardless of the care taken to prevent it. I have been asked if the shock is not dangerously increased by the scrubbing. This might be the case if the patient were not sufficiently anesthetized. Surgical anesthesia should be employed.

CASE II.—Mrs. B., seven months pregnant. She was dressed in her night clothes, passed before an open grate and her night dress caught fire. The dress was burned from her body before her husband reached her and extinguished the fire and she received burns on the back from the thighs to the shoulders, and on the arms and hands, one hand having third degree burns. The wounds were covered with a coating of petrolatum and cotton and the patient immediately removed to the hospital, put under the anesthesia, all damaged surfaces scrubbed and then dressed with petrolatum and bismuth subiodide on gauze. The patient recovered, and carried her pregnancy through to term. To-day the scars are scarcely visible and there are no contractions. The shock in this case was practically absent.

PARAFFIN TREATMENT.

The wax treatment of the wound is a distinct improvement over any of the methods that have been tried and the article by Doctor Sherman or the treatment given in Morse's *Emergencies in General Practice* beautifully describes the process. It has the great advantage of overcoming the pain of the burn and the dressings are changed with

little discomfort. Although this is denied by some, the covering by epithelium is greatly hastened. Whether this is so or not the scar and the epithelial covering that is produced under the wax dressing is much more pliable, more nearly approaches the normal, and the general results are ideal. I now follow the scrubbing with a dressing of wax, in preference to bismuth subiodide.

The wax treatment was advocated by Sandiford about fifteen years ago, but like many other things in medicine and surgery, it did not find favor at the time and it was not until it was used during the war that its value was appreciated. The use of it was especially emphasized through the efforts of Sherman and others who served at the front. It is applied hot either by a soft brush or by a special atomizer which has been put on the market for the purpose. Before applying the wax, the burned surface is dried with an electric drier such as that used by hair dressers. When thoroughly dried the surface looks as if it were varnished. The hot wax is then applied and a strip of absorbent cotton is laid over the wax and another coating of wax is placed over the cotton to incorporate it. Over this a layer of cotton is bandaged. For scrubbed burns this dressing is ideal and the subsequent dressings are much more comfortable. By taking hold of the edge of the wax film the whole dressing can be removed easily without causing pain. A thick pus-like exudate is found under the dressing when it is removed, which, in many cases, is not dangerous and little attempt need be made to remove it, but it is dried and a new dressing applied. Attempts to remove the exudate destroy the delicate new epithelium which rapidly forms, and if this is destroyed the healing time is lengthened. If, however, the temperature or the bacterial examination indicates that an infection of a pathological nature has taken place, then the dressing must be altered and here we can spray the surface with a solution of dichloramine-T, or Dakin's solution, or a milder, acborie dolicytic solution or some other antiseptic. Another method is to apply a mesh of parrazine Abbott and over this compresses of Dakin's solution. Dressings are to be changed every twenty-four hours until such time as the repair has been well established.

In conclusion I would say that patients with over one half of the body burned have been saved by the use of these treatments, that the resulting horrible deformities and disfiguration so often seen were greatly lessened. The dressings are bearable and often painless, the time of convalescence is greatly shortened. In view of this it would seem imperative that the treatment of burns should be surgical and the old methods of ointments and lotions of a hit and miss character should be discarded.

In the patients who have suffered large and extensive destruction of tissue, skin grafting may be necessary. With the methods described one has less necessity for the skin grafting.

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LONDON LETTER.

(From Our Own Correspondent.)

Address on Chronic Arthritis at the Royal College of Physicians.—Amalgamation of the Fellowship of Medicine with the Post Graduate Medical Association.—Decrease of Crime in England and Wales.—Medical Education in Great Britain.—Increased Vaccination Fees.—Registration of Nurses.

LONDON, November 13, 1919.

At one time or another a vast number of remarks must have been made regarding chronic arthritis. Theories as to its origin have been many, but at the present time these have crystallized into the one theory that it is an infection. If it is an infection, which seems to be conclusively proved, what is the most frequent area of infection? At the Royal College of Physicians, London, on November 6th last, Dr. A. P. Beddard discussed chronic arthritis in an intentionally somewhat discursive manner and brought out some very interesting points.

In a case of arthritis the first and obvious thing to do was to find the primary local lesion, treat that, and if possible cure it. In later stages of the disease, when secondary infection had set in, vaccination must be employed. For the relief of infection in joints many local measures were of value and even surgery might be necessary. Doctor Beddard emphasized the fact that medical practitioners did not sufficiently realize the importance of discovering the primary site of infection and of taking steps to eradicate the infection. One or two months each year at baths afforded temporary relief from pain, but in the long run were futile. They gave temporary relief and no more.

As for the primary area of infection, where was it most often to be found? According to Doctor Beddard in ninety per cent. of cases the primary infected area would be discovered in the gums. He insisted that the definition of pyorrhea alveolaris was too loose. It did not simply mean oozing pus from the infected sockets which could be detected by the unaided vision. The most dangerous cases of pyorrhea and those most likely to spread infection were not those in which pus oozed. When pus was oozing there was some slight relief, but when it was formed deep down in the teeth sockets and had no outlet it was absorbed into the system and frequently caused arthritis. The only way to determine with certainty was to have the gums x rayed. Further, every tooth found imbedded in a suppurating socket must be extracted. If left to the dentist in most cases a certain number of those teeth palpably infected would be taken out, but others with slight infection perhaps would be left, partly in order to afford a means of support to a plate. This, however, was a mistake, for if any one tooth was left in which there was a suspicion of infection, the joint infection would not be arrested. It was radical treatment that must be done and every tooth in the close vicinity, of which the x ray showed infection, must be taken out.

In the opinion of the lecturer most people were given to exaggerating the importance of tonsils as sources of infection. It was true that sometimes the tonsils were the site of a low grade toxemia, but they were not a common cause of infection and

it was seldom necessary to enucleate them on this account. The lung was an infrequent site of infection. An uncleared pneumonia might lead to infected joints.

Doctor Beddard held that it was unnecessary to point out that primary infection did not arise in the alimentary canal, but an active secondary streptococcal infection of the colon might keep up the joint trouble. Incidentally, the speaker remarked that Still's disease was nearly always accompanied by infection of the colon. Here Doctor Beddard slightly digressed so as to give his views with regard to extirpation of the colon. He said that if toxemia was present it was in a high degree dangerous to take out the colon without thorough immunization by means of vaccination. In his opinion the operation was very unsatisfactory, and, as a rule, the last state of the man thus operated upon was worse than the first. Vaccination did not do much good in the case of the alimentary canal and the bronchial tube, but assuredly was beneficial in infected joints. An infected uterus seldom caused arthritis, but if it was proved that it did cause joint infection, that organ must be completely removed.

The difficulty lay in the fact that there were often so many infected sites. The only way of demonstrating the true site of infection was by a process of elimination. The vaccine made from germs taken from an infected site that stirred up trouble in the joints showed that this was the primary site of infection. For example, Doctor Beddard said that in a particular case in which there were numerous sites the only vaccine that started pain in the joints was one made from bacteria taken from the gums. In early acute cases vaccination was not necessary, but in fairly advanced cases all the benefits that could be gained from vaccination would not be obtained unless a two years' course of vaccination was undergone. As a matter of fact, when the disease had gained a firm foothold in the system the best that could be hoped for was that it might be arrested, that is, that no fresh infection might be contracted. The worst feature of the situation was that patients did not come to be treated until the disease had gone too far. Early cases if treated properly were curable.

Perhaps the most striking point of Doctor Beddard's address was his insistence on the view that the gums were in the vast majority of cases the primary site of the infection which was followed by chronic arthritis. If this is so, it is also obvious that if the gums and teeth are kept in a healthy condition arthritis can arise in only a few cases. In this connection, it is curious to note, since Rigg first pointed out the existence of pyorrhea alveolaris, the number of diseases that have been attributed wholly or in part to this condition. It does appear that there is more reason in ascribing to pyorrhea the most prominent position as a causative agent of chronic arthritis and the other joint infections, than in some of the other diseases which have been attributed to it. In any event, it is in the highest interests of good health that the teeth and mouth should be kept in the most aseptic

condition possible. Even if it is faddish to urge extreme cleanliness of the mouth, it is wiser by far than the attitude taken by some, that of pooh poohing the influence that the teeth and gums exert upon the general health.

* * *

Another and very important step in the direction of the consummation of the scheme for making London the great medical postgraduate centre of Europe has been taken. The two bodies concerned in bringing about the completion of this project have now joined hands, so that the energy required to effect this object will be concentrated. The Fellowship of Medicine, which has conducted the emergency postgraduate course during the past eight months, and the Post-Graduate Association have now amalgamated under the title of The Fellowship of Medicine and Post-Graduate Medical Association. At a largely attended meeting of the combined councils of the two bodies held at the home of the Royal Society of Medicine on October 24th, it was resolved that the work of the fellowship and the association be continued for the present on the lines of the emergency postgraduate course, and that a detailed scheme be prepared for a permanent course. The following executive committee was appointed: Sir William Osler, Bart.; Mr. L. Bromley, Sir William Hale-White, Mr. W. Douglas Harmer, Sir Arbuthnot Lane, Bart.; Mr. H. S. Pendlebury, Sir Humphry Rolleston, Dr. V. E. Sorapure, Dr. Squire Sprigge, editor of the *Lancet*; Sir St. Clair Thomson, Dr. Dawson Williams, editor of the *British Medical Journal*; Dr. L. Aldrich Blake, Professor Buchanan, Professor Drummond, Professor Dean, Mr. M. L. Hepburn, Dr. A. F. Hurst, Dr. Robert Knox, Dr. Arthur Latham, Dr. J. Ridley Prentice, Dr. C. H. Roberts, Dr. Arthur Saunders, Dr. Thomas Shore, Professor Stanley, Mr. G. E. Waugh, Professor Wright, and Sir John Y. W. MacAlister. Mr. Philip Fremelin and Mr. H. J. Paterson, who were the joint honorary secretaries of the Fellowship of Medicine, hold the same positions in the amalgamated bodies. The permanent course is now being organized and in the next letter we hope to be able to give full particulars.

* * *

According to the annual report of the Prison Commissioners, issued recently, the volume of crime in England and Wales has declined steadily. During the war period the fall was greatly accelerated. Whereas in the twelve months ending on March 31, 1914, the total number of persons received into prison was 136,424, the aggregate for the twelve months to March 31st last was only 26,050. When every allowance is made for such special circumstances as the absence of a large part of the male population with the Forces, and the operation of the liquor restrictions, these are undoubtedly striking figures. With regard to liquor restrictions, reports from all prisons testify to their beneficial effects. It has been specially noticed among the women at Holloway that their general behavior, both on reception and during imprisonment, was more quiet and orderly than during former years, an improvement which in the opinion

of the authorities there was due chiefly to the restrictions imposed by the present law as to obtaining drink at all times and occasions, and the consequent and inevitable degeneration of character that must ensue. The commissioners draw the conclusion from the remarkable decrease of crime, that the prisons might be largely emptied of the petty offender when the conditions of labor were such as to secure full and continuous employment for all; and when at the same time the restrictions placed on the consumption of alcohol prevented the dissipation of wages in procuring drink. They further expressed the general opinion that a social system which could facilitate the means of employment, while at the same time maintaining sobriety at its present level, would incidentally find in such measures the solution of the penal problem. War conditions, however, have tended to increase rather than reduce the numbers of young offenders, due largely to the fact that school attendance was almost stopped, that youths and girls and even children were earning good wages during the war, and that owing to the chaotic state of affairs produced thereby, authority was set at naught and license to some extent prevailed.

* * *

The medical education of the future is providing some very knotty problems for solution. If the practice of medicine is in the melting pot, as many here say it is, then medical education should be in the melting pot also. If the practice of medicine is to be more and more of a preventive character until eventually it is more preventive than curative or remedial, medical education must be organized and arranged so that it is in accordance with the tendencies of the times. It thus appears that medical education in Great Britain, which by the creation of a Ministry of Health is pointing the way to an era of preventive medicine, must be reorganized very considerably. Moreover, over and above the question of the more thorough teaching of preventive medicine in all its branches, obtrudes the decidedly troublesome fact that the curriculum of the medical student is overcrowded already. The average medical student is unable to properly digest and assimilate the various subjects that are jammed into his medical course. The consequence is that not infrequently the young medical graduate does not possess a useful working knowledge of any one branch of medicine and surgery. He has to learn by experience after graduation.

* * *

A Nurses' Registration Bill, which was introduced recently by Doctor Addison, the minister of health, into the House of Commons, is the successful outcome of a number of conferences that have been taking place over an extended period with the various nursing associations. It provides for a council to take charge of the registration of nurses and to supervise the standards of training, and represents an agreement which the minister of health has reached with the chief bodies interested whose differences were prominently before Parliament in connection with two bills introduced during the summer. It is anticipated that a second reading of the bill will be taken at an early date.

Editorial Notes and Comments

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THE SURGEON AND ARTIFICIAL LIMBS.

It has always been considered that the soldier, crippled while in the service of his country, deserves not only the attention of the surgeon for the repair of his tissues, but also for the restoration of his usefulness to himself and the community. One of the first of the great surgeons in modern times to give much attention to this subject was Ambrose Pare, in the sixteenth century, and nearly all of his experience was gained in time of war. He emphasized the fact that the surgeon must plan his amputation so that the artificial limb will be as useful as possible and that it is necessary to treat the patient's body while he suffered from the effects of the injury which necessitated the amputation. He should give him the benefit of his experience with regard to prosthetic substitutes for the amputated part with directions how to keep the stump in the best possible condition to make it useful in connection with the artificial limb.

To allow men to use crude, artificial limbs, peg legs, and the like for the lower extremities and metal hooks for the arm, has an unfortunate effect upon the mood with which a man faces life and tends to lower his earning capacity thereafter. The unfortunate cripple settles down into any sort of an occupation by which he can make anything approaching a living and scarcely hopes for something better.

It is extremely important for success that a man shall not be handicapped by disfiguring prosthetic apparatus. As far as possible he should have the

appearance of a normal individual as he moves about and that he give no immediate sign of the fact that he is a cripple. Over and over again it has been found that when young men particularly were not permitted to wear crude apparatus, but were properly fitted with artificial limbs, their attitude toward life changed and instead of looking for help they helped themselves.

It is this idea that has been emphasized particularly in regard to maimed soldiers. Sir Arthur Pearson insisted that even for the blind a hopeful attitude of mind meant a great deal in enabling them to become independent of their infirmity and even become selfsupporting. The conservation of a properly hopeful attitude of mind toward life is an extremely important thing for those who have been maimed in any way. The late war forcefully taught this lesson. The recognition of the application of this will mean much for the thousands of industrial cripples which we are sure to have, in spite of the safety first and other movements that have been so successfully lowering our accident rate in recent years. Civil surgeons, however, will have to learn the lesson that has been brought home to the military surgeons and which they are not likely to forget. Even the seriously crippled may be brought to face life with a hopeful attitude of mind that will mean much to enhance the chance of success.

THE SYMPTOMATOLOGY OF MYCOSIS FUNGOIDES.

A typical mycosis fungoides, when it has attained its full development, is a dermatosis, distinctly characterized and easy to recognize when one has previously seen one or two examples, because no other cutaneous morbid process resembles it. There are three phases of the lesion, namely, the eruption, lichenoid lesions, and tumors. The eruptions resemble erythema, eczema or urticaria. At first fugitive, the eruption acquires duration. It is not much effaced by pressure and soon becomes covered by a whitish squamous coat; it is occasionally pruriginous and is slightly elevated. Later this eruption gives place to irregular, rough, mammillated lichenoid patches, of a reddish tint and showing an edematous infiltration. Tumors often develop in the lichenoid patch. The patch tumefies, forming a mammillated, semilunar or oval elevation, sometimes irregular in outline on account of confluence of several neoplasms; they are usually bright red, sometimes dark red or vio-

let, more rarely a yellowish white. These are the typical lesions.

When the process begins with tumors the clinical picture changes. In this form the onset is silent, the patient first discovers a small lump which gives rise to no symptoms, but if one examines the process at this time the lesion has the aspect of a small elevation of a bright rose or red violet color, sometimes even brownish, and quite distinct from the surrounding cutaneous surface. The small lesion is not long in increasing in size and finally attains disquieting proportions. At this period there are generally several similar lesions in divers stages of evolution and therefore present different aspects. Some are small, smooth, shiny, resembling an immature boil; others are larger with distinct contours, covered with yellowish or brownish crusts which are the products of suppuration. If the crusts are removed large neoplastic masses are exposed; they are rose yellow in color, soft, fungous, suppurate freely although not frankly ulcerated, because they appear to be covered by a thin epithelial layer.

These tumors are often isolated, but more frequently they are in groups, and as they enlarge they become confluent, forming a single mass with a semicircular contour. Continuing its evolution the tumor of mycosis fungoides suppurates and gives off a rather thick secretion which forms crusts. It is rarely fetid. The centre of the tumor suppurates while the borders, which are always distinct, seem to become effaced and recede from the centre. Then one of two things occurs: either the suppuration is free, giving rise to considerable loss of tissue, even down to the bone, or a brownish slough is produced which may become detached by the suppuration, bringing to view a flat scarred looking surface. If the tumor, which has disappeared, is seated on the scalp or on the region covered by the beard, the hair will usually stop growing and a vast area of cicatricial tissue remains.

The consistency of these tumors is firm. They are smooth, with a distinct rose colored or brown contour, and as they move with the skin it is evident that they are intradermic. They do not cause pain and are usually insensible to pricking or cold. They are encountered anywhere on the cutaneous surface, but they seem to have a predilection for the neighborhood of the joints and the natural orifices, which they deform. Finally, we would mention as a characteristic symptom the presence of an intense dark red erythematous areola, as much as several centimetres in width, accompanied by an edematous infiltration of the integuments. This special form of erythema belongs to this morbid process and seems to prepare the way for the

parts which will become involved when the tumor increases in extent. As a consequence of these tumors extensive gangrene may occur, this probably being due to occlusion of the vessels surrounding the tumor.

INTESTINAL OCCLUSION IN TUBERCULOUS PERITONITIS.

Intestinal occlusion rarely occurs during tuberculous peritonitis, regardless of the varied and numerous lesions created by the process. Occlusion is twice as frequent in the female in both the acute and chronic type of this disease and is encountered at any age. Acute occlusion is most frequently the result of intestinal paralysis, a band, an intestinal kink, and much more rarely invagination, volvulus or torsion of the mesentery. Chronic occlusion is produced by agglutination of the intestinal coils, multiple bands, or fibrocaseous masses. The ascitic form of tuberculous peritonitis does not give rise to occlusion. The acute miliary form provokes occlusion by the mechanism of intestinal paralysis. Other causes of occlusion result from chronic peritonitis. Paralysis may intervene in occlusions produced by a real obstacle and superimpose its action to that of a band or kink. Generally speaking, the lesions are much more extensive in chronic occlusion than in the acute forms.

An occlusion may arise during a tuberculous peritonitis which has been recognized, but it is often encountered as an initial accident of a latent tuberculosis of the peritoneum. In these circumstances the diagnosis of the tuberculous nature of the lesions which provoke the occlusion is difficult, if not impossible, to make. Given an acute occlusion, one should always think of tuberculosis and look for tuberculous localizations which may indicate the way to the diagnosis. It is to be remembered that an acute occlusion from tuberculous peritonitis may closely simulate appendicitis or acute peritonitis. The fecal vomiting is not constant and not necessary for diagnostic purposes. Complete stercoral arrest and a thermic drop are sufficient evidences of occlusion.

When diagnosis is doubtful, abdominal incision should be resorted to if only to discover the nature of the morbid process and site of the lesions, while at the same time it is the best form of treatment. Medical treatment may be essayed in acute occlusion, and if too much time is not wasted in the use of electric enemata these should be tried, at least at the onset of the symptoms and especially in circumstances where an immediate operation is an impossibility. Abdominal incision is the treatment of choice in acute occlusion and the one which

offers the greatest benefits to the patient, but it must be carried out as rapidly as is consistent with good surgery. Exploratory laparotomy has given unquestionably good results when the occlusion has been due to paralysis of the gut. Enterotomy should be employed preferably in circumstances where a proper technic cannot be carried out or where the patient's condition demands rapid work. In chronic occlusion, where the lesions are usually extensive, operation is not to be rejected for this reason, because after exploring the abdominal cavity an artificial anus or an enteroanastomosis can be done according to the demands of the case. A considerable retrogression of the lesions and pseudotumors—occasionally their complete disappearance—is frequently observed after abdominal incision.

The prognosis of intestinal occlusion in tuberculous peritonitis is serious and the operative mortality is greater in the acute than in the chronic forms, being twenty-four per cent. in the former and eighteen per cent in the latter. The mortality from generalization of the tuberculosis is fourteen per cent. in acute occlusion and thirty-two per cent. in the chronic forms. Recovery is sixty-one per cent. in the acute types, as against fifty per cent. in chronic occlusion.

THE NEED FOR THERAPEUTIC TEACHING.

"The teaching of therapeutics is one of the weakest points in the training of the medical student" are the words of Doctor McCrudden, taken by Professor Walter A. Bastedo, of the College of Physicians and Surgeons of Columbia University, as the text of a paper read before the American Medical Association at its seventieth annual session. In view of the fact that Professor Bastedo is himself a teacher of clinical medicine, the admission which he makes as to the shortcomings in the teaching of clinical medicine is most interesting. "The clinical therapeutic teachers," he says, "must be practising physicians, men who will understand the needs of the sick patient in the home and the physician's office, and will take cognizance of all factors, from outside the patient as well as from inside him, that may influence the patient's mental and physical comfort. I am mindful of the words of Sir James Mackenzie in speaking of cardiac decompensation: 'It may be taken as an axiom that if the patient does not get sufficient sleep he will never get well,' and of those of Ray L. Wilbur: 'Reassurance is often as comforting as opium and has fewer after-effects.' Indeed, a sick body is not infrequently only the physical expression of a sick mind. In

many instances, the removal of an outside influence has an important scientific value as a measure of treatment, and has as pronounced a physiological action as the most potent drugs. We could not do better for our students than have them see at work those clinicians who appreciate the personal relations of the patient, and who not only inspire by their erudition and enthusiasm, but also show that humanity that always leaves the patient, whether poor or rich, better in spirit because of the medical interview. Such men always remember that they are treating a patient that has a disease rather than a disease that has the patient."

Doctor Bastedo points out that "in our clinical work we are not treating tonsillitis, typhoid fever and gastric ulcer, each with its numerous possibilities in the way of symptoms, but we are treating a particular patient with tonsillitis, typhoid fever or gastric ulcer at the particular stage and with only such conditions or symptoms as that particular case manifests."

Doctor Bastedo admits that "even hospital training leaves the graduate therapeutically unfit; and this may be accounted for, without reproach to the attending physicians, by that fact that today the hospital services are as large as they were when internal medicine was a much smaller subject. So that by the time the attending physician has ended his discussion of the complex and intellectually stimulating problems of diagnosis, he lacks the time to do more than outline the treatment in a brief and routine fashion, and frequently leaves it entirely to the youthful house physician." The cure to existing evils can only be made, so he says, by such a division of labor in the hospital and dispensary as will enable the men to give equal attention to diagnosis and treatment. The therapeutic measures taken should be recorded carefully for the benefit which they may be when collated and analyzed. Every therapeutic recommendation should be required to meet the challenge of experimental test. "A physician's ability to treat his patients successfully is what constitutes his direct personal value to them, and it is the *raison d'être* of his calling.

The public still looks on a doctor as a healer, but under the present system of instruction he is likely to know little of the healing art when he leaves his school. That the practitioner himself recognizes and deplors this fault in the curriculum is shown by the fact that ninety-one per cent. of the alumni of a medical school in response to a questionnaire asked that more *materia medica* be taught in the school. They were engaged in the practice of medicine and felt that they should know more about the subject.

PHYSICAL EXAMINATION OF STUDENTS IN THE UNIVERSITY OF TORONTO.

Universities throughout this continent and in Great Britain are experiencing difficulties in providing tuition for the increased bodies of students, owing to the return of soldier students from overseas service. In no university is this condition more marked than in the University of Toronto which, in addition to the regular annual influx, has to provide for at least a thousand soldiers who have returned to their *alma mater*. The department of arts has an enrollment of 1,600; a soldier matriculation class of about 175; medicine comes second with 1,093; dentistry, 800; school of science, 700; faculty of forestry, 43; a pre dental class of twenty-five with fifteen women in the dental nursing course.

The authorities of the University of Toronto have made it compulsory that every male student of the first and second years shall take some form of physical exercise at least two hours each week. Therefore, all are required to undergo a physical examination and elect the form of exercise desired. In examining these students, Dr. J. W. Barton, the physical director, states that seventy-five per cent. of the students at the university have been found physically fit, and have been placed in category A. As a consequence the students are permitted to engage in such exercise as they choose—soccer, rugby, basketball, indoor baseball, or hockey. It was found that thirteen per cent. of the students were in category B; and while they are allowed to select the athletics they will indulge in, they are guided therein by the advice of the physical director. In category C, ten per cent., are placed those who are allowed to take physical exercise which has been prescribed for them by the physical director. One per cent. of the students were assigned to category D, or as temporarily unfit; and but one per cent. to category E, permanently unfit.

This means that the basis of fitness is founded on military fitness and, if the age limit of military service were lowered to eighteen years, there would be seventy-five per cent. of the student body at the University of Toronto fit for any branch of the service; fifteen per cent. for service in Army Medical Corps and Army Service Corps but not for front line work; ten per cent. fit for service in Canada only; one and one quarter per cent. likely to be raised to categories A, B, or C, and three-quarter per cent. totally unfit for service.

An interesting fact revealed by the physical examinations was that in medicine there were twenty-five per cent. unable to swim; arts, twenty-three per cent.; science, ten per cent. The department of science had the best record for service of any of the faculties in the Great War. Their line of work prior to the war, surveying, mining, bridge and railway building, may have had something to do with this. Not only had that department the greatest record for overseas service, but they had the greatest proportion of returned men, because the men were older. In arts and medicine fifty per cent. of the students were under military age; in science thirty-five per cent. of the boys were under military age.

News Items.

Doctor Osler Reported Better.—Sir William Osler, regius professor of medicine at Oxford University, who has been ill for some time, is reported slightly improved.

Metric System for the United States.—A campaign for the establishment of the metric system throughout the Anglo-Saxon nations is being carried on by the World Trade Club, San Francisco.

Amputations in the A. E. F.—As a result of war injuries suffered by our forces overseas, it is estimated that the number of major amputations (amputations of an arm or leg or both) was about 3,800.

Doctor Crile Gives \$100,000 to Western Reserve University.—Dr. George W. Crile, of the surgical staff of the school of medicine of Western Reserve University, Cleveland, has given \$100,000 to endow a chair of surgery in the school.

Historical Division in Army Medical Department.—A historical division which will handle all matters pertaining to the medical and surgical history of the war has been created in the surgeon general's office. Colonel Charles Lynch, M. C., is chief of the new division.

May Quarantine Toronto in Smallpox Epidemic.—The provincial authorities have asked the City Council of Toronto to make smallpox vaccination compulsory, it is stated in press dispatches from that city. If the council fails to comply with this request Toronto may be quarantined.

Anniversary Meeting of the Northern Medical Association of Philadelphia.—The Northern Medical Association, of Philadelphia, will celebrate its seventy-fourth anniversary with a reception in honor of Dr. C. Lincoln Furbush, incoming director of public health of Philadelphia, on the evening of January 9th.

Southern Gastroenterological Association.—At the annual meeting of this society held November 10th in Asheville, N. C., the following officers were elected: President, Dr. Sidney K. Simon, of New Orleans; vice-president, Dr. George M. Niles, of Atlanta, Ga.; secretary-treasurer, Dr. Marvin H. Smith, of Jacksonville, Fla. (reelected).

Base Hospital Reorganized.—Base Hospital No. 19, recruited, for the most part, from the Rochester, N. Y., General Hospital Staff and stationed at Vichy, France, has been reorganized on a peace basis as a reserve hospital under the Rochester chapter of the American Red Cross, with Dr. Edward W. Mulligan as commanding officer. The War Department will return to Base Hospital No. 19 its equipment, valued at \$800,000.

Queens-Nassau Medical Society Officers.—At its annual organization meeting held on December 9th in Jamaica, L. I., the Queens-Nassau Medical Society elected the following officers: President, Dr. A. D. Jacques, of Lynbrook; vice-president, Dr. P. C. Chalmers, of Forest Hills; secretary-treasurer, Dr. James S. Cooley, of Mineola; chairman of board of censors, Dr. R. F. Macfarlane, of Long Island City; historian, Dr. Walter Lindsley, of Huntington.

Government Buys Hospital Site.—The federal government has taken over the property at Hudson and Harrison Streets, New York, for the Public Health and Marine Hospital Service. The property was formerly used by the New York Hospital as a House of Relief.

Board Votes \$11,000 for Addicts' Hospital.—The Board of Estimate of New York City has voted \$11,000 to permit the continuance of the Riverside Hospital for drug addicts on North Brothers Island. Later a method will be determined to raise the remainder of the \$38,000 requested by Health Commissioner Copeland to carry on the work until the first of the year.

Tuberculosis Hospitals Have Vacancies.—More than a thousand vacancies in hospitals and sanatoriums in New York are available for the treatment of tuberculous patients, and Commissioner of Charities Bird S. Coler states that all persons afflicted with tuberculosis should make immediate application for treatment. This is a greater number of vacancies than have existed for years.

Rockefeller Foundation Appoints Dr. Richard M. Pearce.—Dr. Richard M. Pearce, of Philadelphia, has been appointed general director of the divisional medical education of the Rockefeller Foundation. He will aid in formulating plans for developing medical education in countries outside the United States, and will work in cooperation with the general education board in its program for medical education in the United States.

English Surgeons Given D. S. M. at Clinical Congress.—Sir Anthony Bowlby and Sir Robert Jones, the English surgeon who taught the American Expeditionary Force war surgery as practised on the British front, were presented with Distinguished Service Medals at the closing session of the Clinical Congress of the American College of Surgeons. Surgeon General Merritt E. W. Ireland made the presentation of the medals.

Dr. Henry K. Oliver Harvard Benefactor.—With the recent death of Dr. Henry K. Oliver, of Boston, is disclosed the fact that Dr. Oliver was the anonymous giver of several hundred thousand dollars to Harvard University for the establishment of a department of hygiene. The name of the donor has been unknown except to the very few who have undertaken to put the gift into practical form. Under this foundation Dr. Roger Irving Lee has been operating as the first professor to occupy the new chair.

Vital Statistics.—During the past five months an average crude death rate of 10.5 in 1,000 population has prevailed in New York State. This, says the Official Bulletin of the State Department of Health, is the lowest rate ever recorded for this State. The reduction is general for all important causes and quite marked for pneumonia (all forms) and tuberculosis. The rate for New York city in October was 9.1 and for the State outside New York city 11.7, or 10.3 in 1,000 inhabitants for the State as a whole. The number of deaths from automobile accidents in the State jumped from seventy-nine in September to 128 in October, which is forty more than the monthly average.

New York Academy of Medicine Election.—At a stated meeting of the Academy on December 4th the following officers were elected: First vice-president for three years, Dr. Rufus I. Cole; trustee for five years, Dr. W. Gilman Thompson; member of committee on admission for five years, Dr. Sidney Rogers Burnap; member of committee of library, Dr. Cary Vogel.

Scientific Association Meets in St. Louis.—The American Association for the Advancement of Science will meet during the week of December 29th in St. Louis, Mo. At this meeting Dr. Simon Flexner, director of the Rockefeller Institute, will replace Prof. John M. Coulter, of the University of Chicago, as president of the association. Doctor Flexner is the third medical man to assume the presidency within the last twenty years.

Southern Medical Association.—The thirteenth annual meeting of the Southern Medical Association was held November 10th to 13th in Asheville, N. C., under the presidency of Dr. Lewellys F. Barker, of Baltimore. The following officers were elected: President, Dr. Edward H. Cary, of Dallas, Texas; vice-presidents, Dr. Henry H. Briggs, of Asheville; Dr. Alfred L. Gray, of Richmond, Va. Louisville, Ky., was selected as the next place of meeting.

State Takes Naval Hospital.—The naval hospital which was erected on Ward's Island during the war has been taken over by the Manhattan State Hospital, also on the Island. The naval hospital consists of about twenty buildings, including a laundry, garage, substance building, officers' quarters, nurses' quarters, storage buildings, and various medical and surgical wards. There are accommodations for about 1,000 patients. Most of the new space will be occupied by patients removed from the East Building of the Manhattan State Hospital, which is to be renovated and fitted up as an infirmary for men. The naval hospital has been turned over to the State under the terms of a contract made before its erection and now becomes permanently the property of the State.

Personal.—Dr. Nathan W. Soble, 2300 East Avenue, Rochester, N. Y., has been reappointed to the Child Welfare Board of Monroe County.

Dr. Charles E. Norton, of New York, director of the Rochester Milk Survey, has completed his work and filed his report with the commissioner of public safety.

Dr. James H. Jackson, founder of a large sanatorium at Dansville, N. Y., which is now being used as a hospital for mental cases by the U. S. Public Health Service, has been freed by a jury in the Jackson-Gorham conversion case of the allegation of intent to "hinder, delay, or defraud."

Dr. Henry Barr Ingle, of Philadelphia, has been elected medical director of the Charity Hospital of that city to succeed Dr. Wilmer Krusen, resigned.

Dr. Harry D. Clough has been appointed to the faculty of the University of Rochester, to serve under Dr. John R. Murlin, head of the department of vital economics. Doctor Clough will conduct electrocardiographic studies in connection with physiological studies on nutrition. He is a graduate of Johns Hopkins University.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Intravenous Injections of Antimony Tartrate in Bilharziasis.—J. B. Christopherson and J. R. Newlove (*Journal of Tropical Medicine and Hygiene*, July 15, 1919) have treated seventy cases of bilharziasis, both rectal and vesical, at the Khar-toum Civil Hospital with intravenous injections of antimony tartrate. They have now under observation patients thus treated nearly two years ago without a sign of relapse in the interval. A sterilized solution of the antimony salt containing one half grain to twenty minims of distilled water is used. Treatment commences with the injection of one half grain diluted to about forty or fifty minims with normal saline solution. Injections are given on alternate days, equal parts of the antimony solution and normal saline being used when larger doses are reached. The dose is increased by half a grain at each injection until two or two and a half grains have been attained, and this is continued. In boys of sixteen or under, however, one and a half grain is the maximum dose. The total amount of antimony tartrate injected is twenty to twenty-five grains, according to circumstances. If more than the latter amount is required, the surplus needed should be reserved for a second course of injections after an interval. Side effects seem to be less when the injections are given three or four hours before mealtime. In vesical bilharziasis, visible red blood disappeared from the urine when about four grains had been injected, and in about fourteen days, after about twenty grains had been used, the residual smokiness suddenly disappeared also, the urine appearing quite clear and normal. In one of the early cases the patient was given as much as thirty-six grains in thirty-one days, but then began to show evidences of chronic antimony poisoning. The urine of a patient who has received twenty-five grains still shows bilharzia ova, but these are unable to hatch, and the authors believe antimony treatment to be actually curative. Where the infection has caused cystitis, the bladder should be washed out and the urine will eventually return to normal.

Treatment of Abscesses of the Lymphatic Glands.—J. A. Hofheimer, (*International Journal of Surgery*, October, 1919) asserts that abscesses of the lymphatic glands may be ascribed either to a diathesis or to some form of infection influenced by internal or external causes. These adenopathies may be present in various parts of the body and are readily palpable at times. There are occasions in which the infection of the glandular stroma is so slight that it is only on close examination that the enlargement of the glands will be manifest. The size of the gland does not always indicate the extent of the infection, but it seems that the more acute and demonstrable the inflammation appears, the more promptly relief is sought and the amelioration of symptoms and reduction of infection obtained. The lymphatic glands served as reservoirs on the course of the lymphatic vessels

through which irritants and infectious materials passed. Cold and overexertion acted as local depressants and thus indirectly favored the development of adenitis. Adenitis might result from contiguity from the propagation, by contact, with neighboring inflammation. It might and frequently did develop by continuity following lymphadenitis. It could also be produced by embolism, due to the transportation of septic or irritating material generated in the system or coming from without. The bacterial causes were usually pyogenic cocci, tuberculous bacilli, or the *Bacillus pestis*. Gonococci have been found in the pus of inguinal glands which have suppurated in cases of specific urethritis. Inflammatory conditions of the lymphatics with resulting abscess formation could be caused by infected or suppurating wounds in the vicinity of the involved glands, or communicating with them through the chain of lymphatic vessels. Diphtheritic, tonsillar, adenoid and scarlatinal inflammations affecting the throat could cause suppurative infections in the cervical or supraclavicular glands. Gonorrhea, syphilis, or bubonic plague could affect the inguinal glands. Tuberculosis, erysipelas, and actinomycosis could cause abscesses locally or in disseminated groups throughout the body.

The noninflammatory causes of enlargement of the lymphatic glands were lymphadenoma, lymphosarcoma, sarcoma, carcinoma, leucemia, and Hodgkin's disease. Lymphadenitis secondary to noninflammatory causes rarely suppurated unless some intercurrent complication supervened and in this case it was usually found that the primary cause was thereby stimulated into greater activity. The situation of these glandular abscesses varied, the most frequent being the cervical region. Glandular abscesses, especially when located in the neck, seemed to attack the young more frequently than after the age of puberty. It has been concluded that there is a glandular temperament just as there is a nervous or a muscular. Many cases have been recorded in which a rapid infection has occurred due to slight trauma. It has been stated that cracked lips may admit microbes and cause cervical adenitis.

Skin diseases, often cause glandular abscesses. Adenoids may be the prime cause of lymphatic abscess and frequently form the pretuberculous stage. Insect bites may cause secondary lymphatic gland infection. The glands in the groin rarely suppurate though they are frequently enlarged. Inguinal hernia has been mistaken for adenitis. The glands about the knee, wrist, or ankle may enlarge but they are rarely subject to abscess formation.

The treatment of enlarged lymphatic glands before the formation of pus depends on the underlying cause, the condition of the patient, and the environment. In cases of acute adenitis a probable exciting cause should always be looked for and removed when possible. All sources of infection and

irritation should be carefully investigated. A small abrasion may be the entrance point of a severe infection. If seen early, cold applications may limit the glandular hyperemia. It has been stated that cold inhibits the growth of bacteria, but when it is applied too late it favors the death of the cells. The region in which the affected gland is located should be supported and placed at complete rest, with posture that will limit the arterial flow while favoring the venous return, thus tending toward the reduction of the congestion. No drug or combination of drugs has proved satisfactory. Mercurial ointment is effective when the glands have a specific tendency. Some success has been obtained by using an ointment consisting of equal parts of unguentum potassii iodidi compositum, unguentum belladonnae, and unguentum hydrargyri. This is unpleasant in appearance, but when applied on gauze and under a firm cotton pad and bandage affords great relief. Several cures have been reported from the interstitial injection of a five per cent. carbolic solution. When pus has formed the glands should be freely incised and thoroughly curetted and every sinus leading from the gland properly drained. It may be necessary to use local or general anesthesia. If the degenerative process has progressed it may be necessary to remove an entire chain of glands. It is well to irrigate the wounds with solutions of iodine and normal saline and insert a drain for a few days. The use of vaccines may abort the stage of abscess formation. Tonic treatment should be instituted. The iodides in various combinations have been effective internally and externally. Milk and milk foods, bone marrow, fatty foods, and cereals are advised in these cases. Rest out of doors after the cure should be indulged in.

Spinal Puncture in Brain Surgery.—C. C. Coleman (*Virginia Medical Monthly*, October, 1919) lays stress on the serious and even fatal consequences that may follow lumbar puncture because of failure previously to recognize increased intracranial tension, especially that arising from a tumor or trauma below the tentorium. In such patients spinal puncture should be most carefully performed, in full knowledge of the symptoms and dangers which may follow. In recent head injuries, puncture is often imperative, primarily to determine tension from hemorrhage or edema, secondarily to ascertain whether blood has been poured out in the cerebrospinal spaces and to determine the necessity of prompt subtemporal decompression. The ocular fundi should be examined as a routine in brain trauma. In certain mild borderline cases without depressed fracture or clot and without threatening pressure manifestations, repeated spinal punctures give prompt and permanent relief. This may also be the most effective treatment in patients seriously shocked by a head injury, with blood extravasation from a torn sinus or large vein, and unfit for a major surgical operation. In cerebral hernia following trauma, daily puncture is practically a specific provided there is no progressive intracranial pathological state. In latent abscess with brain protrusion, it helps to differentiate between simple and complicated hernia. Puncture is often necessary for ascertaining the type of hydrocephalus,

phenolphthalein being injected in the spinal canal and sometimes in the lateral ventricle. If the internal obstructive type is suspected it must be done with the greatest care. In brain tumor, puncture often yields a yellow fluid. In high tension due to a subtentorial tumor, diagnostic puncture is relatively unsafe. Wegeforth has shown that where a blood culture shows septicemia, spinal puncture should not be done unless the patient already has meningitis, or if it must be done for diagnostic purposes, only the smallest quantity of fluid should be withdrawn through a very fine needle so that postpuncture leakage will be negligible. Where high tension is suspected, puncture should be done with the patient's head and shoulders lowered, a mercury manometre always used, and in case of high tension only the least quantity of fluid for cell study removed and the fluid allowed to escape a few drops at a time. Occipital pain or impaired pulse and respiration indicate immediate stoppage and, if required, artificial respiration. In severe medullary compression due to removal of spinal fluid and jamming down of the medulla, aspiration of the lateral ventricle should be promptly done.

Tubercle Bacilli in External Tuberculosis.—

A. Demolon (*Paris médical*, September 20, 1919) found direct examination for tubercle bacilli very unreliable in the case of pus from cold abscesses without secondary infection. In pus from lesions with secondary pyogenic infection, however, a much higher percentage of positive findings was noted. Vegetative multiplication of the tubercle bacillus seems to be favored *in vivo* by the simultaneous development of pyogenic germs. Where the bacillus occurs in large numbers, e. g., in sputum, it is never present in pure culture. In an apparently aseptic serofibrinous pleural effusion, however, the bacillus cannot be seen, though it is known to be present through other procedures. If a septic wound involving the pleura is superadded, the effusion, at the same moment as it becomes purulent, contains readily demonstrable tubercle bacilli. Thus, in general, it is necessary to inoculate guineapigs with pus from external tuberculous lesions, for diagnostic purposes. In the case of cold abscesses without sinus formation, the inoculation may safely and with advantage be made in the peritoneal cavity. The author always injected simultaneously two mills of pus intraperitoneally and one mill subcutaneously in the right thigh. Poor results followed only where the pus injected smelled strongly of the camphor naphthol solution used in the treatment of the abscesses. Autopsies of the guineapigs were made forty days after inoculation. The spleen and lumbar lymphatics particularly showed tuberculous infiltration. There was no abscess nor ulceration directly at the site of injection, owing to the absence of pyogenic germs. Repeated inoculations from a cold abscess may be persistently positive up to the time the abscess dries up. Clinical cure may result, therefore, by a process other than sterilization of the focus of infection. The virulence of the bacilli, as estimated from the rapidity and extent of the lesions produced in guineapigs, did not seem to be influenced by the treatment clinically applied.

Esophagotomy for Foreign Bodies.—Lionel Collidge and G. A. Ewart (*Lancet*, October 25, 1919) contribute the accounts of two cases of impacted foreign bodies in the esophagus in children, in both of which it was not possible to remove the bodies by endoscopy. Manipulations through the esophagoscope were abandoned before any damage had been done to the esophagus and in both instances the body was removed through esophagotomy through the neck. Both children made rapid and complete recoveries, although there was some leakage through the esophageal wound for some time after operation. The authors contend, that esophagotomy is not a dangerous operation, as it is commonly considered, if precautions are observed not to injure the esophagus by internal manipulations and if during the period of leakage the liquids given as food are sterile.

Chronic Hemorrhagic Nephritis.—Hector L. Caretti (*La Semana Medica*, October 16, 1919) considers that this is a clearly characterized syndrome the existence of which cannot be doubted. Essential hematuria is a myth and it is generally nothing else than a chronic hemorrhagic nephritis. Infectious diseases, including syphilis whether congenital or acquired, play the principal rôle in the etiology, according to extensive clinical observations. Symptomatic treatment plays a secondary part and the physician should go carefully into the etiology of the syndrome so as to be able to outline a rational and efficacious therapy. Inasmuch as lues is the one etiologic condition which has a specific treatment its diagnosis and complete eradication is of the utmost importance. Surgical measures should be considered when medical means have failed, and the exact method and technic of operation is to be decided upon after the kidney has been delivered through the incision.

Modern Treatment of Wounds.—Walter Lathrop (*International Journal of Surgery*, September, 1919) states that from a large series of cases he has learned that the principal thing to rely upon is cleanliness and a well known germicide such as iodine, Dakin's solution, or dichloramine-T. Splendid results were secured when Dakin's solution was properly used. In compound fracture the results were also good but required constant attention from the nurse and physician. Of late only dichloramine-T had been used, with excellent results. In lacerated wounds dichloramine-T had superseded Dakin's solution. These wounds required careful preparation and complete débridement. Incised wounds were cleansed, dressed with dichloramine-T, and sutured. They healed promptly. Punctured wounds required free incision, cleansing, and drainage. In infected wounds it had been decided that either dichloramine-T or carbolic acid solutions had given the best results. Gunshot wounds of the abdomen required laparotomy, careful exploration and closure of the perforation, cleanliness, and drainage. Gunshot wounds of the chest should be treated expectantly, for the majority of patients recovered if drainage was provided. Stab wounds cause a higher mortality on account of the hemorrhage. It is emphasized that no germicide can take the place of good surgery.

Curability of Occlusion of the Central Artery of the Retina by an Embolus.—J. Strebel (*Correspondenz-Blatt für Schweizer Aerzte*, October 2, 1919) reports a case of occlusion of the central artery of the retina in a woman forty-eight years old who had long suffered from valvular disease of the heart resulting from rheumatism. Paracentesis of the anterior chamber was performed the next day, followed by the instillation of pilocarpine, massage, and a pressure bandage. Two days later the perimacular striation of edema had disappeared, the white discoloration had become grayish, and the red spot was larger. Massage, pilocarpine, and pressure bandage were continued. Five days later the retinal arteries were better filled and pulsed on pressure on the eye. Nine days later the central scotoma was imperfect. Six days later there was still more improvement. Eighteen days later vision was 0.9, and Niden No. 3 could be read at forty cm. with the proper correction. The visual field was normal for white and colors, no central scotoma could be demonstrated, and the foveal reflex was distinct. He states that there are on record only fourteen other cases of recovery from embolism of the central artery of the retina.

Aids to Definition in X Ray Work.—B. T. Lang (*Archives of Radiology and Electrotherapy*, August, 1919) gives two types of diaphragm that are used to improve definition: 1, The ordinary flat disc or plate type, consisting of a piece of material opaque to x ray, in which a central hole has been cut, and, 2, the tube, cylinder or cone diaphragm, in which in addition to these, a cylindrical or conical portion of similar material is attached to the edges of the central hole. The definition obtained with a tube diaphragm is superior to that obtained with a flat one, especially when dealing with thick tissues. The cone portion of the cone diaphragm serves to protect the surrounding parts from the secondary rays arising from the tube walls. The secondary rays, when they fall on the tissues, set up new rays and may influence the definition of the shadows. These new rays have but little penetrating power and their capacity for blurring the shadow seems doubtful, but there is no other logical explanation of the action of the cone diaphragm. With the use of plane lead diaphragms at least five mm. thick the results obtained were as good as with a tube diaphragm. So it would appear that the explanation of the superior action of the cone diaphragm is that, owing to the fact that it is quite opaque, it entirely protects the surrounding tissues from the rays. The ordinary diaphragm allows the primary hard rays to pass. These enter the surrounding tissue and set up secondary rays which blur the shadow. So long as the tissues are completely shielded from unnecessary primary rays it is of no practical importance where the diaphragm is placed. A cone diaphragm has three advantages: It protects the operator from the secondary rays arising from the tube wall, if the table is not fitted with opaque aprons. If the tube is properly centered, the cone diaphragm clearly indicates the size and direction of the pencil of x rays and is then very useful, when working from above, in aiding one to determine what area will be exposed to the rays.

Plain Human Serum Treatment of Pneumonia.

—J. H. Cannon (*Southern Medical Journal*, September, 1919) reports a case in which a remarkable improvement followed quickly upon the administration of plain human serum. The serum was given about 5:30 p. m. In about an hour the patient had a rather severe chill, rise of temperature to 104°, associated with a severe coughing spell, became nervous and cyanotic, and the pulse became very rapid. This was followed in an hour by a drenching sweat and an improvement in all symptoms. At 11 p. m. the temperature was normal, pulse 102, and respiration 24. Convalescence was uneventful.

Paraplegia from Arspenamine Treatment.

M. Pinard (*Presse médicale*, July 24, 1919) points out that paraplegia following arsenical treatment may exhibit various grades of severity. The mild forms appear suddenly during the injection and are marked by evanescent lumbar pain and weakness of the lower extremities. In somewhat more pronounced forms paraplegia may persist for several days. In severe cases it is of long duration. In one of the author's patients it was accompanied by paralysis of the upper extremities and of the diaphragm. It had followed three injections of neoarsphenamine in doses of 0.3, 0.45, and 0.6 gram, respectively. The paralysis was recovered from after prolonged energetic treatment, in the course of which 12.45 grams of neoarsphenamine were administered. In cases of this type continuous arsenical medication is the proper treatment.

Vaccine Therapy in Bone Complications of Typhoid Fever.—P. Priani and C. Spada (*Revista Sud-Americana de Endocrinología, Immunología, Quimioterapia*, July 15, 1919) note that bone complications occur in eighty-four per cent. of all typhoid cases, according to Murphy's statistics. The lesions may be osteitis, periostitis, or osteoperiostitis, and may occur during convalescence in the sixth to the eighth week of the disease, or they may appear much later up to two years. Clinically they may be divided into two classes: those of a so-called "cold" nature and onset without fever, and those of an acute pyretic nature. It is in the latter class of cases that vaccines are indicated either alone or associated with surgical measures. Three cases are reported where there was a successful outcome with typhoid vaccines.

Typhoid Treated by Antityphoid Vaccine.

—A. Grapiolo (*Revista Sud-Americana de Endocrinología, Immunología, Quimioterapia*, September 15, 1919) from a review of 234 cases comes to the following conclusions: 1. Antityphoid vaccination both prophylactic and curative should be considered as one of the greatest advances of science. 2. The action of the vaccine is more notable when it is given intravenously, and this should be the method of choice, although the subcutaneous injection may be used. 3. The action of the vaccine is to increase diuresis, lower temperature, and shorten the course of the disease. The mortality in this series of cases was between seven and eight per cent., a rate much lower than that obtained by other methods, and this in spite of the fact that the virulence of the bacilli was unusually high.

Destruction of Bedbugs.—Bertrand, Brocq-Rousseau, and Dassonville (*Presse médicale*, September 18, 1919) found that bedbugs were destroyed by amounts of chloropicrin sufficiently small to permit the practical use of the compound for this purpose. The proper quantity per cubic metre of room space is from four to ten grams. Destruction of the ova is not insured by a single exposure to the agent. Consequently, the hatching period for these ova being about a week, a second exposure should be made about two weeks after the first.

Treatment of Myelogenous Leucemia with Benzol.—Manuel E. Pignetti (*La Semana Médica*, October 23, 1919), while recognizing that when radiotherapy acts favorably it is more rapid than benzol, nevertheless considers that the latter is a very valuable therapeutic asset in these cases. Benzol is to be used when radiotherapy has failed to produce either local improvement in the size of the spleen or general condition of the patient. Pignetti has found that the administration of chemically pure benzol in doses up to five grams a day has produced an arrest of the pathological process manifested by a diminution in the size of the spleen and a modification of the leucocyte formula to normal. One case showed sustained improvement for three months and another for approximately two years. The main objection to benzol, namely, its unpleasant odor, is overcome by giving it in keratin capsules. The progressive disappearance of the white blood elements coincides with an aplasia of the bone marrow and the lymphatic system; it would seem that these tissues are regenerated when the administration of the benzol is suspended.

Syphilis and Surgery.—I. W. McDowell (*International Journal of Surgery*, October, 1919) states that frequently in cases apparently of minor importance the patients would take an abnormally long time to recover and the studies led him to suspect syphilis. In a study of the incidence of syphilis it was found at autopsy that in every case there were microscopical syphilitic lesions of the heart and it was believed that many so-called cardiac deaths were attributed to syphilis. The relation this bears to surgery is in regard to the administration of an anesthetic. Injuries directly due to syphilis, such as spontaneous fracture, are rare, but should be kept in mind. The most important group of cases from the surgeon's point of view is that in which syphilis as a complication interferes with normal healing. A slight injury is sustained and as a result of the lowered resistance of the tissues a latent syphilis becomes active; a gumma may form on the site of the trauma and later break down and ulcerate. Syphilis when present as a complication is not always responsible for the failure of wounds to heal. Other conditions may be present which are at fault. A negative Wassermann does not rule out syphilis; a provocative test should be done when the first Wassermann is negative. If this is negative and the clinical evidence points to a syphilitic infection, the therapeutic test should be applied. Syphilitic bone lesions are likely to give a negative Wassermann and here the x ray is of great diagnostic value.

Miscellany from Home and Foreign Journals

Relation of Graves's Disease to Diabetes Mellitus and Glycosuria.—R. T. Williamson (*Lancet*, September 6, 1919) records a number of cases to show the relationship which exists between Graves's disease and diabetes or glycosuria, the cases illustrating the following relations: 1, That Graves's disease may be followed by marked or mild diabetes, or may be associated with it. 2, That there is often a temporary or intermittent glycosuria in the course of Graves's disease. 3, That in rare instances mild diabetes is followed by Graves's disease. 4, That Graves's disease is frequently associated with an alimentary glycosuria. 5, That both Graves's disease and diabetes mellitus sometimes develop directly following sudden mental shock, or great mental anxiety. 6, That there is not infrequently a family history of diabetes in cases of Graves's disease. 7, Finally, that acetonemia may develop in the course of Graves's disease. The author believes that these relationships should be considered in the treatment of Graves's disease to the extent of limiting the use of sugar in the diet, or even of eliminating it entirely. If a nonnitrogenous diet must be given in Graves's disease, sugar should be eliminated or much restricted. If, in a case of Graves's disease, glycosuria is frequent or permanent, carbohydrates are undesirable in the dietary. On the other hand, in a case of Graves's disease with acetonemia, but without sugar in the urine, the administration of sugars along with alkalis may be of great help for a time.

Tuberculosis of the Urinary Tract Among the Elderly.—C. Lepoutre (*Presse médicale*, September 22, 1919) notes that tuberculosis of the urinary tract in persons over fifty years of age is by no means an exceptional occurrence, no less than 8.3 per cent. of a large series of cases having been above that age. After fifty years it occurs with approximately equal frequency in the two sexes, though slightly more often in women. The operable form occurred only exceptionally in males over fifty. The most frequent form is that with vesical symptoms, such as frequency of urination, dysuria, and reduction of bladder capacity as a result of which a pseudoincontinence exists. Another rather frequent form is the nephritic with a large tuberculous kidney on the opposite side. On the other hand, no cases of the hematuric type have seemingly been reported in subjects over fifty. The clinical states to be differentiated from tuberculosis in these patients are enlarged or cancerous prostate, vesical calculus, and cancer of the bladder. Prostatic disorders without accompanying infection are distinguished in that the urine is clear, catheterization after micturition shows residual urine, and in overflow incontinence, the various evidences of retention of urine are present. Where infection does exist, examination with a finger in the rectum, a sound, or if possible by cystoscopy, will reveal prostatic enlargement; here again, the bladder is seldom well emptied; failure to improve after permanent catheterization, instillations, and irrigations suggests some condition other than prostatic disease

with infection. Vesical calculi are easily recognized by various well known means. In cancer of the bladder, cystoscopy is of diagnostic importance. When once the idea of a possible tuberculous condition has been aroused, examination of the urinary sediment and guinea-pig inoculation will remove all doubts. Of forty-four males over fifty years of age, in thirteen the condition was treated by operation; of these, four were lost sight of, and of the remaining nine, only one was living and well six years after the intervention. On the other hand, life may continue a considerable time where palliative treatment is alone applied.

Scope of Gaseous Disinfectants in Prophylaxis of Influenza.—Alexander Gregor (*British Medical Journal*, October 25, 1919) says that there is very definite epidemiological evidence to show that workers in fumes are attacked by influenza less often than are others in the same community. He then investigated the influence of sulphur dioxide and nitrous oxide fumes upon the bacterial flora in the throats of workers exposed to them and of men artificially exposed in the laboratory. The results showed that exposure to such fumes in a concentration not sufficient to produce any ill effects upon the men produced a very marked decrease in the bacteria which could be cultivated from the throats, even after a period of twenty-four hours after the end of such exposure. Similar artificial exposure was tried as a prophylactic upon two groups of men and the results were very favorable as regards the prevention of influenza. The mechanism of the action of the fumes is believed to be the rendering of the nasopharyngeal secretions acid for considerable periods of time with the resulting destruction of most of the nasopharyngeal organisms and the production of an unfavorable medium for their multiplication.

Serological Differences between the Blood of Different Races.—Ludwig Hirschfeld and Hanka Hirschfeld (*Lancet*, October 18, 1919) employed the method for determining the isoagglutinins of the blood in the examination of groups of 500 to 1,000 persons from each of sixteen different nationalities in order to study the problem of racial differences. They followed the classification of bloods given by Landsteiner. Group A blood contains corpuscles which can be agglutinated by the serum from Group B; Group B contains corpuscles agglutinable by serum of A; Group AB contains corpuscles agglutinable by either A or B serum; and Group O contains corpuscles which are not agglutinable by either A or B serum agglutinins. The serum of Group O contains agglutinins for both A and B corpuscles. These characteristics of human blood are fixed and according to Mendelian terminology Groups A and B can be regarded as dominants while Group O is the recessive non-A and non-B. These four Mendelian characters can be shown to behave toward each other as other hereditary phenomena. The inheritance of these properties does not correspond to sex or to the in-

heritance of anatomical qualities, and they are not affected by disease. The analysis of the results obtained with the different nationalities shows that the prevalence of Group A is characteristic of European peoples, in most of which it is present to at least forty-five per cent. Group B is characteristic of the peoples of India and Africa. Peoples living around the Mediterranean basin show the intermediate type of blood. If the relation of A to B be taken as the biochemical race index, this index varies between 4.5 and 2.5 in the Europeans; it is one or less in the Asio-Africans; and it is one to two in the intermediate peoples. The results of these observations suggest the interesting problem of a dual origin of the human race, the one branch coming from India, the other from the North European regions.

The Etiology of "Desert," Septic, or Veldt Sore.—Colin McK. Craig (*Lancet*, September 13, 1919) investigated a large number of European troops in whom this peculiar type of superficial sore developed and found that the sore was a distinct clinical entity with a very definite geographical distribution. The etiological factor was found to be the Klebs-Loeffler bacillus, which in such lesions was of low virulence and therefore produced constitutional disturbances only in specially susceptible individuals. Definite outbreaks of faucial diphtheria could be traced to these sores when the conditions were specially favorable for the transfer of the organisms. The use of antiprophylactic serum protected animals against infection by the organisms cultivated from the sores and also proved of great and immediate curative value in human cases of veldt sore. Finally, in certain cases of veldt sore with constitutional disturbances, instances of typical toxic neuritis were not infrequently noted.

Traumatic Rupture of the Intestine.—E. Gerald Stanley (*Lancet*, October 25, 1919) reports four cases of traumatic rupture of the intestine without external injury, two of which were from falls and two from blows with rapidly moving objects. The mechanism of such rupture of the intestine is shown to depend very largely upon the velocity of the blow which strikes the abdomen; the more rapid the blow the more certain it is that the abdominal muscles will not have time to exert their protective function by firm contraction. It used to be taught that the most fixed portions of the intestine, being unable to escape the compressing force, were the parts most frequently injured, but experience shows that the cecum and transverse and pelvic colons—the most movable parts—are the commonest sites of injury, along with the small intestine. The fixed portions of the gut are precisely those which are best protected, lying one side of and behind the ridge formed by the vertebral bodies. The coil of intestine nearest the abdominal wall at the point struck is the most likely to be ruptured, being carried backward toward the spine and caught between the spine and the object of impact. The diagnosis of traumatic rupture of the intestine is not easy, especially as there is no sure and invariable sign or symptom, or group of signs or symptoms. The two signs which appear of real value

in diagnosis are localized cutaneous hyperesthesia corresponding to the nerve distribution of the portion of gut injured and the presence of dullness in the left flank due to the accumulation of blood. The prognosis of operative treatment depends upon the length of time after the injury, but in general it is favorable if the initial shock is properly treated and the operation performed under combined gas and oxygen anesthesia and local infiltration. The abdomen should be laid wide open to avoid the need of traction. Resection of the gut should rarely be performed, even for extensive tears. Drainage is seldom necessary.

Bilharziasis Complicated by Stone and Cured by Tartar Emetic.—F. G. Cawston (*Journal of Tropical Medicine and Hygiene*, September 15, 1919) reports the case of an army officer who had contracted bilharzia disease twelve years before when bathing in a river near Durban. Hematuria was aggravated by any severe exertion, and occasionally the patient passed large clots of blood. Yellow spots thought to represent "calcified bilharzia" were observed upon cystoscopic examination, and microscopic study of renal substance obtained by operative exploration of the left kidney showed chronic inflammation about masses of chalky concretion. Repeated intravenous injections of from one half to one and one half grains of tartar emetic were followed by the passage of two phosphatic calculi three eighths inch long and by destruction of the bilharzia in the blood stream. The author comments on the predisposition of bilharzia cases to calculous complications. In this case the destruction of the parasites resulted in subsidence of tissue congestion and this, in turn, in passage of the calculi with the urine.

Comparison of Kolmer's Modification of the Original Wassermann Test and No. 4 Method.—N. O. Thomas and Keith M. B. Simon (*Canadian Medical Association Journal*, November, 1919) present the following conclusions:

1. It would appear that in long treated cases sera tested by No. 4 method give a more delicate reaction.
2. The varying number of units of complement used in No. 4 method tend to eliminate sources of error by nonspecific complement fixation.
3. The reserve complement titration used in No. 4 method is an excellent check on any deterioration of complement occurring due to atmospheric conditions which would otherwise detrimentally affect the test proper.
4. Strongly positive sera do not vary in their reaction with the two methods employed.

In making their readings of No. 4 method the authors recorded their results as follows, in order to conform with the readings of Kolmer's method, in which only one tube is used:

1. Complete inhibition of hemolysis (no tinge of hemoglobin in the fluid around or above the cells) in the front and second row tube, three plus.
2. Complete inhibition in the front row tube, some opacity in the second row tube, but also some hemolysis, two plus.
3. Complete inhibition in the front row tube, but complete hemolysis in the second row tube, one plus.
4. Slight hemolysis in the front row tube, plus minus.

Internal Hydrocephalus and Xanthochromia of the Spinal Fluid.—A. H. Gordon. (*Canadian Medical Association Journal*, November, 1919) reports a case with the findings both antemortem and postmortem and discusses them. The following summary of definitions and points of discussion is of interest:

The syndrome of Froin consists of a spinal fluid of yellow color (xanthochromia), which coagulates *en masse* and shows an abundant lymphocytosis. The syndrome of Nonne consists of a spinal fluid showing a marked increase of globulin without an increase of cellular elements. These features may be complete or partial and variations may exist in the several factors. The syndrome of Froin, or xanthochromia alone, usually indicates an isolation of one portion of the subarachnoid space from the rest, by tumor, adhesions, etc. This separation is usually found at the lower levels of the cord. Internal hydrocephalus may be associated with separation of the spinal from the cerebral subarachnoid space either by adhesions of the brain stem to the tentorium, or by hernia of the distended brain into the foramen magnum. In the case here reported the possible explanation is, 1, basal meningitis; 2, partial recovery; 3, obstruction of foramina in the roof of the fourth ventricle by meningitis; 4, development of a noncommunicating hydrocephalus; 5, hernia of the brain into the foramen magnum; 6, separation and sacculation of the spinal subarachnoid space, development of partial Froin's syndrome. A possible explanation of Froin's syndrome lies in the separation of the sacculated portion of the subarachnoid space from the choroid plexus through which normally it is filtered, and a reversion of its contents to a simple lymphoid material—yellowish, coagulating, and cellular.

Spread of Influenza in an Industrial Area.—Andrew Garvie (*British Medical Journal*, October 25, 1919) made a careful study of the latter two of the three successive waves of influenza which spread through an area of Halifax containing some 11,000 persons, most of whom were of the artisan class. In the first wave the statistics show that the disease was largely confined to persons of the insurance class, principally in the workshops. Most of these cases were so mild that the patients could visit the doctor's office; the wives and children were affected only slightly; illness was generally of very short duration, and there were no deaths. In the next two waves the disease could be divided into the sporadic cases and the household cases. The sporadic cases occurred mainly among the wage-earning members of the families; they had little tendency to infect other members of the family, and they were mild. On the other hand the household cases occurred mainly among the women and children; frequently several members of a family were affected; the disease was much more severe and there was a marked tendency toward clumping of infested houses. Investigations of the spread of the disease seemed to show that during periods of strong winds the epidemic waned; that there was little or no direct contact between members of different households to account for infection or for the clumping of infected houses; that close indoor

life with its wide departure from man's normal outdoor existence played a large part in reducing individual resistance both to the infection and to the disease after it was acquired, and, finally, that the practice of throwing the houses wide open checked the spread of the epidemic and enormously benefited the affected persons. The author is convinced that places of amusement and other places of public congregation are not sources of spread of the infection, while the abnormality of continued indoor life is the greatest single factor in rendering persons susceptible to infection.

Reactions to Chilling of the Body Surface.—Stuart Mudd and Samuel B. Grant (*Journal of Medical Research*, May, 1919) have elaborated a method and designed instruments by which changes in the temperature of the skin and exposed mucous surfaces of human subjects may be studied quantitatively. The thermogalvanometric method described in detail showed a fall in the temperature of the skin and of oral and pharyngeal mucous membranes on chilling distant areas of the surface of the body, with a rise on rewarming the patient. The cutaneous chilling caused reflex vasoconstriction and ischemia in the nasopharynx, oropharynx, tonsils, and palate, rather than congestion, as was formerly believed. Such chilling had practically no effect on the blood temperature or blood pressure. It was found necessary to control the subject's respiration when studying the mucous membrane temperature, as cutaneous chilling caused an increase in the respiratory volume. Among special cases studied, one of chronic pharyngitis of almost two years' duration showed no fall in the oropharyngeal curve with chilling, and normal vasodilatation followed the inhalation of amyl alcohol. Scar tissue showed reflex vasoconstriction parallel to that of the neighboring skin. The authors state that it does not seem improbable that the ischemia of the mucous membranes resulting from cutaneous chilling might so disturb the equilibrium between the host and the bacteria in the tonsillar crypts and folds of the pharyngeal mucosa as to excite infection.

Celiac Disease of Boric Acid Poisoning.—David Forsyth (*Lancet*, October 25, 1919) describes a typical case of celiac disease in which the condition was promptly cured by a change in the milk fed to the infant. The milk used on the two occasions on which the disease developed was found by analysis to contain an amount of boric acid which gave the child not less than seven to ten grains daily. The author reviews the current views of the cause of celiac disease and shows that cow's milk has commonly been regarded as the chief cause, while often the simple change of supply of the milk, or the substitution of dried milk or of milk from some other animal commonly cures the disease. He also shows that the first described cases of the disease were noted about one year after the first recorded use of boric acid as a preservative of milk. From his own case and the facts recorded in the literature he raises the suggestion that the disease may be merely the manifestation of subacute boric acid poisoning, especially since the symptoms also harmonize closely with those produced by the ingestion of boric acid.

Hyperthyroidism in Influenza.—A. T. Todd (*Lancet*, October 25, 1919) calls attention to the absence of references to the occurrence of hyperthyroidism as a sequel of influenza. He observed sixteen cases in a group of about 1,500 cases of influenza, five of which, having been quite marked, are recorded in detail. The thyroid signs and symptoms first appeared at times varying from the sixth to the twenty-first day of the illness, and in all but one fatal case they developed during convalescence. Their onset was sudden in all cases. The importance of the condition seemed to rest with the early recognition of the thyroid involvement of minor grade, for the condition responded favorably to a prolongation of convalescence, whereas if such were not provided the cases might well have formed one of the groups of so-called irritable heart.

Dental Impressions on the Tongue as a Sign of Morbid Mental Stupor.—Chavigny (*Paris médical*, September 13, 1919) refers to the frequency with which mild yet pathological states of mental depression were overlooked in military practice during the war and calls attention of practitioners to molding of the tongue against the teeth as a sign of this condition. While dental impressions may occur in any severe constitutional disease inducing inactivity of the muscles, the sign is nevertheless of definite value where muscular inactivity cannot be accounted for. Whenever a subject, brought to the physician supposedly ill but free of any obvious physical disturbance, shows dental impressions, the physician should suspect some mental state such as stupor, melancholia, mental confusion, a maniacal condition with inhibition, maniacal stupor, dementia præcox with catatonia, stupor in acute alcoholic delirium, lead stupor, or postepileptic mental confusion.

Migration of Missiles in the Abdomen.—Barthelemy (*Paris médical*, September 20, 1919) reports two cases showing that a bullet may become well imbedded in subperitoneal tissue at a certain point and yet be found a few days later to have migrated to some distant point, in the mesentery. In one instance the missile was twice located with the x rays beneath the left vault of the diaphragm. On the day following the second examination, when an operation for removal of the missile was undertaken, it could not be found, and examination of the anesthetized patient with the x rays showed that it had passed from the left hypochondrium to the right iliac fossa. It was later found within the ascending mesocolon, near the cecum, and was extracted, uneventful recovery following. In the second case the bullet was found imbedded in front of the anterior peritoneum and was exactly localized by Mme. Curie. Three days later, an operation was begun for removal of the bullet under the radioscopic screen. The missile was found to have moved to the central portion of the abdominal cavity, and was excised from within the mesentery of a loop of small intestine. These cases make it seem advisable, even after the careful localization of a missile, to make a final radioscopic examination of the abdominal cavity immediately before the extraction of the missile is proceeded with.

Influenza Bacillus in Paranasal Sinus Infections.—S. J. Crowe and W. S. Thacker-Neville (*Bulletin of the Johns Hopkins Hospital*, November, 1919) compare the bacteriological findings in a series of infected maxillary sinus cases for the six years from 1912 to 1917 before the epidemic with a series of cases occurring during February, March, and April, 1919. In each group of cases the influenza bacillus was found in twenty-one per cent. of the patients, and not infrequently it was isolated in pure culture. In all of these antrum infections the streptococcus was the predominating organism. The authors conclude that the influenza bacillus is a secondary invader and not the primary cause of influenza.

Congenital Pyloric Stenosis.—Roland Hill (*Journal of the Missouri State Medical Association*, November, 1919) from observation of one thousand children believes that congenital pyloric stenosis occurs in one out of two hundred babies. The symptoms usually manifest themselves between the third and sixth weeks of life, and may be considered under four distinct heads, vomiting, constipation, waves of gastric contraction, and tumor. Treatment may be medical or surgical. The medical treatment consists in feeding through a stomach tube, and should be abandoned for surgical measures if the child is losing weight rapidly or if there is a palpable tumor. Operations which have been done in the past are division of the pylorus, pyloroplasty, and posterior gastroenterostomy, but recently the simple Ramstedt operation has been resorted to. Hill's personal experience comprises twenty-five cases with sixteen recoveries and nine deaths. Of this number fourteen patients were operated upon by posterior gastroenterostomy with only six recoveries. The mortality by the Ramstedt method in the hands of skilled operators has come down to ten per cent.

A New Form of Trichophytosis.—Aldo Castellani (*Journal of Tropical Medicine and Hygiene*, September 15, 1919) describes a peculiar affection encountered by him in Macedonia, quite different from the usual type of trichophytosis and resembling more a diffuse form of pityriasis sicca. The condition was observed in adults only, and the entire scalp was often affected, presenting an abundance of pityriasis squamæ, with some thinning of the hair, much as in severe seborrhea sicca. A fungus was found rather abundantly in the scales, and was isolated by inoculating the latter, after keeping them for a few minutes in alcohol, on glucose agar. The growth of the fungus on the agar was very slow, and generally presented a crinkled or cerebriform appearance. Glycerine medium was rapidly liquefied. Growth on potatoes and carrots was very scanty, and the fungus produced no gas from sugars. In young hanging drop cultures the growth consisted of septated mycelial filaments, without free spores, but with occasional pedunculated pseudoconidia. A marked feature of the fungus was that it failed to show any sign of pleomorphism even after being subcultured on glucose agar media for over two years; in this it differs from practically every other trichophyton. The author believes the fungus to be a new species.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-ninth Annual Meeting, Held at Harrisburg, Pa., September 22 to 25, 1919.

Dr. GEORGE E. HOLTZAPPEL, of York, in the Chair.

SECTION IN MEDICINE.

(Continued from page 903.)

Prevention of Communicable Respiratory Diseases Based upon Observations in the Army Camps.—Dr. ORLANDO H. PETTY, of Philadelphia, detailed the sanitary measures enforced in the camps. Personal hygiene had been taught on all occasions and special emphasis placed upon droplet infection. In the prevention of infection the properly fitted gauze mask, exchanged when soiled, had proved probably the most valuable agent. The value of bacterins in the prevention of communicable respiratory diseases had not been proved. Prevention, he believed, was to be accomplished, not by the injection of polyvalent preventives, but by the tireless enforcement of the difficult procedures of sanitation, hygiene, and preventive medicine.

Dr. M. HOWARD FUSSELL, of Philadelphia, observed that there was no easy road to the prevention of respiratory diseases. So far as known, the most readily preventable diseases were smallpox, typhoid fever and, just possibly, pneumonia. The prompt isolation of cases of ordinary infectious colds would greatly limit the cases of respiratory disease. He regarded Doctor Petty's stand concerning bacterins as extremely sane; personally he was not sure that bacterins were entirely harmless.

Dr. CHARLES A. E. CODMAN, of Philadelphia, believed the sanitation of the army camps entirely applicable to civil practice, and coincided in the opinion that the value of the bacterins was yet to be demonstrated. The mask which in his experience had proved to be the most efficacious was the ordinary chloroform inhaler, moistened with bichloride solution, and fastened with elastic bands about the ears.

Dr. ARTHUR C. MORGAN, of Philadelphia, asserted that the remarkable advance in the medical work of the Army made between 1898 and 1919 had been due in large part to the reserve corps men who injected new life into the work, putting the regular Army on the defensive. As a matter of economics he would recommend that in the return to civil life young men who had been members of medical detachments be selected for health officers. Their training had been such that should make them 100 per cent. efficient.

Dr. THOMAS H. A. STITES, of Hamburg, felt that there should be made public more specific directions upon the proper way of wearing the mask. In ordinary hygiene he regarded the washing of the hands on every possible occasion important in the prevention of transmission of disease.

Dr. C. P. BROWN, of Ambler, from his laboratory and army experience believed that while it had

not been entirely proved that the pneumococcus vaccine was the cure for pneumonia, it was entitled to much more use than it had received.

Diagnosis and Treatment of Epidemic Cerebrospinal Meningitis.—Dr. JOSEPH SAILER, of Philadelphia, said that as a result of observations made in the work of the Army Medical Corps, he believed that the two features of importance in the management of meningitis were prophylaxis and serum treatment. Prophylaxis was to be accomplished by the recognition, segregation, and treatment of carriers. Chronic carriers might require segregation for a long time, and there was no known certain method of clearing them. Treatment of the disease by serum was specific and the most important method of administration was intrathecal. The intravenous administration might also be employed, particularly in cases in which as a result of culture general blood infection was found, or in which there was evidence by purpuric eruption, or in which there was evidence of localization in some of the internal organs. The amount of serum should be the most that could be safely administered; it should be given from one to three times a day in the early stages and at the earliest possible moment in the case. The efficacy of vaccines was still in doubt. He cautioned that great care should be exercised not to administer serum during serum fever; the matter might be mistaken for a recrudescence.

Dr. LAWRENCE LITCHFIELD, of Pittsburgh, said that in two cases of meningococcic pneumonia in the early part of his army service he had given Flexner's serum intravenously as well as intraspinally in all his meningitis cases. It had seemed to him that the patients did better; both men with pneumonia had recovered. In his meningitis cases where the patients refused water, or to whom a sufficient amount could not be given by the bowel, he had found that the free use of dextrose intravenously was often of decided benefit, and in many instances apparently life saving.

Dr. M. HOWARD FUSSELL, of Philadelphia, commented upon the refusal of boards of health to isolate cases of meningitis. He had personally requested that such isolation be carried out in the general hospital and had been refused. He felt that results with the serum treatment of meningitis had been better at the time of its first being advised by Flexner, and asked whether any difference had been noted in the serums made by different manufacturers.

Dr. B. FRANKLIN ROYER, of Philadelphia, believed that much depended upon the time during the epidemic that the serum was administered as well as upon the disease itself. When given as early as the second day he had secured the most satisfactory results.

Dr. THOMAS KLEIN, of Philadelphia, referred to his treatment in 1918 of a number of cerebrospinal meningitis cases in Doctor Sailer's service, giving the antimeningococcic serum intravenously. In a series of seventy-seven cases the mortality had

been eighteen per cent. At that time and at Camp Dix it had seemed that the intravenous administration obviated the necessity of the large dose in the spinal canal, and in that respect alone he thought the intravenous method an advantage over the intraspinal. In patients not treated by the serum the mortality was about forty per cent. The intravenous administration was begun as early as possible, with fifty c. c. diluted, repeated every eight or sixteen hours as demanded.

Doctor Sailer, in closing, and in referring to Doctor Fussell's request for isolation of meningitis cases in the hospital, cited an instance of ward epidemic in which the cases were traced to one nurse found to have virulent meningococci in the nasopharynx. He believed that in all cases of meningitis isolation of the most careful character should be instituted. That ward infection was rare was no reason that every possible precaution should not be taken.

Present Status of Therapeutic Pneumothorax in Pulmonary Tuberculosis.—Dr. ALEXANDER ARMSTRONG, of White Haven, asserted his conviction that therapeutic pneumothorax was the only new plan of treatment for pulmonary tuberculosis discovered in recent years which had positive value. Selection of the appropriate case required careful physical diagnosis and usually several weeks of close observation of the patient. Progressive softening was the indication most often calling for compression of the lung. Remembering that pleurisy was usually a forerunner of tuberculosis the treatment should be employed early. He urged that in every town of over 10,000 inhabitants one physician should familiarize himself with the plan of treatment.

Dr. ISADORE KAUFMAN, of Philadelphia, emphasized the necessity for care in the selection of the case for pneumothorax treatment and cautioned against the recommendation that the procedure be carried out by the general practitioner. The treatment was preferably to be carried out by a surgeon working under the direction of a man familiar with the disease.

Doctor Armstrong, in closing, said that to wait under the expectant treatment for a period longer than six weeks before administering the treatment, was almost criminal negligence. Although therapeutic pneumothorax was in a measure on trial, he felt that the patient with pulmonary tuberculosis should be given the chance it offered.

The Value of an Early Diagnosis of Pleural Effusions.—Dr. S. A. SAVITZ, of Philadelphia, observed that it was well to consider all serous exudate as tuberculous. In the study of the chest he regarded percussion as the dependable practice and its variation upon change in posture as the cardinal sign. Palpation and auscultation be believed of little value but emphasized the importance of the frequent use of the aspirating needle. Pleural effusions, he said, were too frequently mistaken for other respiratory diseases. An individual with a pleurisy, discharged from treatment too soon, or with a pleurisy unrecognized, in his opinion, undoubtedly had a passive lesion which might become active. Too much emphasis could, not be laid upon

the importance of keeping such patients under observation for a long time. Since the recent war had shown that there was as little danger in opening the thorax as the abdomen, he felt that by closely watching the pleura and working in conjunction with the surgeon tuberculosis might be greatly lessened.

Dr. ARTHUR C. MORGAN, of Philadelphia, spoke of the great importance of Doctor Savitz's paper in its reference to the development of pleurisy and tuberculosis in the same individual. In his experience in teaching students he had records of at least seven students in whom pleurisy developed with or without effusion, who had died of tuberculosis. To him, pleurisy, with or without effusion, meant not predisposition to tuberculosis, but that the patient was really the subject of tuberculosis. Contrary to Doctor Savitz's opinion he believed auscultation of the chest in pleurisy of value, the quality of the voice, the slight changes in breathing, amplification of the tubular sounds under the scapula, particularly on raising the arm, having important bearing.

Dr. JOSEPH SAILER, of Philadelphia, agreed with Doctor Morgan that percussion was not the dominant physical sign, but regarded inspection, palpation, and auscultation particularly, as of extreme value. That simple puncture was not unattended with danger should be remembered and more care regarding it should be exercised than had been the custom. At Camp Wheeler there had been two deaths from simple puncture, both sudden; one just at the end of the operation and the other a few minutes later. Autopsy had shown no other cause of death. Granted that all cases of pleurisy were tuberculous, which Doctor Sailer regarded as an overstatement, many pleurisies could be tapped and the patient be healthy for many years.

Dr. CHARLES A. E. CADMAN, of Philadelphia, regarded the differential diagnosis between some pneumonias and pleurisies as extremely difficult. Too great dependence should not be placed upon method of diagnosis. An encapsulated pleurisy presented difficulties in diagnosis, as did the differentiation of sarcoma of the lung and an effusion.

Dr. WILLIAM G. TURNBULL, of Cresson, felt that the danger of puncture in effusion was not sufficiently appreciated, and in his opinion empyema had developed in tuberculosis as a result of unwise aspirations of pleural effusions. In an institution with over a thousand cases of tuberculosis in a year he attributed the small number of empyema cases (two) to the fact that the resident physicians were not permitted to use the aspirating needle.

Pulmonary Syphilis.—Dr. ELMER H. FUNK, of Philadelphia, here dealt more particularly with late syphilis of the lung, which he said most commonly manifested itself as gummata occurring usually near the root or in the lower lobes. These might occasionally break down, forming small cavities. The gummata might also be converted into fibrous tissue and the resulting contraction distort the lung, giving rise to bronchiectasis. Gummata had been found at autopsy in those who during life had given no evidence of pulmonary disease. Syphilis of the lung, the author said, might manifest itself as a dif-

fuse fibrosis. Lesions of this character, it was said, could not be distinguished during life from fibrosis due to tuberculosis and even the autopsy evidence might be inconclusive. While not in sympathy with the frequent diagnosis of syphilis of the lung and upon scant evidence, it was Doctor Funk's belief that it occurred clinically more often than older observers believed and than postmortem evidence indicated. With Hofman he believed that patients had died unnecessarily from pulmonary syphilis improperly treated under a mistaken diagnosis of pulmonary tuberculosis or other condition.

Dr. E. J. G. BEARDSLEY, of Philadelphia, cited a case illustrative of the uncertainties and difficulties in pulmonary tuberculosis. In the patient who was believed to have an advanced tuberculous infection sputum examinations had been continuously negative for tubercle bacilli. The blood gave a four plus Wassermann. At this time the forty-second sputum examination revealed myriads of acid fast bacilli.

Dr. WILLIAM A. WOMER, of New Castle, cited a case in which repeated sputum examinations for bacilli were negative, but in which a history of chancre had been obtained. Under antisiphilitic treatment the condition cleared up, the sputum, of which there was a quart or more daily, almost disappeared, and the man had apparently entirely recovered.

Doctor Funk, in closing, said that while the finding of the bacilli in Doctor Beardsley's case would seem to establish the etiology of the lesion, he would want a second positive to check the examination. The instance did not in his opinion militate against the statement that in all patients with symptoms of long standing, with definite signs in the chest of advanced lesions and in whom the sputum was repeatedly negative, the lesions were as a rule nontuberculous. Disbelief of this statement and failure to make it the working rule would cause the physician to miss the large majority of nontuberculous conditions, for here was the turning point in the differential diagnosis between advanced pulmonary tuberculosis and other conditions.

Removal of Spinal Cord Tumor, Resulting in Entire Disappearance of Paraplegia and Neurological Signs.—Dr. THEODORE DILLER and Dr. OTTO C. GAUB, of Pittsburgh, contributed this paper, which was read by Doctor Diller. The case was that of a healthy woman, twenty-eight years old, who had for two years suffered from increasing weakness in the legs, resulting in complete paralysis. There was pain about the anal region, and impairment of sensation from the level of the navel downward, with exaggerated knee jerks. At operation a tumor about the size and shape of the little finger was found encircling the spinal cord below the level of the ninth thoracic vertebra beneath the dura. Its removal was easily accomplished and it was found to be an endothelioma. The cord was indented but apparently uninjured. Movement of the toes was possible on the following day, and at the end of two months the woman was able to walk. Sensory changes disappeared within two weeks; knee jerks became normal, and ankle clonus and Babinski toe reflexes were absent.

Dr. JOHN A. LICHTY, of Pittsburgh, cited the cases of two women with distinct paraplegia and symptoms corresponding to those described by Doctor Diller. One had entered the hospital with a tentative diagnosis of pelvic disease producing pressure. Following a positive Wassermann salvarsan was administered intravenously, with mercurial inunctions and iodides. In eight weeks the woman was able to walk. In the second case, in which the Wassermann was also positive, recovery followed the appropriate treatment, except that there remained to a recent date loss of sensation about the buttocks and anus and upon the inner side of the thighs. In both patients there had been sore throat previous to the spinal symptoms and it was thought that an influenza infection might have caused the neurological disturbance.

Dr. JOHN J. GILBRIDE, of Philadelphia, cited three cases he had seen of the type described by Doctor Diller, one of which was in his own service. In two the lesion was extramedullary; in the third, intramedullary. It had been his observation that the lesion was higher in the cord than was shown by the clinical examination, and that operation upon two or three vertebrae above the supposed location of the lesion was necessary.

Doctor Diller, in closing the discussion, added that there had been some occasional loss of control of the bladder and bowels. In an operation of the kind described he felt that the work was too exhausting for one surgeon, that there should be a second skilled operator to do the very delicate manipulation required.

Sexual Psychoneuroses as Studied in a Medical Clinic.—Dr. E. J. G. BEARDSLEY, of Philadelphia, presented a study of a series of adolescent patients suffering from anxiety neuroses due to overstimulation of the sexual centres. Functional nervous conditions, he said, should have as careful investigation and treatment as cases of organic illness. There was urgent necessity that parents be instructed regarding sexual hygiene, and he felt that intelligent, sound advice from official sources should be encouraged. The diagnosis of sexual anxiety states was dependent upon the elimination of organic disease by careful physical and laboratory examinations, and in the average patient recognition of the true cause of the symptoms was said to render cure a certainty. Careful inquiry was advised into the sex life and thought of the functionally nervous patient during the adolescent period.

Dr. THEODORE DILLER, of Pittsburgh, in his examination of a considerable number of young men in the Army complaining of nervous and mental symptoms, he had made the diagnosis of constitutional mental inferiority. In treatment there was needed, first of all, a good neurologist who would take a personal interest in the man; then hydrotherapy and psychotherapy in a good institution. Such young men should have guidance in their discouragement, with work suited to their ability.

Dr. TOM A. WILLIAMS, of Washington, D. C., regarded the anxiety state as often due to its combination with some physical phenomena. Unfortunately it was frequently exaggerated by unwise

and unskilful meddling of medical men who, not realizing that the condition was due merely to a psychological attitude of the patient, spoke of it before the patient as a serious physical disturbance. Treatment of the case consisted of making a correct estimation of what was taking place in the patient, physically and mentally, and enabling the patient to understand what was taking place. This latter was accomplished by entering into the patient's way of thinking and leading him out of the situation, so that he saw himself truly and ceased to have sensations about himself which were morbid. Patients disinclined to so reveal themselves could be persuaded by psychotherapy.

Cardiovascular Phenomena Associated with War Neuroses.—Dr. GEORGE MORRIS PIERSOL, of Philadelphia, expressed the opinion that medical officers were in accord that chronic organic disease of the heart played an inconspicuous rôle among the medical casualties of the A. E. F. Of 3,752 medical cases in one base hospital, in only twenty-four was there definite organic disease. This incidence, however, by no means represented the number of apparently healthy soldiers in whom from time to time systolic murmurs were observed. That the cases designated as "effort syndrome" came under the supervision of the cardiovascular examiners and medical men rather than under the neurologists he thought was probably due to a misconception of etiology and mechanism and because symptomatically the cases were so obtrusively cardiac. It was a source of pride to Americans that they owed the recognition of the syndrome to DaCosta who, in 1871, published his *Irritable Heart of Soldiers*.

From the various observations made of effort syndrome Doctor Piersol thought it justifiable to regard it as the result of the reaction of an unstable nervous mechanism to anxiety and overstrain, producing a neurosis associated with cardiovascular symptoms, just as in other instances the same factors induced neuroses in which the well known symptoms referable to the gastrointestinal tract and musculoskeletal systems occurred. Cohn had observed that after the signing of the armistice effort syndrome had been difficult to discover. In treatment of the affection the lead of the British had been followed, the cases grouped in detachments and given systematically graduated exercises and practice marches, always in military formation. In addition the men were encouraged to play games and were diverted by amusements. The results in the army had been so encouraging that the method had been applied in all convalescent medical cases fit for mild exercise. Doctor Piersol thought the plan of treatment might be introduced in civilian hospitals with economic advantage to patient and hospital, although the average civilian patient might not take kindly to setting up exercises, or to anything diminishing the comfort of his convalescence. The belief was expressed that the experience gained with large numbers of soldiers suffering from effort syndrome had awakened a true appreciation of the frequency with which neuroses manifest themselves through symptoms referable to the cardiovascular system.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Practical Medicine Series. General Surgery. By ALBERT J. OCHSNER, M.D., F.R.M.S., LL.D., F.A.C.S.; Major, Medical Reserve Corps, United States Army; Surgeon-in-Chief, Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Illustrated. Chicago: The Year Book Publishers, 1919. Pp. vi-624.

Ochsner has included considerable surgical material that has been gathered during the war. The book is generously filled with data on war surgery and some of the late developments of reconstruction surgery are included. An effort has been made to carry over the surgical measures which have been adopted during the war to the branches of civilian surgery where they will be most useful, especially industrial surgery. The author has aimed for brevity so that a larger field could be covered, and he has accomplished this without presenting the subjects in a jerky fashion. The result is that the book may be used as a dependable reference, with no fear of disappointment in not finding the thing sought after. In some chapters the findings of war surgery proved so interesting that more space is devoted to them than to the conditions usually encountered in civilian surgery. This, however, is not a grave fault, for the importance of the application of war surgery to civilian practice is generally underestimated.

Births, Marriages, and Deaths.

Died.

BOCK.—In St. Louis, Mo., on Friday, November 14th, Dr. Arminius F. Bock, aged seventy-three years.

CRONIN.—In Boston, Mass., on Thursday, December 4th, Dr. Joseph John Cronin.

GRAHAM.—In St. Joseph, Mo., on Monday, November 10th, Dr. James K. Graham, aged sixty years.

GUGLIERI.—In San Jose, Cal., on Sunday, November 30th, Dr. August A. Guglieri, aged sixty years.

HUNT.—In Otego, N. Y., on Saturday, December 6th, Dr. Dwight Birdsill Hunt, aged seventy-three years.

RODLEY.—In Napa, Cal., on Tuesday, December 2d, Dr. John Ellis Rodley, of Chico, aged sixty-two years.

RUSSELL.—In Asheville, N. C., on Friday, November 28th, Dr. Edgar Reid Russell, aged forty-nine years.

STUBBS.—In Birmingham, Ala., on Friday, November 28th, Dr. George Hamilton Stubbs, aged fifty years.

STURGES.—In Norwalk, Conn., on Saturday, November 29th, Dr. Frederick Dennis Sturges, aged eighty-three years.

VANDEVEER.—In Phoenix, Ariz., on Monday, December 8th, Dr. Charles A. Vandever, aged seventy-two years.

WOOD.—In Elmhurst, L. I., on Friday, December 12th, Dr. Samuel Augustus Wood, aged sixty-four years.

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Original Communications

STAPHYLOCOCCI BACTERIURIA.

By P. NOLF, M. D.,
Brussels, Belgium,

Professor at the University of Liège; Chief of the Division Infectious Diseases, Belgian Army Medical Corps.

During trench warfare staphylococcic blood infections were frequent among the soldiers. The infection usually owed its origin to furunculosis which had been badly treated, the itch, or pediculosis. In addition to patients who suffered from a true staphylococcic septicemia, with a great many organisms in the blood stream, there were many more who did not show an active infectious condition. Ordinarily an increased temperature was present with headache, pain in the extremities and bone pains of the lower extremities, fatigue and insomnia. During the first few days there was no visceral localization to be noted, except in over half the cases where a notable increase in the size of the spleen occurred. The tongue was coated, the patients had no appetite and suffered from constipation. The urine quantity was diminished but clear on emission, contained urates and at times a small quantity of albumin and occasionally gave a positive diazo reaction.

In order to make a more positive bacteriological diagnosis the urine of all patients who showed signs of urethritis was cultured. The urine was gathered with precaution. It was cultured on an extensive surface in a preparation of one c.c. of bouillon to one tenth of a c.c. of nutritive gelose. It was determined that in the urine from healthy persons or from patients suffering from other than staphylococcic affections staphylococci were rarely found and successive cultures did not reveal the staphylococci with regularity and they were only present in the bouillon cultures. Therefore it may be stated that the presence of the staphylococci is very significant when the organisms grow at the same time on bouillon and gelose, above all if the colonies on the gelose multiply, are of the same general type, and when the growth may be obtained several times in urine collected from the same patient.

This occurs regularly among patients who have either a true staphylococcic septicemia or an attenuated sepsis without organisms in the blood, accompanied by the symptoms which we shall describe. The organisms may be present in the urine during the first few days of the disease. In certain cases of true septicemia the organisms may be found in

the blood and not in the urine at the beginning of the disease, and later may be recovered from the urine. Usually when there are few germs eliminated in the urine they are eliminated for a very short period and the urine becomes sterile a few days or weeks after the fall in temperature. But the opposite may also be true. It was observed clinically in a number of the patients that it was some months after their infectious condition had subsided before the organism had disappeared from the urine.

Aside from the presence of the organisms the urine is absolutely normal and notably there is no albumin present. The patients do not have any elevation of temperature and do not present any other evidence of disease. There are a great many organisms present in this urine and in one tenth of a c.c. cultured upon an extensive surface of nutritive gelose there were innumerable colonies of bacteria present. This condition has been known for a long time clinically under the name of bacteriuria and the majority of these bacteriurias are caused by the *Bacillus coli*.

The interest in our cases of staphylococcic bacteriuria is that the cases were followed from the onset of the disease and that all of the steps of the microbic infection were established: 1, cutaneous infection; 2, blood infection; 3, urinary infection. In these cases the long duration of the elimination of the organisms resemble in character the elimination of the *Bacillus typhosus* in the bile or in the urine of patients convalescing from typhoid fever who become carriers. The patients with staphylococcic bacteriuria show a direct analogy to the carriers of the typhoid bacilli, not only in the origin and in the nature of their affection but in the resistance they show to the usual therapeutic measures.

It is quite useless to attempt to sterilize the urine in patients of these two types by irrigations of the bladder, or the administration of urinary antiseptics like urotropin, salol, or methylene blue by mouth. They do not have any beneficial effect. Consequently as the carriers of these germs are patients who are incompletely cured, and with the idea that the immunity of these patients with bacteriuria be increased, we have submitted them to a course of vaccine therapy consisting of intensive properly prepared doses injected intravenously. The organisms disappeared in every case, usually after prolonged treatment.

The following case history furnishes an excellent example:

CASE.—L. S., soldier, aged twenty-three, admitted February 11, 1918. Was suffering from furunculosis. The onset was marked by headache and chills three weeks prior to admission. On admission his temperature was 39.4° C. The patient was emaciated; the condition of the heart was normal; a diffuse but not intense bronchitis was present; the spleen was palpable; no findings in the liver or intestinal tract; a trace of albumin was found in the urine; the diazo reaction was negative. The blood picture showed 17,000 leucocytes; seventy-two per cent. polymorphonuclears; the blood culture was sterile; the Widal was negative; culture of the urine gave innumerable white staphylococci.

The initial treatment consisted of intravenous injections of peptone followed after February 26th by intravenous injections of vaccine. The initial dose was 5000 organisms. After three days he was given 10,000 organisms and the number was augmented progressively to 30,000, 50,000 and ever increasing numbers. On March 7th the temperature of the patient had become normal, but it rose on March 22d. The dose of vaccine was reduced to 30,000 organisms. On April 5th the temperature again came down to almost normal and remained subfebrile during the entire month of April and became frankly normal on May 10th. On this date the dose of intravenous vaccine was increased to 200,000 organisms. The staphylococci reappeared in the urine on the 6th and on the 9th of May. In plating one c.c. of urine there was obtained on the 17th of May, one colony; on the 26th of May, fifty-three colonies; thirty-one colonies on the 31st and innumerable colonies on the 2d of June. On this date 400,000 organisms were injected into a vein. The dose was augmented progressively until the urine was definitely sterile. This result was not obtained until toward the middle of August. On the 7th of August there were still three colonies of staphylococci in one c.c. of urine, and one colony on the 15th of August. On the 17th, 19th, 21st, 23d, 25th and 29th the successive cultures of urine were sterile. The last dose of vaccine was given on the 26th of August, and consisted of fifty million organisms. The patient regained his strength and gained weight during his course of treatment. He left the hospital completely cured on August 30, 1918.

I have applied the same method of progressive intravenous vaccination for bacteriuria caused by the *Bacillus coli*. The case was interesting because the bacteriuria had resisted an intensive course of vaccination by the subcutaneous route, during which time several doses of ten billion organisms had been injected. When the organisms were injected intravenously a definite sterilization was produced by a dose of fifty million organisms.

It is interesting to observe the curative action of vaccination when it is done by the intravenous route in an affection like bacteriuria where it has been said to be an infection of the urine rather than of the urinary apparatus. The therapeutic result indicates that this conception is erroneous.

OBSERVATIONS ON THE FASTING TREATMENT OF DIABETES.*

By HENRY S. STARK, A. M., M. D.,
New York.

When in December, 1914, Dr. F. M. Allen, of New York, made public what by common consent became known as the "fasting treatment of diabetes," it was heralded by the profession as a long step in the solution of a perplexing therapeutic problem. It was such a radical departure from old traditions and such a severe indictment of current methods of treatment, that it really seemed by contrast as though other investigators in this subject had merely been groping in the dark. As a result of this general endorsement by the profession, the fasting method at once became the vogue and before long medical literature was flooded with returns which indicated that this treatment would occupy the centre of the stage for some time.

It was but natural to expect such an effect, for it seems to be the established order of things in medicine, and medical history will bear me out in this, that new methods of treatment are taken up with an enthusiasm born of custom rather than of conviction, and what is more, these therapeutic innovations are seized upon by that large class of practitioners who are easily beguiled by the promise of new methods, before the facts of the case support the theory or justify its adoption. "Results" naturally follow in the wake of the new method of treatment but too often it has been found these results were based upon fancy and enthusiasm rather than upon conclusions drawn from disinterested clinical observation. Scepticism soon takes the place of enthusiasm and confidence, with the inevitable result that the so-called new method of treatment loses its adherents, stands discredited, and finally shares the fate of the many others which have gone before it.

The treatment of diabetes is a shining example of this medical psychology. Ever since diabetes has been accepted as a disease incidence, it has undergone many vicissitudes of treatment. One dietetic method after another has been tried out. Each of these methods in its day was hopefully received by a gullible profession, had a meteoric run, then was relegated to the category of therapeutic failures. Many of these new methods of dietetics seemed plausible enough at the time and had the merit of being ingenious as far as the dietetic necessities of the patient were concerned, having been constructed upon chemical formulae, mathematical calculations, and titration calculations. But it soon became apparent that clinical experience and the feelings of the patient did not always conform to chemical formulae nor harmonize with algebraic equations.

Caloric estimations as a basis of feeding diabetics and infants, while attractive theoretically, was in many instances a therapeutic fallacy. Human metabolism seemed to be at variance with laboratory rulings. Despite caloric feeding and its advantages in securing acid and glucose free urine, there were

*Read at the November, 1919, meeting of the Eastern Medical Society, New York.

numerous other urinary radicals which have to be reckoned with and which were not contemplated by the caloric method of feeding. I lay great stress upon the unreliability of the calory as a numerical index for feeding purposes, because the framework of Allen's treatment centres about it. In the fasting method, the foods are doled out with mathematical accuracy, while the food values are standardized in the same way, in utter disregard of the acknowledged fact that calories are only relative measures of food values.

If then the calory is unreliable as a unit of food value in health, how much more unreliable must it be in disease, when all the metabolic functions are out of gear. Therefore let not the physician delude himself with the belief that when he has met the caloric requirements he has solved the food problem. Nutrition is not so simple a problem. We have no assurance that the food weighed and measured out for the diabetic will go right to the spot intended, unaffected by the morbid state under which the diabetic is laboring, nor can we have any definite idea how much of it will undergo combustion and how much of it will be lost in feces. Allen's scale of food values and calories is the same for all individuals, but are there any two individuals, especially sick ones, who have the same metabolism? Human metabolism is influenced and governed by many factors and therefore does not lend itself to control by mathematical standards.

Subalimination in diabetic therapy is no newcomer. It has been practised under various guises by Balta, Magnus-Levy, Van Noorden, Naunyn and Guelpa. The efficacy of alimentary rest through food abstinence, as a therapeutic measure is familiar to all.

I have frequently noticed the disappearance of glycosuria in diabetics, who were stricken with an acute infectious disease and were placed on a fluid diet. I have occasionally observed that diabetic Hebrews who fasted on their Day of Atonement would be sugar free the following day. I have had a number of diabetics tell me that the less they eat, the better they feel. Alimentary rest will not only cause glucose and acetones to disappear from urine, but will have a like effect on other foreign elements such as albumin, peptones, albumoses, and indican. It is simply a case of all going out and nothing coming in. During the process of fasting, whether voluntary or therapeutic, the body is selfconsuming, shedding itself of extraneous matter, while supporting itself on its own fats and proteins in the form of reserved food stored in the tissues. A number of times I have observed a complete disappearance of albumin during therapeutic fasting, as well as glucose, and yet I could no more convince myself that these patients were cured of their nephritis than I could that they were cured of their diabetes. I knew that the pathological processes were still at work. The surface indication was that the patient was improved, but deeper rooted there was ever the conviction that this improvement was ephemeral and that directly the diabetic curb was loosened, the diabetic outbreak would be inevitable. Broadly translated the fasting treatment meant that the patient was consigned for the

rest of his natural existence to alternate periods of sugar free urine and of fasting.

In 1910 Guelpa, of Paris, made the statement before the British Medical Association that if food were withheld and the bowels thoroughly evacuated sugar might be made to disappear in three days. His after treatment embraced periodical fasting and exclusion of meats. He also insisted on the importance of reducing weight and metabolism. You will notice that the methods of fasting of Allen and Guelpa were similar in more than one respect. However, it must be stated in justice to the former that he was the first to supplement the fasting periods with efforts to ascertain and to maintain the diabetic's power of assimilation of proteins and fats, as well as carbohydrates with scientific accuracy.

Naunyn recommended periods of fastings years ago together with reduction of proteins. Van Noorden's vegetable and oatmeal days were in reality days of underfeeding.

It is now five years since Allen's modification of the fasting treatment has been on trial; during this period hundreds of diabetics have taken the cure. It should therefore be possible to state, without equivocation, whether this latest method is all that is claimed for it or whether it is but another illustration of the therapeutic sophistry that is so common in the medical mind. On more than one occasion I have taken exception to the dazzling results claimed by Allen and his adherents on the ground mainly that this treatment, irrespective of its results, was not based on a proper appreciation of what clinical human diabetes is.

Allen and his school believe that diabetes results from a weakening of a metabolic function, the carbohydrate function in particular, due to a deficiency of the internal secretion of the pancreas. His conception of the nature of diabetes is based largely on the phenomena of glycosuria and ketonuria, rather than upon the pathology of the disease, as though the entire pathogenesis of the disease was a mere matter of a physiological disturbance. If the mechanism of glycosuria were as simple as this a rational dietotherapy would long ago have suggested itself. As a matter of fact, something more than a disturbed metabolism is comprehended in the production of diabetes, namely, an anatomical lesion. If, unfortunately, we cannot point to any constant anatomical basis, but one that changes with each decade, it must be expected that dietetic treatment will vacillate likewise. Leading authorities are agreed that we cannot, today, dignify any organ or tissue, the pancreas not excepted, as the one constantly involved in diabetic pathology. To make clearer the distinction between a weakened function and an anatomical basis, I cite the phenomenon of hyperchlorhydria. This is also, in a sense, a weakening of a physiological function, but we would not consider it sufficient treatment solely to restrict acid foods or endeavor to strengthen it by dietetic means. The logical procedure would be to look for a pathological basis and direct treatment to that. Albuminuria is likewise the weakening of a physiological function but it does not comprehend the whole pathogenesis of

nephritis. So we cannot palliate our ignorance of diabetic pathology by arguing that diabetes is not a distinct pathological entity but a weakened metabolic function.

If it is true that diabetes results from a disturbance of carbohydrate metabolism, it is equally as true that often a glycosuria proceeds from disturbances of protein and fat metabolism. In other words, diabetes may be defined as a disease resulting from the unbalance of all the metabolic functions. The prevailing tendency to look upon diabetes as a disturbance of carbohydrate metabolism alone, has been a source of confusion and has led to errors in therapy. Many diabetics are forming sugar from protein and fat intake.

As far as training the weakened carbohydrate function is concerned, Allen himself states "that a full return to the normal is practically never obtainable." Quoting further he remarks "that gain in tolerance marks the milder cases only," and to make a third quotation to illustrate what Allen himself thinks of the fasting treatment, he says "that for the severe cases, there is no hope that their tolerance will improve." So you see that as long as the powers of assimilation cannot be radically regenerated, the best that can be looked for prognostically is that the disease, while incurable, can be periodically curbed. In other words, though the urine is sugar and acid free and though the metabolic functions are strengthened, the diabetic remains diabetic. Glycemia and ketonuria are not the only indices to be reckoned with in gauging the severity of a given case. I have frequently seen diabetics without a glycosuria display a greater downward tendency, a greater tendency to infections, to gangrenous processes, or to coma than did patients whose urine was loaded with glucose. This admonishes us that we must not adhere too strictly to a sugar free diet, but rather permit so much only as will produce a glycemia that the patient can tolerate without effecting tissue changes and without exposing him to those toxemias, internal and cutaneous, common to diabetes. In other words, ascertain how much carbohydrates a patient can tolerate without producing diabetic symptoms, rather than ascertain how much food he can digest without the appearance of glycosuria.

Could we be sure that nothing more than a weakened metabolic function was involved in the pathogenesis of diabetes, the fasting method would be acceptable at once, but too often diabetic necroses disclose, not pancreatic lesions but an involvement of other organs and tissue, the musculature for example. The part played by the muscles in the production, storage and combustion of sugar is no small one; muscle cells elaborate the heat energy necessary to a perfect metabolism. I think you will agree that strengthening of a weakened function will have no effect on the lesion in this form of diabetes, and the same reasoning applies to other types of the disease.

Another principle underlying the fasting treatment is that the patient must be kept below weight in order not to overtax the internal secretion function of the pancreas. To secure this end the patient is starved until his urine is sugar and acid

free. This may involve a few days or over a week but the leading feature must be carried out to keep the patient under weight and further to restrict the fat intake.

The importance of fats as a menace in the metabolism of the diabetic is emphasized. Whereas formerly fats were liberally allowed it is now recognized that fat excess may induce coma by upsetting the nitrogen balance. While this is true for fats it is just as true for proteins, because the metabolic functions of the diabetic, at best, are below par. Long ago I pointed out the dangers of overfeeding with proteids, especially when nephritis complicated the diabetes. In such cases I advised placing the patient periodically on the Karrell diet. The ideal in diabetic therapy is so to distribute the calories among the proximate food elements that the food will not provoke constitutional symptoms, and secondly will secure a sense of satiety, not fearing a slight glycosuria which after all is a delusive guide to the patient's condition. Such a diet is always welcomed by the patient and I have found that it maintains the health balance and the nitrogenous equilibrium. This means approximately about 1,800 to 2,000 calories, depending upon the age, sex, weight, size, occupation, and general condition of the patient, and subject to the uncertainty of the calory as a standard of fuel value.

The plan of keeping the patient under weight and at low metabolism certainly does not coincide with our conception of the treatment of wasting diseases. It seems superfluous to resort to scientific fasting to secure loss of weight when this effect is automatically accomplished by the natural ravages of the diabetes itself. It has been my experience that many confirmed diabetics, even before coming under observation, lose weight at a rapid rate, and though they may improve materially they rarely reach the same level of weight that marked their era of good health.

My experience with the Allen method includes about fifty cases, each of which was under observation over two years, a period long enough to permit me to judge of the merits or demerits of the method. In addition to these cases I had the opportunity to see other diabetics in cooperation with their attending physicians. All the technical details were minutely carried out. A number of my patients were physicians or a close relative which meant that I was assured of intelligent assistance, which was of material advantage in securing results. Among my recorded cases were two children, aged ten and twelve years, respectively; there were mild cases and severe cases, with high sugar percentages and marked acidosis; there were obese subjects and lean ones; there were some who were starved in anticipation of an anesthetic; there were others who were fasted as a precautionary test preliminary to operative measures; there were numerous instances of severely complicated diabetes; there were three pregnant diabetics, and there were two patients who weathered the influenza epidemic of last winter. But in all of these patients the dietary necessities were based on their clinical condition, and I was always mindful that a too rigid diet would inevitably result in malnutrition, but that

improvement would depend on a proper distribution of the food equivalents, in other words, not fearing a slight glycemia providing tissue changes nor infective processes did not follow. Only in one particular did I deviate from the Allen procedure and that was that I did not make an amateur chemist of my patient by requiring him to test his own urine. I think this makes him selfconscious to the point of hypochondria, sets his imagination to work, and leads to false interpretations of his condition of health.

Thus far I have refrained from making any comments on the routine of this method; the proponents of it believe that it is very simple of application. Personally, I cannot subscribe to this belief. The details presuppose a knowledge of scientific dietetics and all that this term implies, namely, the percentage composition of foods and the nutritive value of their components, expressed calorically. It also calls for the weighing and measuring of foods, a knowledge of the conditions which influence metabolism and a knowledge of the patient's powers of tolerance, all comprising a scientific field not calculated to tempt the average physician to essay.

A practical question that arises at all times is, What are the limitations, contraindications and unfavorable features of this method of treatment? My experience has taught me that some patients bear the initial fast very poorly, they show evidence of stomach catarrh or of colitis of the upper tract, they may even furnish symptoms referable to the liver or pancreas. A number of times it became necessary to stop the fast to prevent inanition.

There is another group of patients who give evidences of an increasing acidosis or of an impending coma. They are drowsy, weak, nauseated or they may vomit and have dyspnea. It is unfortunate that we have no means of determining in advance which cases will react favorably or otherwise. Naturally, in all cases, critical observation of the patient and his urinary indices is called for.

There is still another group of patients who go through the initial fast apparently without harm and are then allowed small amounts of carbohydrates, whereupon they fall into an acidosis much severer than obtained before the fast. These patients are worse off than before and gradually become weaker and markedly emaciated. Cases like those of the last group admonish us that metabolism is a very relative function, and that each person has a basal metabolism of his own which cannot be gauged in terms of mathematics, and that we can have no assurance that the daily mathematical dietary administered to the diabetic, will accomplish the desired therapeutic effect, uninfluenced by the laws of nutrition and digestion.

Another observation I have made, is that fasting is better borne and there is less tendency to acidosis of a severe type in thin subjects than in obese ones. In the latter it is well to prepare the patient for fasting by restricting fats, butter, oil and even proteins for two or three days in advance of the trial. Excess of fats has a tendency to precipitate acidosis, because the acetone bodies are derived from the lower fatty acids.

Children bear fasting favorably but they require

a relatively greater caloric intake than adults do. With their weight, avoidance of injections and exercise as controlling factors. Pediatricists tell us that children can tolerate immense amounts of abnormal acids without any blood reaction or disturbances of respiration. Both children in my set of cases died within two years of their initial fast, although at the time the fast appeared to have been followed by good results. In each an intercurrent infection determined the fatal issue.

Among my patients were three women who became pregnant. Two fasted well, the third grew weak and had attacks of syncope after fasting for two days. In one, pregnancy was interrupted spontaneously in the fifth month, whereupon the patient grew rapidly worse, but survived. The second woman was delivered at term of a dead macerated child, and died on the fifth day of puerperium. The third is approaching full term with a low sugar output and a slight acidosis. Fasting certainly made no favorable impression on these pregnant women.

Aside from the unfavorable features so far noted, there were others of a different nature. One woman contrary to injunctions given by me to her son, a physician, without premonition, developed a severe facial paralysis. Whether there was any relation between this complication and the strenuous treatment must be merely conjectural but when, shortly after, another fasting diabetic was stricken with apoplexy, a faint suspicion entered my mind. As opposed to these neurological disasters, I must in justice report that several of my patients appeared to be cured of a peripheral neuritis following the fasting treatment. There are at present two patients under observation with trophic disturbances, shedding of the nails and perforating ulcer of the large toe. Both appear to stand fasting favorably.

Twice I have seen a latent tuberculosis activated some time after the fast, but of course a causative relationship could not be claimed. Yet other observers have reported similar instances. Two weeks after the fast, one patient began to cough, have expectoration, and afternoon temperature. He informed me he had not coughed in over a year "to amount to much," and had had no night sweats; he believed the fast precipitated the attack.

Taken all in all, considering the many failures to bring about an improvement in the patient, I think we can with a semblance of justice assert that the value of the fasting treatment of Allen, is inconclusive and enigmatical. That it has advantages no one will deny, for under ordinary conditions it can usually be relied upon to make the diabetic sugar free, temporarily, and this improvement naturally must have a good moral effect on the patient.

The most forcible lessons drawn from my series of cases, as far as any treatment is concerned; is, first, that the earlier the diabetes is discovered the more favorable the prognosis; second, the diabetic's span of life is in direct ratio to his ability to resist infections; and third, that both of these factors are largely determined by presence and degree of acidosis.

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GAS GANGRENE.*

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INTRODUCTION.

A great deal of the confusion existing regarding the bacteriology of gas gangrene is due to the tendency manifested in the prewar period of considering this affection a specific clinical entity. This was responsible for the different conceptions of various workers as to what constituted the etiology of the disease. The isolation of the *Vibrio septique* from certain cases of gas gangrene was considered proof positive that gas gangrene was always due to the *Vibrio septique*. The later isolation of the *Bacillus welchii* from patients with gas gangrene caused some workers to consider this organism as the causal agent of this disease. An attempt was then made to differentiate the type of gas gangrene caused by the *Vibrio septique* from that due to the *Bacillus welchii*, and to designate the former as malignant edema and the latter as gas bacillus infection. This would have helped settle the question had not some observers noted cases of gas gangrene which resembled clinically malignant edema, but were caused by the *Bacillus welchii* and the opposite was equally true. Other authors, in addition, isolated from time to time bacteria other than the *Bacillus welchii* or the *Vibrio septique* which seemed to them to be the cause of the gas gangrene process. Before long gas gangrene, which was supposed to be a clinical entity, became definitely associated with a large number of bacteria, the literature before the war containing as many as twenty-one supposedly different bacteria, to which an etiological rôle had been ascribed, were isolated from gangrenous infections in the years elapsing between 1877 and 1912.

Most bacteriologists were confronted, at the beginning of the World War, with this seeming confusion and there was a doubt as to which organism was the causal agent of the disease. It was observed, in addition, that the presence of the organism did not mean the coexistence of the disease. Many of the wounds which were studied were found to contain *Bacillus welchii* and other bacteria, and in the wounds there failed to develop any type of gangrenous infection, whereas in many rapidly fatal cases these organisms were found in pure or mixed culture. The French bacteriologists, many of whom considered the *Vibrio septique* as the sole causal agent, noted early in the war that an overwhelming proportion of their cases contained *Bacillus welchii* in pure cultures. It became evident that all previous conceptions concerning causal agents would have to be revised or that new factors previously undiscovered were responsible for the causation of this disease.

Weinberg and Seguin (1) in attempting to clear up the confusion carried out a very exhaustive critical review of the preexisting literature on the subject. They found that the confusion was chiefly due to the faulty nomenclature adopted by certain authors as a result of their erroneous concep-

tions. The publication of a large number of papers describing bacteria that had been incompletely studied helped further to confuse this subject. Other bacteria which were identical had been given different names because of the varying clinical manifestations of the disease they produced. This was the reason so many aerobic and anaerobic bacteria had accumulated in medical literature as causal agents of gas gangrene infections.

Thus, for example, the *Vibrio septique* of Pasteur and the bacillus of malignant edema were proven to be identical, but the clinical designation given this organism by German authors was misleading in that it suggested that this bacillus could only produce a progressively fatal edema. This was not always the case, so that authors who encountered this organism in diseases with a different clinical picture would describe it as a different species and would designate it by a different name. This accounts for the many so-called bacilli of pseudomalignant edema encountered in the literature, as well as the other supposedly different bacteria.

By comparing the descriptions of various authors, Ghon and Sachs (2) were able to differentiate the organisms described into three groups:

1. Those bacteria identical with the *Vibrio septique*, which were capable of reproducing the disease in animals.

2. Those which belonged to different species, which were isolated and studied at length.

3. Bacteria so poorly described or incompletely studied as to be entitled to little consideration.

The first group included the *Vibrio septique* of Pasteur; the bacillus of malignant edema of Koch, Schlemmer, Ghon and Sachs, and Eugene Fraenkel; the *Bacillus III* of von Hible; the *Bacillus Kitasato*; the *Bacillus Sanfelice*; the *Bacillus Eisenberg* and many other organisms which were proven to be impure cultures of the *Vibrio septique* like the *Bacillus septicus* of Mace; the *Bacillus X* and *XI* of von Hible, the bacillus of malignant edema described by Miss Robertson and others.

The second group included the *Bacillus welchii*, the *Bacillus novy*, the *Bacillus enteritidis sporogenes* of Klein, the *Bacillus Silberschmidt*, the *Bacillus Penzo* and others.

The third group need not be considered.

It was thus apparent from Weinberg and Seguin's analysis of the literature that a progressive gangrene infection could be due to a variety of bacteria, the clinical condition varying with the virulence of the organism, its varying ferment activity, its toxin producing power and other associated factors which deserved further study. Different bacteria might therefore produce similar lesions so that gas gangrene must not be considered to be a specific clinical entity due to a specific microorganism but must be regarded as a clinical syndrome. This condition is analogous in many ways to the clinical syndrome termed angina. Angina or sore throat represents an inflammation of the throat caused by a variety of bacteria and other associated factors. It may be caused by the streptococcus, the staphylococcus, the *Bacillus diphtheriae*, the *Micrococcus catarrhalis* of the *Bacillus fusi-*

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forms in association with one or another of the mouth spirillae, and the degree of inflammation bears no relationship to the organism which is present. The virulence of the organism is not always an index of the severity of the process and vice versa. It is not uncommon for a simple follicular tonsillitis to be caused by a most toxic strain of the *Bacillus diphtheriae*. Strain VIII of Park used for the manufacture of diphtheria antitoxin is a classical example.

The same holds true for the bacteria isolated from gas gangrene infections. They are oftentimes present alone, although it is more common to encounter mixtures of these organisms. They may be present as anaerobic bacterial associations or may consist of aerobic and anaerobic associations. Their virulence varies so that they may be responsible for fulminating gangrenous infections. As a rule organisms isolated from fatal cases are most virulent, although this is not always constant. Certain conditions increase their virulence, with a consequent increase in the severity of the disease, whereas others diminish their virulence and produce relatively benign affections. These factors will be discussed at greater length in connection with the etiology of this disease.

BACTERIOLOGY.

Many of the bacteria described before the war were encountered in gas gangrene occurring during the war. Some of the organisms described before the war were not met with by any of the numerous workers who delved into this problem during the hostilities. A large number of new organisms have been isolated and some of the older organisms more thoroughly studied, so that we are able today to classify the organisms into several well defined groups. The first group consists of the anaerobic bacteria which are found in connection with gas gangrene and which are capable of reproducing the disease in animals. The second group consists of anaerobic bacteria which are isolated from gas gangrene processes, but which are not capable of reproducing the disease, although they are of importance in association with the above. The third group consists of aerobic bacteria isolated from gas gangrene processes capable of reproducing analogous lesions, and finally a fourth group of aerobes which are found in association with any of the above but which of themselves fail to produce lesions in animals.

The anaerobic bacteria isolated from disease processes in man which can reproduce the disease in animals are:

- 1.—*Bacillus welchii* (synonyms—gas bacillus, *Bacillus aerogenes capsulatus*, *Bacillus perfringens*, *Bacillus phlegmonis emphysematosae*.)
- 2.—*Vibrio septique* (synonyms—*Bacillus of malignant edema*, *Bacillus chauveyi*, *Bacillus symptomatic anthrax*, von Hibler III, *Bacillus septicus*), bacillus of Ghon and Sachs.
- 3.—*Bacillus oedematis* (synonyms—*Bacillus gasoedem*, *Bacillus helonensis*, *Bacillus novyi*, *Bacillus of malignant edema II*).
- 4.—*Bacillus fallax*.
- 5.—*Bacillus histolyticus*.
- 6.—*Bacillus sporogenes* (synonyms—*Bacillus enteridis sporogenes*, *Faehnis erregor*).
- 7.—*Bacillus aerofetidus*.
- 8.—*Streptococcus anaerobius*.

The following anaerobic bacteria have been isolated from gangrenous infections but do not reproduce the lesions in animals:

- 1.—*Bacillus bifermentans*.
- 2.—*Bacillus putrificus* (*Bacillus cadaveris sporogenes*, von Hibler XIV).
- 3.—*Bacillus tertius* (von Hibler IX).
- 4.—*Bacillus II of Ghon and Sachs*.

The aerobes which are capable of reproducing analogous lesions in animals are:

- 1.—*Bacillus mesentericus*.
- 2.—*Bacillus anthracoides*.

Those which are found in association and produce in animals putrid abscesses or are nonpathogenic are:

- 1.—*Bacillus proteus*.
- 2.—*Bacillus coli*.
- 3.—*Bacillus subtilis*.
- 4.—*Bacillus pyocyaneus*.
- 5.—*Bacillus friedlander* (*Bacillus mucosus capsulatus*).
- 6.—*Bacillus mycoides*.

The aerobic and anaerobic bacteria isolated from gas gangrene infections before the war, whose presence was not confirmed by other observers during the war, are the following and are mentioned for the sake of completeness.

- 1.—von Hibler VI.
- 2.—von Hibler VII.
- 3.—von Hibler X.
- 4.—von Hibler XI.
- 5.—*Bacillus of Stoltz*.
- 6.—*Bacillus of Wicklein*.
- 7.—*Bacillus of Buday*.
- 8.—*Bacillus of pseudomalignant edema of Sanfelice*.
- 9.—*Bacillus septique aerobie of Legros and Lecene*.
- 10.—*Bacillus aerogenes aerophilus of Uffenheimer*.

The last three named are aerobes, while the first seven are anaerobes, von Hibler X and XI are very likely impure cultures of the *Vibrio septique*.

A large number of observations made by the bacteriologists of the Allied Armies and confirmed by American bacteriologists show that the greatest number of cases of gas gangrene are caused by anaerobes either alone or in association with other anaerobes. The aerobes which are present in some cases are evidently only accessory factors in the production of this disease. The anaerobes which are the primary cause of this affection are important only if they are capable of producing toxins. Their fermentative power is likewise of importance as this enables these organisms to develop media favorable for the secretion of toxin. Those which produce toxin are capable alone of producing progressive tissue necrosis with irreparable damage to the vital nerve centres, in this way causing death. Those which have slight toxin producing powers but marked proteolytic ferments are capable of producing limited local lesions, whereas those organisms which have active proteolytic ferments but secrete no toxin are relatively harmless when present alone. They become dangerous in the presence of necrotic tissue or when associated with some of the toxicogenic organisms mentioned. The biochemical properties and cultural characteristics of these organisms would require more consideration than is possible in a short paper and will form the subject of future publications. We can divide these organisms according to their toxin production,

their saccharolytic properties and their fermentative properties.

The toxicogenic organisms are the following: *Bacillus welchii*, *Vibrio septique*, *Bacillus oedematis*, *Bacillus fallax*, *Bacillus histolyticus*, *Bacillus sporogenes*. Antitoxic sera have been prepared against the *Bacillus welchii*, the *Vibrio septique*, the *Bacillus oedematis* and the *Bacillus histolyticus*. All of the organisms mentioned have active saccharolytic ferments with the exception of the *Bacillus histolyticus*. The *Bacillus histolyticus*, the *Bacillus sporogenes*, the *Bacillus putrificus*, the *Bacillus bifementans*, and the *Bacillus aerofetidus* have active proteolytic ferments. The *Bacillus welchii* has a slightly active proteolytic ferment. They are all strict anaerobes although some are capable of growing under conditions which would have been formerly considered partially anaerobic. Thus the *Vibrio septique*, the *Bacillus sporogenes* and the *Bacillus welchii* will all grow if seeded into a large volume of freshly prepared media. The oedematis and the histolyticus require fairly strict anaerobiosis for their isolation from fresh animal material. The toxins of all of these organisms are capable of producing tissue necrosis which is limited if the toxin produced is present in sublethal amounts or becomes progressive if these amounts are exceeded. The liquefaction of tissue that often accompanies infection is due to the proteolytic ferments, whereas some of these organisms have in addition a fat splitting ferment which is responsible for the disintegration of the fatty connective tissue often observed in this disease.

ETIOLOGY.

According to the older conceptions which obtained regarding this affection, serious forms of this disease were caused by infections with pure cultures of these organisms; according to some workers mixed cultures were responsible, whereas other authors maintained that anaerobic infection could only develop in the presence of tissue alteration. These were only opinions, but no experimental proof had been adduced to show which factors were really of etiological importance.

It has been shown experimentally that some of these organisms deprived of their toxin are rarely capable of producing infection. The factors which make for the production of toxin *in vivo* are those which are predisposing causes. These organisms produce toxin in the presence of organic material which favors their multiplication and development. Necrotic tissue produced by any cause will therefore favor infection. Tissue necrosis is usually the result of the trauma inflicted, whether due to an accident or a projectile. This often occurs secondary to fracture, the bone fragments lacerating and destroying the tissue in their immediate vicinity. Vascular obliteration is another prolific cause, and may be due to the trauma or to inflammation. Occasionally gas gangrene infection is observed where there is no solution of continuity. The necrosis oftentimes is due to thermal changes and explains the cases of tetanus oftentimes observed without any apparent external lesion. Frostbite often produces enough necrosis to start anaerobic development.

Gaseous gangrene secondary to thrombophlebitis is occasionally seen in exhaustive diseases like typhoid fever. The bacteria gain entrance under those conditions from the intestinal tract.

Tissue necrosis is much more extensive where the injury is due to a projectile and the infection is then usually of a mixed character. The bacteria are brought into the wound either on the projectile or are attached to the foreign bodies which are driven into the tissues. Colonel Lagarde (3) of the U. S. Army, many years ago showed that projectiles were infected and these experiments were repeated and confirmed by Legroux (4) in the early part of the Great War. It was also shown that the heat engendered in their flight does not last sufficiently long to sterilize bacterial spores with which they have been inoculated. This is especially true of irregular projectiles derived from exploding shrapnel, hand grenades or high explosive shells, whose velocity is much less than that of smooth or regular projectiles fired from rifle or sidearms.

The clothing of the combatant is usually heavily infected, as is the soil of the trenches or battlefield. It has been possible to isolate most of these organisms from all of these sources. Contamination of clothing by feces occasionally occurs and many of these organisms can be isolated from the feces. Certain climatic conditions favor the development of these bacteria in the soil and gas gangrene is more frequent in those regions where heat and moisture are excessive. Physical factors play a very important part. Thus a deep wound with irregular pockets and a narrow opening would favor the development of anaerobic bacteria. Injury to muscle often results in a hernia of the muscle bundles into the wound opening and conversion of the wound into an anaerobic cavity. Foreign bodies often act as a nidus to protect anaerobic bacteria from the phagocytic elements of the body. Necrotic tissue may help beginning infection through the mechanical protection that it affords these organisms against the defensive forces of the body.

Anything which tends to interfere with the mobilization or diminish the immune elements of the body will similarly favor infection. Hemorrhage may help by diminishing the total content of immune bodies and phagocytic cells available. Stasis interferes with the continued mobilization of these elements. Shock by reducing the blood pressure cuts down the circulation of the affected part and similarly diminishes the amount of antibodies and phagocytic cells available. Fatigue tends to produce acidosis which interferes with the function of the antiferments of the body, favors proteolysis of tissue and thus creates favorable culture media for these organisms besides affording optimum conditions for the development of certain groups of the anaerobic bacteria.

Bacterial association plays an important rôle in the production of infection. It has long been known that many bacteria mutually favor one another's development. It has likewise been known that certain bacteria have a tendency to destroy or inhibit one another's toxin. This has been proved experimentally in the cases of several of the organ-

isms concerned with the causation of gas gangrene. Thus Marbais (5) injected whole cultures of the *Bacillus welchii* into humans without untoward results until he mixed them with tuberculin and staphylococci when accidents occurred. *Bacillus welchii* mixed with enterococcus killed guineapigs in three hours, according to Tissier (6). The same author found that the *Bacillus welchii* mixed with *Staphylococcus albus* killed guineapigs in twenty-four hours. Major Aronson (7) found that the virulence of the *Bacillus welchii* is increased, depending upon the activity of the proteolytic ferment contained in the staphylococcus. Staphylococci that had an active proteolytic ferment would increase the virulence of a given quantity of *Bacillus welchii* tenfold, whereas staphylococci which contained no proteolytic ferment or a very slightly active one did not have this effect.

The author has been able to prove that avirulent amounts of the *Bacillus welchii* added to avirulent amounts of a streptococci will produce rapid death, the symptom complex being that of a rapidly fatal toxemia. The time of death is definitely influenced by certain associations. Thus streptococcus and *Bacillus welchii* will kill guineapigs in fifteen hours, and as mentioned above mixtures of *Bacillus mesentericus fuscus* and *welchii* will kill guineapigs in six hours and staphylococcus and *Bacillus welchii* in twenty hours.

Certain anaerobic bacterial associations likewise favor infection. *Bacillus sporogenes* will kill guineapigs in twenty-four hours when mixed with avirulent amounts of *Bacillus welchii*. *Bacillus bifermens* has a similar action when mixed with *Bacillus welchii*. *Bacillus histolyticus* likewise favors infection with avirulent amounts of *Bacillus welchii*. Certain associations have an inhibitory influence on infection. Thus *Bacillus sporogenes* tends to destroy the toxin of the *Bacillus oedematis* or the *Vibrio septique*. The Reading bacillus, an organism which belongs apparently in the *sporogenes* group, has been shown by Donaldson (8) to have a distinctly deleterious effect on tetanus toxin and on diphtheria toxin, so that toxic filtrates in which this organism is grown fail to kill in 150 times the amount which ordinarily kills.

The time at which surgical intervention takes place is a very important factor in the production of infection. It has been shown that the development of gas gangrene bears a very close relationship to the evacuation of the wounded. The longer the delay the greater the opportunity for the proteolysis of tissue which favors anaerobic bacterial development.

PATHOLOGY.

Since gas gangrene is essentially a progressive infection of tissue due usually to mixtures of anaerobic organisms, it is evident that the pathology and consequent symptomatology will vary depending upon the types which are present. The toxicogenic types will produce lesions in which necrosis of tissue and accompanying edema are present. The saccharolytic type will produce lesions in which gaseous infiltration predominate, whereas the proteolytic type of organisms gives rise to lesions characterized by extensive destruction and digestion of tissue. The

pathology bears a close relation to the cultural characteristics and biochemical properties of these organisms.

The extension of the infection is dependent on the amount of toxin produced, and the amount of preceding tissue destruction. Thus where there is little preceding destruction of tissue to favor the growth of bacteria with consequent increase in toxin production, and where the defensive forces of the body are capable of controlling the progress of the infection a gaseous phlegmon will result. Should sufficient toxin be produced, necrosis of the neighboring tissue results with a spread of the infection and in many cases with an extension into the general circulation.

The gas phlegmon shows the same changes as is observed in ordinary abscesses excepting that the presence of saccharolytic bacteria produce a variable amount of gas in the exudate and margins of the wound. In addition the presence of proteolytic organisms usually causes a greater liquefaction of tissue to take place with discoloration of the wound margins when the putrid group of organisms are present. All of the phenomena present in ordinary wounds, such as local hemorrhage and exudate, foreign bodies, congestion and edema are present here.

When the infection becomes progressive, the suppurative changes become overshadowed by the necrotic and edematous changes that take place. The local wound shows marked necrosis, the wound margins become gangrenous, the muscle at the base of the wound becomes dry and necrotic, and turns a brick red color unless the infection is due to a *Vibrio septique*, when it is more likely to be a red mahogany color owing to the intense congestion and hemorrhage that takes place. The necrotic tissues become converted into a slimy greyish red mass as a result of the action of the proteolytic organisms, and if the putrid organisms are present the wound margins take on a reddish black or greenish hue owing to the iron sulphide produced by the combination of the hematin of the blood and the hydrogen sulphide produced as a result of the metabolism of this group of bacteria.

The blood vessels in the immediate vicinity become thrombosed as a result of the pressure of the gas and the edema which infiltrates the tissue. The toxins have a selective effect on the muscle fibres of the *pars media* of the blood vessel walls, thereby thinning the blood vessels with consequent rupture and hemorrhage. Hemolysis of the escaped blood takes place, and is most marked in the subcutaneous connective tissue and is responsible for the discoloration of the skin adjacent to the wound. This discoloration corresponds closely, to the layer of hemolyzed blood which infiltrates the derma and subcutaneous connective tissue. The underlying muscles are fragmented, the individual fibres being dry and occasionally spotted with small red hemorrhagic areas. In advancing processes the muscles surrounding the wound show marked digestion, being converted into a slimy reddish grey, dark greenish or even black mush, having a markedly foul odor. The muscle bundles adjacent are infiltrated with a serous fluid which is straw colored or reddish and the individual fibres are in varying stages

of necrosis and necrobiosis. The limit of the process is usually indicated by muscle which is markedly congested and shows small areas of hemorrhage. The edema which is present runs parallel in most cases with the infective process unless the causal agents are highly toxicogenic organisms, when the edema will extend far beyond the site of bacterial localization. A varying degree of gas infiltration is present between the individual muscle fibres. Infections due to highly toxic *Bacillus welchii* or *Bacillus oedematis* often show very slight or no gaseous infiltration. When injury to a large blood vessel is present, massive gangrene occurs, the tissues, under those conditions being markedly cyanotic and show extensive necrosis and digestion particularly in the region of the wound. The fatty connective tissue is often in a state of partial digestion owing to the action of the fat splitting ferments, secreted by many of these organisms, and the edema fluid infiltrating the connective tissue contains free fat globules. Thrombosis of the superficial lymph and blood vessels of the derma results in the formation of vesicles of varying dimensions which contain a straw colored fluid when lymph vessels alone are affected or is blood tinged when the blood vessels are affected. They sometimes contain a few unaltered blood cells and bacteria are commonly present. The vesicles are unilocular and collapse completely when pricked. They contain occasionally a small amount of gas.

If the organisms are particularly virulent, these changes extend up to the abdomen or chest, depending upon the limb affected. The muscles of the chest or abdomen then show similar changes. If very toxicogenic, edema may progress, the local changes remaining moderate or slight. As soon as enough toxin is secreted to irreparably damage vital nerve centres, death results. The visceral changes are chiefly parenchymatous. Cloudy swellings of the liver, kidneys, spleen and heart are almost constant findings. In acutely toxic cases fatty changes can be demonstrated in the kidneys as well as in the liver.

The brain is usually pale and somewhat edematous, although the leptomeninges are often injected. In delayed death the basal vessels show gas infiltration.

The lungs are often the seat of bronchopneumonic changes particularly where septicemia is present and occasionally the causal anaerobe can be isolated from these areas. The lungs are constantly hyperemic and hypostatic congestion and pulmonary edema are often observed. Subpleural petechiae are commonly observed. Several observers have noted particularly the fluid state of the blood. The blood often contains numerous fat globules. The pulmonic vessels are often markedly engorged with consequent engorgement of the right side of the heart.

The heart is often pale, and the muscle fibres show a marked degree of cloudy swelling. Petechiae are present underneath the surface of the endocardium as well as subpericardially. These may be due to the asphyxia which so commonly precedes death. The elasticity of the aorta is rarely affected, but small streaks of what appears to be atheroma-

tous changes are commonly observed. This is evidently due to localized changes of the muscle fibres of the media. Pinkish staining of the intima by hemolyzed blood is common.

The stomach and intestines are usually distended and submucous hemorrhages are often present. In case of delayed death small ulcerations may be found in the mucosa resembling gastric ulcers. The large intestine is distended and contains packed feces. Occasionally the intestines are empty and contain fluid feces, but intestinal stasis due to paralysis is the usual rule.

The pancreas is firm except where autolysis is present.

In cases where the agonal condition is prolonged, or where the autopsy is performed several hours after death, it is common to see gas infiltration of the larger blood vessels similar to that observed in caisson disease. The blood vessels of the brain contain numerous gas bubbles and the heart similarly contains a large amount of gas. Gas is also present in the larger veins. Microscopic examination of the lungs shows vacuole formation which is independent of the alveolar structure and often surrounds bacilli which are demonstrable within the reticular tissue of the lung capillaries.

The liver shows marked fatty degeneration of the central as well as peripheral cells and coagulation necrosis with dilatation of the central veins. The liver cells are replaced in many areas by irregular vacuoles which often contain bacilli. If putrid bacilli are present discoloration of the tissues is present and microscopically these are seen to be due to particles of iron sulphide.

The tissues affected locally show some very interesting pictures. All workers agree that muscular degeneration is an essential element in the progression and production of the disease. The etiology of this muscle death is different according to different observers. Some consider that the spaces surrounding the muscle fibres represent gas bubbles which surround the muscle fibres and by mechanical pressure produce not only death of muscle but help to scatter the bacteria. Others on the other hand consider that these spaces represent a toxic fluid resulting from the growth of the bacilli, and it is this toxic fluid which is responsible for the progressive death of the muscle and the connective tissue. This toxin further destroys the muscular coat of the blood vessel, produces hemorrhage and venous thrombosis, which secondarily results in muscle necrosis, thus favoring the growth of the bacilli.

The histological changes described by McNee (9), Bashford (10), Sand (11), Jablons (12), Taylor (13) and Klose (14), as well as those which were published before the war, agree regarding the extent of muscle necrosis, fragmentation and separation of the muscle fibres by the gas and the edema which is often present. Sand's descriptions of the changes have been in a great part confirmed. These changes may be best classified into those observed in beginning gas gangrene, in advancing and in advanced gas gangrene.

In beginning gas gangrene, the muscular fibres which are affected show a moderate amount of

swelling and are surrounded by a slight margin of edema. The transversal striation is maintained in some areas, whereas the longitudinal striation is more prominent in others. The nuclei of the sarcolemma are usually diminished in number. Cloudy swelling of the muscle fibres is often associated with pyknosis or beginning karyorrhexis. The bacteria are present in close proximity to the margin of the muscle without being inside of the muscle fibres. Hemorrhage into the connective tissue is absent in this stage. There are no signs of leucocytic invasion and the connective tissue shows little change.

In advancing gas gangrene muscle fibres are markedly swollen and are surrounded by a large band of edema. The fibres are deformed owing to the pressure of the edema and the swelling of the fibres. The longitudinal fibres are dissociated and the transverse striations rarely visible. The muscle fibres are homogeneous and stain intensely with eosin. At times they are mottled, cloudy or finely granular, showing characteristic Zenker's hyaline degeneration. Occasionally the muscles show a fine sprinkling of blood pigment granules. The nuclei of the sarcolemma are scant, pale and show pyknosis or advanced karyorrhexis. The connective tissue shows marked hyaline degeneration with an infiltration of numerous blood pigment granules.

The blood vessels at this stage show interesting changes. The capillaries show little outside of congestion, and they contain relatively few leucocytes. The larger vessels, however, show fragmentation and coagulation necrosis of the muscle fibres of the media, and diapedesis of blood cells is often observed. Where the injury is more marked actual rupture of the coat is present with an infiltration of blood cells in the immediate vicinity. Some of these red blood cells are hemolyzed while others are fairly well preserved.

In advanced stages of gas gangrene the muscles are converted into a homogeneous mass, especially where many proteolytic organisms are present. The connective tissue is necrotic. Connective tissue cells are in an advanced state of karyorrhexis. The fragmented muscle fibres contain bacteria and each bacillus is surrounded by a small gas vesicle. The proteolytic organisms digest tissue so that crystals of amino acids are not uncommonly found in histological sections.

SYMPTOMATOLOGY.

The disease has a slightly differing symptomatology when it is due to a toxicogenic organism, a saccharolytic organism, a proteolytic organism or mixtures of all three. In the first instance, the disease is usually classified as the toxic type, in the second as a gas infiltrative type, in the third as the putrid type, while the last named is responsible for a mixed type in which all of the symptoms present in either of the preceding types are combined. In the toxic type, necrosis is the essential feature, but occasionally the hemorrhagic infiltration is more marked or the edematous infiltration may be the outstanding symptom of the disease. In the gas infiltrative type, necrosis is present with a variable amount of edema, but the sugar splitting ferments actively ferment the muscle sugar and other carbo-

hydrate substances present in the tissues so that the gaseous infiltration becomes the outstanding symptom of the disease. In the putrid type the digestion of tissue down to the protamine stage with the consequent putrid odor of these substances makes the putridity the predominant symptom, although the associated sugar splitting ferments are responsible for a variable amount of gas infiltration.

To recapitulate: Gas gangrene may be divided into the following types:

A. Toxic type producing extensive necrosis accompanied by:

1. Hemorrhagic infiltration if blood vessel destruction is marked.

2. Edematous infiltration if toxin production is excessive.

B. Gas infiltrative type or classical, accompanied by necrosis and variable amount of edema.

C. Putrid type in which putridity of process, accompanied by marked liquefaction of affected tissue, discoloration if hydrogen sulphide is produced, necrosis, gas and edema being variable.

D. Mixed type in which all symptoms observed in these types are present, the predominant symptoms being due to the predominant type of bacteria.

The toxic type is most commonly due to toxicogenic strains of the *Bacillus welchii* and the *Bacillus oedematis*. In animals inoculated with pure cultures of these organisms or with their filtered toxins there develops a symptom complex which resembles that observed in humans in whom there have developed pure infections with these organisms. The local symptoms are as follows:

The affected limb is markedly swollen. The veins stand out as bluish markings on the dull white skin. The swelling is only slightly compressible. The limb is tense, and it is rare to palpate any appreciable amount of crepitus. It is the absence of gas infiltration that is so misleading and causes surgeons to consider this infection as due to one of the simple pyogenic organisms. The exposed parts of the wound are necrotic and usually infiltrated by a gelatinous edema. This gives the muscle at the base of the wound a washed meat appearance. Pulsation in the affected limb is usually present, but faint. The limb is much cooler than the opposite healthy limb or than the part of the body contiguous which is still unaffected.

The general symptoms are those of a toxemia. The pulse is rapid and small. The heart sounds are rather feeble. Respiration is hurried and somewhat shallow. Consciousness remains to the end. The patient is restless and seems markedly anxious. The temperature may be elevated but it is usually low particularly toward the end, and patient usually dies with a subnormal temperature. Death is usually preceded by marked restlessness and convulsions.

The hemorrhagic type differs from the above in that the skin is deeply congested and numerous areas of bronze erysipelas are present in the region of wound or the beginning of the process. This bronzing and mottling of the skin is often accom-

panied by the formation of vesicles. These are almost always found over an area of bronze discoloration. They vary in number and size and usually contain a blood stained fluid. They are unilocular and sometimes several vesicles unite to form one large vesicle. They always have a thin layer, the upper layers of the derma and epidermis forming the outer covering. The muscle at the base of the wound is swollen, deeply congested and hemorrhagic in areas.

In this form, which is very commonly due to the *Vibrio septique*, the edema is much more compressible than in the purely toxic type. There is at times demonstrable a very fine crepitus usually best felt by passing a razor blade over the skin. The general symptoms are similar to those observed in the preceding type. The pulse is very rapid and out of proportion to the temperature which may vary from 101° to 103° F. The restlessness is very marked. This symptom and the anxiety are characteristic general symptoms of this type. Death usually occurs before paralysis sets in. In experimental infection with minimal quantities of bacterial culture paralysis of the limbs occurs before death takes place. The blood culture is often positive and usually shows the presence of the *Vibrio septique*. In the gas infiltrative or classical gas bacillus infection type which is usually due to the saccharolytic type of the *Bacillus welchii* or to the *Bacillus fallax*, the wound margins are swollen and somewhat necrotic. The wound margins show characteristic bronze discoloration with vesicle formation. The tissues at the base of the wound are bathed in a pinkish gelatinous exudate and the muscles are dry and have a dull red cooked meat appearance. They usually protrude through the wound owing to the distention caused by gas infiltration. There is a very extensive exudation of gas from the wound mixed with a pinkish blood stained fluid. The limb above the wound is swollen. The swelling is extensive and extends considerably beyond the region of the wound. Palpation elicits marked crepitus where infection is present in the deeper planes of the muscles, but it is necessary to palpate deeply to elicit this sign. In early cases the presence of gas bubbles underneath the skin gives a peculiar sensation as of a razor drawn over the skin, and many people have considered this a characteristic early sign of this type of the disease. In pure infections, there is little or no putrid odor. The odor resembles rather that of butyric acid and is particularly marked where excessive gas infiltration is present.

The general symptoms of this type are similar to those observed in the hemorrhagic toxic type. The dyspnea is more marked and is a more constant feature of the disease. Progressive anemia is likewise more marked in this form than in any other type, and where the disease is prolonged, a marked anemia of a secondary pernicious type develops. Blood culture is sometimes positive before death. This form of the disease is usually associated with obstinate constipation, occasionally diarrhea is present. In one such case the feces showed an almost pure culture of the *Bacillus welchii* and the organism was isolated from the heart blood. In the

mixed type all of these symptoms are usually present.

In the putrid type, the wound margins are markedly necrotic and gangrenous the skin overlying the lesion being a greenish gray, very moist and showing numerous vesicles, which are denuded of hair, discolored and with a very offensive putrid odor. The muscles at the base of the wound are converted into a grayish green, almost black, putrid mass. The limb is badly swollen, and contains large gas pockets. Crepitus is present but it is not as marked as in the classical gas bacillus infection type. The general symptoms are the same, excepting that the symptoms of collapse are more marked.

CLINICAL PATHOLOGY.

This represents the changes in the formed elements and body fluids caused by the toxins of these organisms. The hemolytic agents secreted by the organisms are active, so that studies of the formed elements of the blood reveal a marked anemia even in the fairly early stages of the disease. The blood count at times shows a total red blood cell count of less than 1,000,000 cells to the c.c. Ritter found in twenty cases of gas gangrene a constant diminution of the total count of the red blood cells. This was one of the very early signs of the disease. Only in four cases was there a count approximating 4,000,000 to the c.c. The blood count was usually 3,000,000 cells to the c.c., and in one case it was 1,130,000. A soldier whose blood count was 2,280,000 previous to his infection by gas gangrene, had a count of only 1,060,000 after the disease developed.

Anisocytosis is usually present. Macrocytes predominate at the beginning of the infection while microcytes predominate toward the end of the disease. Poikilocytosis is constant and in ten cases there was a noticeable polychromatophilia, nucleated red blood cells being present in four cases with occasional basophilic granulations. There was a definite leucocytosis varying from 15,000 to 30,000 with a relative increase in the polynuclear cells. Eosinophiles were diminished or absent. Myelocytes and Turck cells were often present. In convalescence the lymphocytosis becomes noticeable. The lymphocytes are about forty to sixty-two per cent. of the total white blood cell count and a slight eosinophilia of three to five per cent. is usually present.

The urine in serious cases shows the changes due to diffuse nephritis. Most patients show hyaline casts and albuminuria. Hemoglobinuria is sometimes observed, particularly in cases due to *Bacillus welchii*.

The blood serum in fatal cases shows demonstrable hemolysis. Agglutinins are rarely demonstrable in the acute cases. One case cited by Weinberg agglutinated *Bacillus fallax* and the organism was later isolated from the heart blood as well as from a focus of bronchopneumonia. Skin reaction to killed cultures is similarly negative. It is possible to produce a skin reaction in guineapigs with the blood serum of acute cases, serum from convalescent cases failing to produce this effect. This indicates the presence of a circulating toxin.

THERAPY.

The treatment of gas-gangrene is essentially surgical. This is particularly true where the disease follows trauma. The early extirpation of the focus of necrotic tissue and the contained anaerobic bacteria is the best means of preventing the disease. It is sometimes impossible to evacuate a patient sufficiently promptly for early surgical intervention. The use of prophylactic injections of mixed serum containing antibodies against the three most common anaerobes is then indicated and its use in gas gangrene has appreciably lowered the mortality. A discussion of the serum therapy of gas gangrene and the results obtained both prophylactically and from a curative viewpoint will appear in a future paper.

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THE RELATION OF ARTERIOSCLEROSIS TO THE EYE.*

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In view of the great vascularity of the eye, it is not surprising that the ophthalmologists lay claim to being able to diagnose this condition in its various stages. One entire tunic, the uveal tract, is almost entirely composed of bloodvessels, while the dominating features of the retina, visible to the eye of the examiner, are the retinal arteries and veins. The conjunctiva has few bloodvessels, but these are involved only in acute conditions of that structure. The cornea has none. The sclera has a few deep vessels for the most part, which are so protected as to be open to observation only in acute conditions involving the eyeball and sclera. The vessels of the iris, ciliary body, and choroid, are for the most part venous and have the conditions peculiar to such structures. The vessels of the retina are both arteries and veins. The arteries have the same structure as arteries elsewhere in the

body and divide into arterioles, all so distributed as to be visible for the greater part of their course by means of the ophthalmoscope. Since the disease under consideration in this symposium is first manifested in smaller vessels, the ophthalmologist is in position to aid the clinician materially in the diagnosis of obscure as well as frank cases of the affection.

Perhaps the oldest observations in which disease of the structure of the vascular system was connected with an ocular condition were those concerning arcus senilis by Canton (1), in which this gentleman stated that it was associated with a fatty degeneration of the heart muscles; and that by Schön (2) in which ossification of the ophthalmic artery was found in cases of arcus senilis. Modern writers do not accept this relation, but regard arcus senilis as merely a circle of fatty degeneration of the substantia propria of the cornea, secondary to advancing years, leaving its closer relation to vascular disease open to speculation. Hence it is we find many of the men in active general practice accepting it as an evidence of arteriosclerosis.

Passing to the conjunctiva we find these vessels sharing but little in the disease, that is, as far as we are able to observe, but a diseased vessel is a weak vessel, and on this account it is my practice to regard recurring subconjunctival hemorrhages in adults with suspicion and refer such patients to the clinician for examination of the blood, the blood-pressure, and other detailed examination. A careful study of a series of cases at the Medico-Chirurgical Hospital several years ago elicited such surprising information as to have justified my subsequent handling of these patients. These conditions are often followed by nephritis, arteriosclerosis, or diabetes.

Glaucoma is attributed in some cases to arteriosclerosis. This is doubtless due to the fact that both occur at the same time of life and that lessening of the elasticity of the ocular structures is common to both conditions. However, the incidence of general arteriosclerosis is much greater than that of glaucoma.

The uveal tract (iris, ciliary body, and choroid) is affected by the same etiological factors that produce arteriosclerosis. These will produce the several forms of uveal inflammation, but their presence does not indicate a coexisting arteriosclerosis. Patients with uveal disease may obtain some satisfaction from the knowledge that later on they are more likely to have arteriosclerosis than others of the same age not so affected.

Cataract is the logical result of vascular disease. Somewhere along the line, the nutrition of the crystalline lens is interfered with and since this is dependent upon the circulation of adjacent structures, we must look for its primary origin in the vessels of these parts. Its presence is not *prima facie* evidence of generalized arteriosclerosis, but is suggestive. Vitreous opacities are also included in the results of arteriosclerosis, but this is difficult to prove.

In the retina, however, the disease is definite and pronounced. We have vasculitis, perivasculitis, tortuosity, alterations in calibre, and hemorrhages,

*Read as part of a symposium on arteriosclerosis at a meeting of the Philadelphia County Medical Society, November 12, 1919.

all unmistakable evidences of generalized vascular disease. In the well known condition of retinitis albuminuria the changes in the retina are, for the most part, associated with the vessels, and from this it is assumed that similar changes must be taking place with the smaller vessels elsewhere in the body, hence the synchronous occurrence with kidney disease. Embolism and thrombosis likewise affect these vessels.

The differential diagnosis of the vascular conditions of the retina is for the ophthalmologist to determine, and consequently is out of place in a symposium of this character, but it may be stated without fear of contradiction that whatever change may be produced elsewhere in the body by vascular disease will also be produced in the eye, but unlike disease elsewhere it may be rendered visible to the examiner by means of the ophthalmoscope. Therefore, it is the ability to use the ophthalmoscope and to interpret the picture that it presents that constitutes the relation of the eye to vascular disease.

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INDUSTRIAL MEDICINE AND SURGERY AN INTEGRAL PART OF INDUSTRY.*

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In 1906 when Vicount Haldane, representing the British government, was exploring the ground in Germany for a better understanding between the two countries which it was hoped would prevent war, he was discussing the subject one day with the Chief of Staff, General Von Moltke. They each expressed the opinion that a war between Great Britain and Germany would be to the disadvantage of both countries, as each would be weakened, neither would be victor, and the United States would succeed to world supremacy. Through a more fearful war than either man imagined this result has come to pass, and now the United States is the foremost nation in the world in resources, wealth, power and influence. Indeed, our country has come into a position of world influence which should cause every thoughtful citizen to seriously consider our national equipment for the discharge of the responsibility which rests upon us as a nation. Perhaps the other nations of the world expect too much of us, notwithstanding our resources and ability. In many ways we are badly prepared for world leadership. Slowly and through a painful struggle we are developing an international mind that will qualify us to deal diplomatically and effectively with the problems of international relationships. Although we have had a great world commerce, we have not carefully studied the habits, likes and dislikes of other

peoples in order to adapt our commercial methods to their national traits. With almost boundless resources, we are not as frugal and thrifty as many of the other nations of the world, we have been wasteful in the extreme. We are a wonderful country in regard to quantity, but have not rightly emphasized quality. These facts should lead us to careful analysis and selfcriticism in order that we may be better equipped to render a world service commensurate with our opportunity.

The war has revealed our weak spots, one of which is our general health conditions. We were startled when the fact was made known that a third of the young men between twenty-one and thirty-one years of age were physically disqualified for military service and that between the years of thirty-one and forty-six a much larger number were disqualified.

As health is the first requisite for a normal life, it must be apparent to every reflecting mind that the basis of our national life is not secure until the health of the people is greatly improved. Health is not only the first requisite for a normal life but it is the first necessity for a full productive life. Good workmen are healthy workmen; production and contentment rest upon health as the keystone of the arch. Work places must be safe and sanitary. Occupational diseases need to be prevented and injuries properly and fully treated. For these reasons industrial medicine and surgery should be an integral part of our industrial life. It is estimated that the working people each lose an average of nine days every year because of sickness. Much of this sickness could be prevented. Further it is obviously true that a multitude of sick people continue at work when they ought to be under treatment at home or in the hospital. The loss to industry through sickness is much greater than on account of accidents. Indeed, the economic loss because of ill health is second only to the loss on account of the labor turnover.

The better organization of industry which is now taking place emphasizes the health phase of industry as well as accident prevention and suitable conditions of labor. The industrial physician or surgeon therefore should have his place by the side of the employment manager. Many forward looking employers have recognized the importance of a proper medical equipment and well qualified physicians and surgeons as members of their organization, and have made great advancement in the prevention of sickness and the proper treatment of injuries and disabilities. A larger number of employers are still dealing with the subject inadequately, through part time physicians, a few nurses and first aid work, and a considerable proportion of the employers have not awakened to the necessity of proper health measures in their industries. But the burden of taxation and increased costs of production, added to by accidents, sickness, labor turnover and shortage of labor will soon compel all employers of labor who wish to be successful in the industrial field to give more attention to this important subject.

It is opportune that the medical associations are themselves commencing to give careful considera-

*Read before the Clinical Congress of the American College of Surgeons, October, 1919.

tion to the field of industrial medicine and surgery, and if commendable progress is to be made the medical profession must lead the way. If the knowledge, skill and collective experience which the medical profession has at its command could be applied practically and broadly in the field of industry, there would rapidly take place a tremendous improvement in the health and productive power of our country. It becomes a practical question, therefore, how to connect up the industries and the medical profession in order that whatever the profession can contribute to the welfare of the industries may be recognized by employers and this good result brought to pass. Evidently the time has come for some statesman in the medical profession to find a way to do the necessary thing. The traditions and ethics of your noble profession forbid that you should advertise your skill and services among employers individually. Only charlatans and quacks do that. Without meaning to criticize your fine traditions and ethics, which I approve, will you permit me to offer a practical suggestion which may point the way? Why should not the American College of Surgeons, composed as it is of leaders of the medical profession, establish a committee to formulate plans to bring to the attention of the employers of the country, in a most practical way, the assistance which the medical profession can render to the industries in promoting the health and efficiency of workmen. Let the plan embrace some of these features:

First: A bureau in the American College of Surgeons, headed by a practical business man who is also a surgeon, and which bureau under his direction will prepare, or have prepared by appropriate committees, pamphlets on the subject of health and the treatment of disease and injuries in clear, non-technical, forcible language, which pamphlets should be sent to every chamber of commerce, manufacturers' association and trade body in the country.

Second: Letters should also be sent to all the employers of the country, calling their attention to the necessity of health as a factor in industry and making suggestions concerning the proper organization of a health service in industrial plants.

Third: Let the plan include a roster of able men who can speak effectively upon this subject before chambers of commerce, before manufacturers' associations and the leading trade bodies at their annual meetings. Then by correspondence and interviews with leaders of commercial organizations, secure the opportunities for these speakers to present the health subject at their important meetings.

Fourth: Maintain a roster of well qualified physicians and surgeons who are willing to enter the industrial field provided suitable conditions and opportunities are open for them. This does not mean an employment office for unemployable physicians and surgeons but rather an exchange centre of information for industries and the medical profession which will be to their mutual advantage.

Fifth: Let this propaganda and educational work also be carried into the medical schools and hospitals of the country in order that the regular medical course may provide training in industrial surgery, as Harvard, Cincinnati and other colleges are

doing. We must not forget that if surgeons are to succeed in industry they must have the industrial point of view and be able to function in co-ordination with the rest of the management.

You have been accustomed to receive patients at your offices, clinics and hospitals. Those of your number engaged in general practice also visit patients in their homes. You will observe that I am advocating a reverse process as regards industrial surgery, namely, that it be established as an integral part of industry. Instead of patients being sent to your clinics and hospitals, put forth an earnest effort to have industries establish first aid treatment, clinics and small hospitals in the works. In other words, carry the message to Garcia.

Why should not the leading men of your profession organize, direct and personally help to carry forward an aggressive campaign to introduce industrial medicine and surgery in all the leading industries of our country? You have the knowledge, the technical skill, the collective experience and the personal influence to convince all intelligent employers of this country that they must give first consideration to the health of their workers if they expect to have an increased production, a lowered labor turnover, and the saving of lost time because of accidents and sickness.

The fact is that many employers are more forward in hunting for industrial surgeons than has been the medical profession, as a profession, in stimulating health conditions in industries. You have been held back by your traditions and ethics which govern your individual attitude and action, but will it be any violation of your ethics, if, through a proper organization, you advertise the help which your profession can render to this fundamental need of our industries? The Life Extension Institute is rendering a splendid service by stimulating a broader interest in health and also rendering a health service. Its work is growing rapidly and deserves every encouragement. The plan which I wish to suggest is not to offer health service itself, but an organized effort to convince the employers of our country of the imperative and fundamental necessity of health as a prerequisite to normal and increased production, and then to help the industries find suitable and well qualified men to do the work in the industries as a part of the industrial management. Such a plan would supplement the efforts of the Life Extension Institute and in no way interfere with its efforts.

The safety movement has made rapid strides in ten years, but it has made this wonderful advancement because an effective organization has sold the idea of safety to the employers. The question of health in its broad aspects is much greater than the problem of accident prevention, and no body of men can bring these facts to bear upon the minds of industrial leaders like a great medical association, which properly organizes its thought and energies to accomplish this noble purpose. By improving the health conditions in industry you will fundamentally affect the health conditions of communities, stimulate the departments of health in our cities and States, and greatly diminish the field of operation of the charlatan and the quack, who

make a rich living out of the ignorance, fears and misfortunes of the American people. The time is ripe for a movement of this kind. It will be an assured success, if entered upon with heartiness, co-operation and good will. I am the more bold to make this suggestion to the American College of Surgeons because you are the leaders of your profession, men of approved skill and experience, with vision and organizing ability. You are accustomed to staff work and know the value of group action. You have the prestige and influence to lead in solving this fundamental problem.

RHEUMATISM IN THE LIGHT OF MODERN RESEARCH.*

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As physicians, we appreciate that the most common cause for patients consulting us is for the relief of one symptom, pain, and in describing their symptoms, the condition is invariably referred to as rheumatism, the underlying cause being ascribed to the uric acid in the system.

In the past ten years, physicians have learned that the conditions which were previously regarded as rheumatic may now be divided into two classes, about seventy per cent. of which are due to various types of focal infection and about thirty per cent. to disturbances in the metabolic processes, i. e., too much food in general; too much of one kind of food, such as potatoes, rice, meats, oranges, etc.; some physiological disturbance of the function of digestion to digest certain kinds of food.

There is not one form of infective or septic disease affecting the body which may not produce both acute and chronic inflammation of joints. For instance: 1. Any local nidus of suppuration in the oral or nasal cavities, as carious teeth, septic gums, tonsils, rhinitis, and accessory sinus disease, middle ear suppuration, etc.

2. Acute or chronic infection of the genitourinary tract—urethritis, prostatitis, vesiculitis, cystitis, and nephritis, vulvovaginitis, endometritis, or pyosalpinx, etc.

3. Puerperal sepsis.

4. All forms of gastrointestinal diseases, from gastritis or the mildest mucous colitis or a perianal abscess, to the gravest forms of ulcerative colitis.

5. Sepsis in the bronchial and pulmonary system, from acute bronchitis to the most chronic form of bronchiectasis.

6. Every known specific bacterium has been proved a source of arthritis—streptococcus, staphylococcus, pneumococcus, gonococcus, typhoid, *S. crysipelatos*, meningococcus, the bacilli of dysentery, *S. salivarius*, etc.

7. The exanthemata and infective diseases common to childhood—diphtheria, chickenpox, scarlet fever, and measles.

8. Acute rheumatism, which probably affords one of the best examples of acute synovitis. It is also associated with suppuration in joints, as one would expect in an affection which so frequently leads to malignant endocarditis and septicopyemia.

9. The chronic granulomata, syphilis, and tuberculosis.

10. Many diseases incidental to the tropics.

11. Lastly, any lesion, however small or unexpected, which may lead to septicopyemia, whether acute or chronic, has the capacity to infect a joint. One comes across such instances constantly.

As already stated, it must be remembered that a bacterial process may produce arthritis in two ways: 1. By septicemia or pyemia, i. e., the bacteria themselves gain admission to the constituent tissues forming the joint, and therein excite active disease. 2. As a result of the production of toxins in any local nidus of disease (i. e., not in the joint), these must circulate in the blood stream and thus tend to produce disease in all the tissues of the body. If any portion of the body has its vitality sufficiently reduced by other agencies, such as overuse, trauma of a very slight nature, or exposure to cold, the toxins are enabled to excite inflammation in such an area, thus producing in a joint synovitis or arthritis. When we, therefore, attribute to cold and slight lesions the blame for a synovitis or arthritis, we must remember that in all probability they were only contributory to it and seek for septic foci in other parts of the body.

It is highly probable that certain forms of toxemia result from disturbances in the metabolism of food substances, especially in the case of excessive intake of proteids, and that such toxic byproducts play a part in maintaining or exciting the arthritic diathesis.

That such toxins would help to produce disease is obvious from what has already been stated, but I have yet to be convinced that such errors of metabolism are unconnected with bacterial disorders of a septic nature in the intestine—i. e., do they occur in absolutely healthy intestines and in patients entirely free from gastrointestinal sepsis? From a clinical standpoint I do not think so, as treatment directed to the septic condition invariably leads to relief or cure of the arthritis, while the dietary remains unchanged.

Whether a true toxic joint is common, i. e., whether it is only the chemical poison which is present in and produces the lesion, is difficult to decide. It is highly probable there is a definite gradation in these cases, from the severest case in which the bacteria are demonstrable in great numbers down to the mildest form wherein no bacteria can be demonstrated.

It is well known that in the various forms of tuberculosis microscopic methods entirely fail in many instances to detect the presence of the tubercle bacillus in spite of the most careful search, yet a guinea pig inoculated with a portion of the material investigated will die of tuberculosis or show a definite tuberculous lesion when the animal is destroyed and examined post mortem. Therefore the presence of the microorganisms is to be suspected in all cases of toxic arthritis.

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I personally do not think that focal infection as the cause of acute joint conditions is sufficiently appreciated at the present day. I feel sure though that the teeth and gums as sources of infection are overestimated and much harm is done by the promiscuous extraction of teeth owing to incompetent interpretation of x rays. It is not generally known that infected gums and abscessed teeth were recognized as a cause for rheumatism by one of the foremost American clinicians over a hundred years ago, as the following quotation will prove (1):

"Some time in the month of October, 1801, I attended Miss A. C. with rheumatism in her hip joint, which yielded for awhile to the several remedies of that disease. In the month of November it returned with great violence, accompanied with a severe toothache. Suspecting the rheumatic affection was excited by the pain in her tooth, which was decayed, I directed it to be extracted. The rheumatism immediately left her hip, and she recovered in a few days. She has continued ever since to be free from it."

The following cases of focal infection in the gums, tonsils and rectum will serve as illustrations of hundreds seen at the Hospital for Deformities and Joint Diseases and in my private practice during the past ten years:

INFECTIONS FROM THE TEETH.

Pyorrhea.—The infection occurs around the roots of the teeth or at the roots of the teeth where streptococci, staphylococci, or other bacteria have invaded, setting up an inflammatory process and then carried by the blood-stream and lymphatics through the system finally invading one or more joints, setting up an acute inflammatory process.

CASE I.—Mr. F. H., a detective, referred by Dr. Austin Hollis, of New York, applied at the Hospital for deformities and joint diseases, complaining of flat and painful feet. For two years previous, he had been treated for his painful feet by various types of foot plates given him at the advice of different physicians. In the past three months, his pain had become so acute that it was impossible for him to get about without the aid of a cane, and he was incapacitated from attending to his work. The appearance of his feet did not give the impression of an infectious arthritis. The Wassermann test for syphilis was negative; the agglutination test for gonorrhea was also negative. An attempt to determine the focus of infection revealed infectious pyorrhea of a number of the roots of the teeth. As this resembled the type of case in which symptoms have been benefited and relieved by sterilization of the gums and cleaning up of the deposits in the roots of the teeth, this method of treatment was pursued in this case. Although the arch of the foot had decidedly broken down and the Röntgen ray showed evidence of the infectious process, after two weeks' treatment, the patient's symptoms of pain had all disappeared, and he has discarded his arch supporters and cane, and has remained well attending to his business during the past five years.

CASE II.—Mrs. S., referred by one of our directors in Newark. She is the wife of one of the foremen in his factory. She had been treated for a

period of nine months in three hospitals in the city of Newark. Owing to the prognosis, that her condition would gradually become worse and she would become bedridden from her rheumatoid condition, and realizing her inability to take care of her home and children, she made two attempts to commit suicide. When she arrived at the hospital, after a thorough examination and inspection of her gums, I concluded that I would attempt to obliterate the condition of septic pyorrhea from which she suffered and which I regarded as the cause of her joint manifestations. Both of her knees, the left ankle, the right wrist, and elbow were involved. No internal medication was prescribed. The dentist at the hospital removed the infection around the roots of her teeth. The early treatment increased her pain and the acute condition, but after ten days her joint manifestation decreased, and at the end of three weeks her joint affections, which had existed for nearly a year, disappeared. During her stay in the hospital, her temperature ranged from 98° to 102° F. with a corresponding pulse. Until the present time, a period of nearly five years, the patient has had no recurrence of her joint manifestations.

In my judgment, so-called rheumatic conditions in children, are most commonly due to streptococcus or other bacteria in the tonsils, adenoids and mucous membrane of the nose and throat. We see them daily at the clinic. At times the original infection is of so mild a character as to be almost overlooked, as the following cases illustrate:

SECONDARY VIRULENT THROAT INFECTION.

CASE III.—H. J. Patient was well until two weeks before admission to the hospital, when she suffered from an attack of tonsilitis which was so slight that she required no medical aid. One week later, she had swelling in the left ankle, which was red, intensely painful and the ankle about four inches larger than the other ankle. The inflammation was both interarticular and periarticular. Doctor O'Brien was consulted when the foot first began to trouble her and recommended arch supports. She was seen by two other physicians who did not regard the beginning of the trouble in her ankle as serious. When the ankle and foot had swollen to a large dimension and the pain became so intense that $2\frac{1}{2}$ grains of morphine in twenty-four hours produced no relief, the parent telephoned to the Hospital for Deformities and Joint Diseases, asking for her admission, as they were unable to take care of her properly at home. On admission into the hospital, her left ankle and foot was intensely inflamed and the pain was so great that there was no position in which the patient could be made comfortable. An inflammatory condition of both tonsils was present. The tonsils were painted with tincture of iodine. Tincture of echinecea was applied to the inflamed surface of the skin over the left ankle and foot. After a few days, a large patch broke down and the area sloughed away. In the throat and tonsil streptococci were found on culture. With the subsidence of the inflammation of the throat, the condition of the foot improved and after three weeks' treatment healed.

In my private practice and at the Hospital for Deformities and Joint Diseases, I have been surprised how frequently infected hemorrhoids, fistulas and abscesses of the rectum have been the foci from which infected joint conditions had developed. The following case illustrates this condition:

CASE IV.—Mr. A. O., native of Russia. During June, 1917, the patient was operated upon for hemorrhoids. Three weeks later he had a severe pain in the left ankle and noticed the swelling. Ankle incised both sides and discharged pus. Healing was delayed and diagnosis of tuberculous ankle made by four surgeons. The ankle was put in a cast with windows. It did not heal and amputation was advised. The patient was seen at the Hospital for Deformities and Joint Diseases where the Wassermann, von Pirquet and tuberculin tests all proved negative. In November, 1918, a piece of bone was taken from the ankle and three weeks later, it healed. At present, stiffness is present but the patient is able to walk and he has no pain. At the rectal examination, the anal canal showed that hemorrhoidectomy was performed and a large amount of mucous membrane removed so that a large area was exposed to infection which was transmitted to ankle. With physical therapeutics, the ankle has become normal and function has been restored.

ARTHRITIS (RHEUMATISM) DUE TO NONGONORRHEAL LEUCORRHEA.

I wish to call attention to an interesting class of cases where acute inflammation of the feet and an inflammatory condition in the larger joints are present in married women, between twenty and forty years of age. The patients give a negative Wassermann and agglutination fixation test (Neisser). A vaginal discharge is present and often a laceration of the cervix which causes lymphatic absorption. Gonococci are not found in repeated smears. The feet are swollen, tender, and painful. The patient walks with great difficulty; often the large joints are involved. These cases are cured of their joint infections by douches of a solution of iodine or bichloride of mercury.

GNORRHEAL JOINT DISEASES.

Statistics show that from sixty to eighty per cent. of the male population of cities acquire gonorrheal infection and of these from two to seven per cent. have gonorrheal rheumatism. As to the frequency of gonorrheal arthritis in children, Doctor Kimball (2) reports that out of 600 children admitted to the Babies' Hospital in one year, seventy had gonorrhea, and in ten arthritis developed. He also dwells on the frequency of gonorrheal epidemics in institutions where a number of children are placed together. During treatment, the local infection must be eliminated before we can expect the arthritis to subside. In gonorrheal as well as in streptococcus infections, there is a great danger of involvement of the heart. I am not citing a case of gonorrheal arthritis because it is so common in every physician's practice, although many have come under observation that have been overlooked.

SYPHILITIC ARTHRITIS.

Estimates of the prevalence of syphilis among the people of America and Western Europe vary considerably among different authorities. According to Erb, twelve per cent. of the adult male population of Berlin is syphilitic. Le Noir estimated for Paris that the proportion of syphilis in the adult male population was not less than thirteen per cent., and for London twelve per cent. Erb found among 10,000 men of the better class in his private practice, that excluding patients with tabes, 21.5 per cent. were syphilitic. Pinkus is quoted by Flexner as saying that one man in five in Germany has had syphilis. Collie, of the British venereal commission, in a Wassermann survey of 500 healthy workmen, found that 9.2 per cent. gave a positive reaction. Barrett, in a Wassermann survey for four months of practically all patients attending at an eye and ear clinic in Melbourne, Australia, found 14.4 per cent. to be syphilitic. The best estimates that we have in America come from examinations made of men in the public service. Reasoner, from a study of a regiment in the United States Army, estimated that seven per cent. of the men were syphilitic. Bartlett estimated that 10 per cent. were syphilitic in another regiment.

Before the time of the Wassermann test, the frequency of syphilitic arthritis was overlooked. Most of the cases were regarded as being tuberculous. This error is still made by surgeons who are not able to interpret x ray plates properly. In the past ten years, we have found that more than fifteen per cent. of the cases with joint involvement at the Hospital for Deformities and Joint Diseases were produced by syphilis. The following case is an illustration of how syphilis is overlooked in many of our institutions, the patient having been examined by eight physicians in five institutions. The Wassermann was never taken or was syphilis recognized by the x ray.

CASE V.—Mr. N. H., aged thirty-six, referred by Doctor Fishberg, examining physician for all medical cases applying at the United Hebrew Charities, of New York. The patient had complained of pain in both feet and had been advised to wear foot plates. Not having the means to purchase these, he was referred by the doctor to the Hospital for Deformities and Joint Diseases, without a personal examination having been made. The following history was obtained. On September 22, 1910, six months previous to the onset of the present symptoms, the patient suffered with headaches, which were so severe at night that he was compelled to discontinue his occupation, which was that of a waiter. October 23, 1913, he had fever and chills during the night. The following morning, he was unable to get up; the left knee was swollen and powerless; he suffered from pain when attempting to bend it. He sent for Dr. A. who diagnosed the condition as rheumatism and applied ichthyol. The patient was under his care for four weeks, but the condition remained unchanged; Dr. A. therefore referred the patient to the first hospital under the care of Dr. B. Here he received twenty-one basking treatments at the rate of three treatments a week. He felt no better, and Dr. B. referred him

to second hospital, where he came under the care of Dr. C. in the orthopedic department. This doctor diagnosed the condition as being caused by a loose cartilage and applied a plaster cast for two months, but no relief was obtained. Then the patient sent for his lodge physician, Dr. D., who diagnosed the trouble as synovitis and tried to tap the knee twice in two places, but did not succeed. Next the patient was referred to Dr. E. at the third hospital, but as Dr. E. was not there at the time, he came under the care of Dr. F., who immediately removed the cast, believing that this would cause ankylosis. He cauterized the knee three times a week for several months, tapped it, and had a knee cap made which the patient was still wearing when he applied at this institution. As he still obtained no relief, Dr. D. referred him to the fourth hospital, under the care of Dr. G.; a röntgenogram was taken which the physician said showed tuberculous spots of the bone, and November 19, 1912, an operation was performed in which a portion of the tibia was removed: the patient remained in the hospital four days, was discharged and instructed to return three days later, which he did: at this time he was examined by a dispensary physician and then advised to return three days later. Meanwhile the patient became feverish and chilled and complained of sticking pain; he sent for Dr. D., who said he was too ill to be removed to the fourth hospital, and was therefore transferred to a fifth hospital, where he remained for eleven weeks. His knee was opened and cleansed thoroughly, and a cast was applied for eight weeks. In January, 1913, he was discharged; then Dr. F. in charge of the orthopedic department at the fifth hospital was sent for, and having recognized him, instructed him to return to the dispensary. His knee was cauterized, baked, and massaged for several months. Following this treatment, he was able to bend his knee; the swelling decreased considerably and the pain was somewhat relieved.

In February, he complained of severe pain and cramps in the left ankle during the night: the following morning, he noticed a swelling. He went to Dr. F. and a röntgenogram was taken which showed some injury to the bone. June 14th, the patient was sent to hospital five and an operation was performed in which the bone was scraped. Dr. H. diagnosed it as synovitis and applied a cast for four weeks, but the condition remained the same. Finally the patients applied at this institution for treatment, September 22, 1913. He was referred by Doctor Fishberg for foot plates.

The objective evidence of the knee joint showed it to be one and one half inches larger than the opposite knee. A synovitis was present and motion produced scarcely any pain. The limitation of motion was caused by the restriction of the fluid in the joint. The ankle was two inches larger than the opposite ankle: no pain or tenderness on pressure within the limitation of motion.

The swollen appearance of the patient's feet and ankles led me to suspect syphilis. The röntgenogram of his foot showed syphilitic periostitis. The Wassermann determination was four plus positive. The point of interest in this case is that after pass-

ing through five different institutions and medical examinations by eight physicians, in no case had the röntgen ray examinations suggested the patient's trouble as being syphilitic, and in no institution was a Wassermann or Noguchi test made. The patient, under salvarsan, mercury and iodide treatment made a perfect recovery. A Frauenthal knee splint was applied for a short time, owing to the relaxed condition of his knee joint. The swelling and discomfort in his feet were completely relieved after two weeks of antisyphilitic treatment. He has made a perfect recovery.

TREATMENT.

In all cases of focal infection, we must eliminate the spreading foci of the disease, but if it is in the tonsil, it is most advisable to remove it during the acute condition. Our local treatment to the joint must be: For the relief of pain; for the removal of the products of inflammation; for the prevention of joint deformity; and to restore the function of the joint to normal. You are all familiar with the use of salicylates, aspirin, novaspirin acetates and citrates. Autogenous and mixed vaccines should not be given during the acute exacerbations. In chronic arthritis, we have obtained remarkable results with nonspecific protein antigens. One may at times be frightened by the violent temperature reactions which go above 105° F. at times from the use of these antigens.

I now wish to call your attention to the value of physical therapeutics and the wonderful results obtained from their use in the Army. Captain Sampson of Fox Hills, Staten Island, at the September, 1919, meeting of the Electro-Therapeutic Society, reported some 300 cases of joint involvement, with ten per cent. failures, treated by physical methods after medical treatment had failed. This corresponds to my own experience at the hospital and in my private practice.

The physicians in this country are just awakening to the value of physical methods of treatment such as the following:

1. Massage.
2. Mechanical vibration with a regular stroke, which is more efficient in giving deep massage than the hand, as there is more power to the percussion.
3. Baking by dry heat in a temperature of from 150° to 400° F. to produce congestion and elimination.
4. Hydrotherapeutics consisting of general baths in which the trunk and limbs are immersed: aeration baths; brine baths; sedative pool baths; and body manipulation baths; and local baths, in which only the limbs are treated; whirlpool baths; septic wound baths; contrast baths; and hot and cold packs and douches and showers; low pressure douche; alternating or Scottish douche; and needle baths and showers.
5. The use of electric light treatment as a substitute for the actinic rays of the sun.
6. The use of the galvanic, faradic and sinusoidal and Morton wave current to stimulate local circulation and to aid in the absorption of articular and periarticular exudates.

7. The use of diathermy for action on the central metabolic processes.

In addition, I wish to urge one of the best and most efficient methods of attacking joint disease, i. e., by electroionization (Edison spoke of its value in 1890 but its practical application was developed by Leduc of Nantes in 1900). What advantage has this method of treatment over administration of drugs by mouth, injections or inunctions? We do not know what chemical change the drug undergoes in the process of digestion. Drugs applied to the skin only penetrate partially and some times not at all. Ionic medication has the advantage over hypodermic injections. While the latter carries the drug into the lymph spaces, and to the muscles and nerves but not into the cells, by ionization a large quantity of drug can be applied to a given local area, and by this means a greater and more prolonged effect can be obtained. When lithium is administered in this way the elimination by the urine is extended over a longer period than when taken by mouth.

The following experiment will show the efficiency of this method.

If we apply a tampon of absorbent cotton soaked in a solution of sulphate of strychnine to the internal surface of the ear of a rabbit and place over this a metal plate as the anode and another plate placed on the body of sodium chloride as the cathode, and a current of sufficient strength is passed through, typical tetanic convulsions and finally death are produced. I have found the use of the following drug by ionization of great value in joint conditions, lithium compound and sodium compound, iodine, fluid extract of colchicum, tincture of echinacea and the salicylates.

The following statement from Leduc is worthy of serious consideration: "It is difficult to imagine how ludicrous our present day method will appear in the future of scattering harmful substances particularly noxious to the most delicate and important tissues, such as the nerve centres, through the whole body in order to act upon a very limited part of the body which happens to be diseased. It should be one of the aims of medicine to replace general treatment as often as possible by local treatment, and to attain this ideal, the electroionic method offers resources which no other method affords. It allows us to introduce into each cell, impermeable to most remedies, a series of ions, and to obtain as many different actions as there are ions. When one knows the variety and multiplicity of actions of all sorts which one can produce by saturating the cells of the skin exactly to the degree and depth one wishes with all the electrolytic substances, one is surprised to see medicine remaining content with its applications to the surface, ointments and pomades, which act only superficially, and of which only an infinitesimal fraction can penetrate into the interior."

I have taken for granted that x rays, blood tests and urine examinations are made in all your cases.

In conclusion, I wish to urge you not to allow your attention to the foci of infection of the teeth to hide all the other foci, for you will have many patients come to you who have been deprived of

their teeth without any relief of their joint symptoms. And in the treatment of the local joint conditions, let me again urge you to become conversant with the efficiency of physical therapeutics.

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THE RELATION OF MALARIA TO PREGNANCY.

BY BERNARD KAUFMAN, M. D.,
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That an associated infection of malaria during pregnancy is a condition fraught with serious possibilities is well known to those who practise in malarial sections, but not so well known are certain factors entering into its treatment and the treatment during the puerperium at the same time. The importance of such intimate knowledge in dealing with these conditions is increased at this time on account of the present general tendency of the rural population to go to the cities, and vice versa. The average practitioner in the cities does not see these active cases, and it is important that he should be conversant with them in their broader outlines, and know how to meet the conditions.

The presence of malaria during pregnancy, either early or late, need cause no great alarm so long as its presence is recognized and steps taken to combat it, but if allowed to remain untreated, it will sooner or later lead to abortion or miscarriage. The occurrence of pregnancy seems to relight into activity latent or chronic malaria which had lain dormant for long periods. That this seems probable is borne out by the total disregard to the seasonal incidence with which active symptoms of malarial infection develop in pregnancy. If these coincident conditions existed during the malarial seasons only, one would naturally assume that it was an intercurrent or superimposed infection, but, coming out of season as so many do, it is more than likely that the incidence of pregnancy with its added burdens on the system allows or favors the sudden flaring into activity of the latent infection.

Whether in early or late pregnancy this condition is recognized, it is necessary to administer suitable doses of quinine. The exact salt used is immaterial, so long as the requisite amount is given and absorbed. There is no danger of producing abortion or miscarriage in these cases by giving quinine, notwithstanding the widespread idea that quinine is an abortifacient. It has a directly opposite action in such conditions, and unless it is given in large enough doses to overwhelm the infection quickly, abortion or miscarriage will occur. Furthermore, the necessity for maintaining the use of quinine as a prophylactic measure throughout the pregnancy is equally important: A few doses of quinine will not cure malaria; it will hold the invasion in check, but more than this is needed to cure. It is therefore necessary in pregnant women, in whom there has been either a recrudescence or a new infection of malaria, to insist on prophylactic doses of quinine throughout the remaining

period of the pregnancy. In these patients it is desirable to administer it on retiring.

During these attacks urine examination will often show marked albuminuria, but do not be misled into mistaking this for true renal albuminuria. More often the albumin present is the result solely of the concomitant infection and will disappear with the coincident abatement of the infection. The relation between the albuminuria and the malaria may seem to imply that the presence of malaria is conducive to the development and favors the incidence of eclampsia. In over 250 obstetrical cases in a badly infected region I have never had a case of eclampsia; therefore I think the supposition that malaria tends to produce eclampsia, is unfounded. Of course, if the presence of malarial infection is unrecognized and consequently untreated, what the ultimate outcome might be I cannot say. The involvement in the infection of both liver and kidneys is certain and it is possible that eclampsia might ultimately result; but under prompt and efficient treatment this danger can, I think, be avoided.

An interesting condition one occasionally meets is the inability of certain patients to tolerate quinine, even in minute doses by mouth. The intense urticaria, the swelling of face, hands and feet; the deathly pallor, the sense of suffocation and weakness, leading to fainting often, and the intolerable itching of the skin, are well known, and furnish concrete evidence of this inability. In these patients I have tried minute doses, but with the same results only in lessened degree. By giving bromides previously, the effects were lessened but not eliminated. Finally I resorted to intramuscular injections of sterile solutions of quinine and urea, starting with one c.c. of a one per cent. solution. This was borne without ill effect, and I was able in this way to establish immunity to the ill effects previously seen and ultimately to give large enough doses to cure one of the obstinate cases, in which, previous to this method of administration, all the symptoms described above appeared whenever the quinine was given by mouth. Whether chemical changes are produced by the action of the saliva and the gastric juices in these cases, and substances are formed which are poisonous to that organism, I do not know, but this seems reasonable when it can be given with safety by intramuscular injections.

At labor, however, we are confronted with the end result of such infection, which may be serious as far as the mother is concerned, but I have never seen any ill effect on the child. They apparently are not injured in their intrauterine growth as gauged by their size or lustiness at birth. In one case in which twins were born to a mother who had had an intercurrent malarial infection, one child was born dead and one alive. By a curious coincidence, this had also been the case at a previous confinement, during which pregnancy she had been free from malaria. Therefore, the death *in utero* of this child could not be ascribed to the infection. Nor have I ever seen cases in which such death *in utero* could be attributed to a malarial infection.

Postpartum, in patients treated or untreated dur-

ing pregnancy, it is almost uniformly certain that notwithstanding rigid asepsis and no intravaginal manipulations during the delivery, sooner or later there will develop a rise in temperature. This may occur as early as the third day or as late as the eighth day, causing one to fear that puerperal infection had occurred. Under sufficient exhibition of quinine, however, this fever will promptly disappear and the puerperium go on normally. This is so common that it is now a fixed rule to give appropriate doses of quinine immediately after delivery and continuing for some time, say about ten days.

What actually causes this so soon after delivery I do not know. In the late cases I feel sure that the ergot given to contract the uterine muscles and prevent hemorrhage also acts on the muscular coat of the spleen, driving into the blood stream the plasmodia held within itself, thus causing the development of an apparently new infection. It may be that the plasmodia in different stages of development or activity are thus thrown into the circulation, and thus we get the fully active ones producing their effects at once and the less fully developed ones later. However, whatever the cause, the result of giving quinine is uniformly satisfactory.

The beneficial result of giving quinine as a routine measure after delivery in malarial infections is only one of the many reasons why it should be done. It is well known that quinine stimulates uterine contraction and it is useful for this purpose under ordinary conditions without the presence of malarial infection. Much more so is it of use under these circumstances when one realizes that in these cases there is a tendency to delayed involution of the uterus, with all that this implies. The danger of postpartum hemorrhage is always present under these circumstances. The only severe hemorrhage I had among my patients was one in which I did not use quinine. This occurred on the eighth day and was very severe. The uterus had shown relatively no tendency to natural involution as shown by the number of strips of packing it was necessary to place within the uterine cavity to control the bleeding. From that time on quinine was given, and no more postpartum hemorrhages were encountered. As a secondary result, the normal involution of the uterus being assured, there is a decreasing of clots within the cavity of the uterus and less danger of ascending infection.

Of great importance during this period is that wounds show a lessened tendency to heal in the presence of malarial infection. It is obvious, then, that this factor be guarded against where there is need of perineal repairs after labor. I feel sure that a great proportion of the failures to get satisfactory perineal repairs are directly or indirectly the result of such infection; directly, inasmuch as the tissues themselves do not heal as readily as the result of this infection, and indirectly, as the result of the pouring over them of the altered and abnormal lochial discharges which are associated with these untreated cases.

There is one danger associated with this routine

treatment with quinine during the puerperium that must not be overlooked. In patients who show a history of chill, fever, and sweating after delivery and in whom malaria is or has been present, quinine in sufficient doses having been given for several days, there is a natural tendency to ascribe the symptoms to a double tertian infection and to blame the lack of response to treatment to insufficient medication. Five days of sufficient doses of quinine with no resultant changes for the better in the condition of the patient is enough evidence to rule out the etiological factor of malaria positively. The presence of sapremia and possibly retained placental fragments must then be considered. I have seen this occur four times. When the chill, fever, and sweating had started, the diagnosis of malaria had been made by the attending physician, and after no results had been obtained with quinine I was called in consultation. In each of these four cases placental tissue had been retained, with the result that intrauterine conditions were overlooked and ascribed to a nonexistent malaria. This shows another useful and important therapeutic value to the routine giving of quinine. It can be used to rule out malaria as a factor in the problem of diagnosing the cause of any fever occurring during the puerperium and enable the physician to be sure of the true cause of the rise in temperature, sooner than he otherwise would be able to do.

Another valuable result of the routine use of quinine in these cases is to protect the milk supply for the infant. Breast milk from a mother having more or less fever is not as good for the infant as milk from a mother free from fever, and even though quinine may be secreted with the milk, no harm will be done the child and much good is done by conserving the milk supply in its natural state.

Finally, of value is the protection of the psychic state of the mother. Nowadays the average woman is well informed, relatively, in respect to the significance of fever after childbirth. She assumes that all fevers associated with the puerperium are of septic origin, and she knows in a general way the dangers of such infections. It is therefore extremely important to protect her from the anxiety that will be naturally occasioned by the occurrence of such fever. This can best be done by preventing the rise in temperature that so uniformly follows delivery after malarial infections. This is in no sense the least important reason for such routine treatment with quinine and is in itself sufficient reason for its observance.

SUMMARY.

Routine treatment with quinine during pregnancy is necessary to prevent abortion and miscarriage.

After delivery it is necessary, 1, to prevent reinvasion; 2, to hasten involution of the uterus and thus prevent postpartum hemorrhage and infections; 3, to aid in permitting perineal wounds to heal better; 4, to preserve normal milk conditions for the infant; 5, as a therapeutic test to rule out malaria in the presence of other infections, and 6, to maintain normal mental equilibrium of the mother.

240 STOCKTON STREET.

LETTER FROM FRANCE.

METHODS OF ANESTHESIA FOR ESOPHAGOSCOPY.

Types of Anesthesia for the Young, for the Old.—Advantages of Local Anesthesia.—Methods of Applying Local and General Anesthesia.—Continental Methods as Compared with American Methods.—Mechanism of the Anesthesia.

BY CHARLES GREENE CUMSTON, M. D.

Much has been done in Europe on the problem of local and general anesthesia for esophagoscopy. In the majority of cases it is local, but general anesthesia will derive its indications from the following circumstances: 1, Children are restless and offer a particular susceptibility to cocaine, and therefore this alkaloid can only be employed with the utmost prudence for children. For these reasons it is thought better to resort to general anesthesia in subjects under the age of ten years. 2, Inversely, when esophagoscopy is done on an elderly subject the same reasoning is correct. Elderly subjects are easily frightened and there are many untoward effects, so that it is well to be parsimonious with this drug in these cases. 3, When the patient is particularly nervous. Some women are difficult to manage and no matter what is done they continue to be excited. Under these circumstances, morphine or morphine-scopolamine should be given before esophagoscopy according to the rules I shall give. If this is not sufficient to control the excitement, then general anesthesia must be resorted to. 4, When some special anatomical conformation hinders the passage of the esophagoscope. In some instances where the patient's tongue is very large, the upper teeth are too long or for some reason the mouth cannot be opened without difficulty, general anesthesia will be required, because the pressure or feeling of traction produced by the passage of the tube will be too painful. Finally, general anesthesia will be indicated in patients whose condition, such as arteriosclerosis, nephritis or cardiac disturbances, forbids the use of cocaine.

These are not absolute, and in cases where doubt exists the type of anesthesia will vary according to the preference and practice of the operator. It is only logical that a laryngologist more accustomed to the use of local anesthetics will have recourse to them, while a surgeon will most probably resort to general anesthesia. But I would point out that general anesthesia will not by any means simplify the technic of esophagoscopy because by suppressing the reflexes and other reactions on the part of the patient the manipulation of the tube is more dangerous and the making of false passages is to be feared. Moreover, although general anesthesia does away with the resistance of the tongue or muscular contraction, it increases the reflexes of suffocation and vomiting, especially when chloroform is used.

Local anesthesia is exclusively an anesthesia of the mucosæ. It suppresses the sensation of contact and the cause of annoying reflexes, such as cough; it also does away with superficial pain of the mucosa almost completely, but only diminishes—without entirely suppressing—the deep seated pain resulting from compression or traction of the

esophagus. Therefore, when local anesthesia is to be employed it is well to combine it with some general analgesic in some cases.

If the esophagoscopy can be deferred for a few days the patient is given a potion containing bromides during this time prior to the operation. If the patient coughs easily he should be given codeine for a few days, which diminishes the bronchial secretion and calms the cough which might otherwise be annoying during the examination. Atropine has been advised on account of its action on all secretions, and there are unquestionably cases where it can be used to advantage, as is also the case with morphine and scopolamine.

These two drugs are antidotes for each other, although they are both anesthetics and moderators of the secretions. The anesthesia produced by scopolamine hydrobromate is long in duration, from twenty-four to forty-eight hours, so that it is especially indicated when a foreign body is to be removed by esophagoscopy, when abrasion of the mucosa is almost sure to occur. The following formula may be recommended:

Scopolamine hydrobromate.....	12 milligrams
Morphine hydrochlor.	12 centigrams
Aq. dest.	10 c. c.

One cubic centimetre is injected a half hour before the operation.

If the toxic effects of scopolamine are to be feared a simple one per cent. solution of morphine may be used or two centigrams of pantopon may be given hypodermically, an hour before the examination.

The local anesthetic of choice is without doubt cocaine, although novocaine, quinine and urea hydrochlorate, quinine and adrenalin bihydrochlorate, alypin and other drugs have been recommended, but the only one to be relied upon is cocaine, which is now universally employed in Europe for anesthesia in esophagoscopy.

In children, in case of absolute urgency, and if one is obliged to resort to local anesthesia, novocaine should be employed in the same dose as cocaine, but this newer product offers the inconvenience of being very slow in taking effect. The ordinary way of applying the local anesthetic is by painting the solution over the mucous surfaces, and it seems quite useless to resort to submucous injections of a cocaine solution, as some Germans recommend, or directly into the walls of the esophagus. The solution for local application usually employed is:

Cocain. hydrochlor.	1 gram.
Aq. dest.	5 c. c.

This solution must not be boiled, because heat decomposes cocaine. It should be sterilized by tyndallization.

At the time of using it, ten drops of a 1/1000 solution of adrenalin are added to one cubic centimetre of the cocaine solution. The addition of this drug will increase the retraction of the mucosa and thus facilitate the passage of the tube. In order to increase the adhesion of the anesthetic solution to the mucosa, it has been proposed to add a solution of gum arabic or tragacanth. But such a solution only soils the instruments and lenses.

Therefore, a simple watery solution is all that is required. During the examination it is a good thing to have both a twenty per cent. and ten per cent. solution of cocaine ready for use, the weaker solution being sufficient for anesthesia of the esophagus once the pharynx has been passed by the tube of the instrument.

Of late, stronger solutions—twenty-five to thirty per cent.—have been employed, and, according to those who recommend them, no untoward symptoms or accidents have been met with. However, from what I have seen I believe that a twenty per cent. solution is amply sufficient in every case and that stronger solutions are quite unnecessary. Everyone knows that any toxic solution introduced into the organism is not only toxic according to the quantity of the poison that it contains, but also in direct ratio with the rapidity of its absorption and the degree of its concentration. Therefore a twenty per cent. cocaine solution should be employed after the following manner: There are three ways of applying it, the brush, cotton applicator, and the spray. I think that the best results are obtained with the brush, because with it all the folds of the mucosa can be reached with ease, and by lightly brushing the surface the secretions are removed at the same time, so that the cocaine acts directly on the mucosa. The mucous membrane is never injured by the brush.

When a cotton applicator is used, rather strong pressure must be made on the mucosa in order to squeeze out the solution from the cotton. The mucous membrane quickly becomes covered with viscous material. It is necessary to change the cotton after each application, and consequently it is impossible to estimate the dose of the cocaine consumed and absorbed. Brüning's spray gives an exact dose of the quantity of the alkaloid utilized, but it is delicate to manipulate and makes cocaine-ization of certain parts of the mucosa very difficult as they cannot be reached directly by the jet given off by the instrument. For these reasons I shall only describe the technic with the brush.

The patient should be seated directly in front of the operator as for an ordinary laryngoscopic examination. Two cubic centimetres of the cocaine solution, to which twenty drops of a 1/1000 adrenalin solution have been added, are poured into a sterile porcelain capsule. The brush is dipped into this and under the control of the mirror is brought directly in contact with the arytenoids, their posterior aspect and that of the vocal cords. The brush is then withdrawn and at once dipped into a weak antiseptic solution and then wiped dry. Two minutes are allowed to pass; the brush is then dipped in the cocaine solution and a second painting of the mucosa is done. When withdrawing the brush it should be allowed to slide over the posterior wall of the pharynx and base of the tongue.

The operator again waits for two minutes and then makes a third application; exceptionally a fourth may be required. One may be sure that anesthesia is complete when the patient no longer reacts by coughing or efforts at vomiting when the arytenoids are touched. It is useless to anesthetize the velum, pillars, mesopharynx or the piriform

sinuses. The patient is now prepared for esophag-
oscopy.

I have referred to the indications necessitating the use of general anesthesia. It is not my intention to give the different methods employed, and I shall limit what little I have to say to the methods that I deem the best from what I have seen in various clinics and to those which should not be employed. I would, however, say that ethyl chloride gives too short an anesthesia, while ether causes hyperemia of the mucosa and an increase of the secretions.

Recently intramuscular injections of ether have been advised for general anesthesia which would be an ideal method in cases of examination, such as esophagoscopy or bronchoscopy, but it is yet too soon to advise this procedure, and I mention it merely as a novelty.

Anesthesia with large doses of morphine hypodermically — four to five centigrams — is not constant in its effects and varies with each patient. It is not devoid of danger and has nothing to commend it.

In Germany the chloroform-oxygen method is largely employed; it is little used in France or Switzerland. On the whole the method is not bad, but does not compare with American technic of ether nitrous oxide anesthesia, which, by the way might well be introduced into continental clinics. It is practically unknown.

Chloroform given with Ricard's mask is perhaps most generally employed in France, and after anesthesia is obtained, it can if necessary be continued on a gauze compress after the esophagoscopic tube has been introduced.

LONDON LETTER.

(From our own Correspondent.)

The Need for Postgraduate Instruction.—Coal Smoke and Its Effects in London.—Need for Research in Fight Against Disease.—Registration of Nurses.—The Dangers of the London Streets.—Medical Training in Wales.—Annual Meeting of British Orthopedic Society.

Sir George Makin, president of the Royal College of Surgeons of England, gave an address dealing with this question, in the Medical School of Manchester University on October 29th, at the opening meeting of the new session of the medical society. He said in part that the development of the present system of medical education had been a gradual development, of which one of the most important processes, that of fitting the man for the actual practice of his profession, had been removed from the preliminary to the postgraduate stage. With the growth of the two sciences of physiology and pathology an ever increasing amount of time was needed for the acquisition of the modicum of knowledge to be acquired by the student, until these two sciences, together with the other early subjects, began to take up the greater part of the entire medical curriculum. Meanwhile, the advance in the whole field of medicine, and especially the development of the so-called specialties, rendered the time available for the acquisition of actual professional knowledge hopelessly inadequate. They

found themselves today in a position in which the student, burdened with a task well nigh impossible and worried with the frequency and multiform character of examinations, was less broadly acquainted with the general principles of medicine than he was after passing through a much simpler course. He suggested that a remedy for some of the evils of the existing system might be found in regrouping the subjects of study and returning in some degree to the simpler course laid out for students in earlier days.

Referring to postgraduate instruction Sir George pointed out that an adaptation of the present system would scarcely suffice. Postgraduate instruction required to be utilized for more exacting purposes than that of merely improving the capabilities of the practitioner. It must include facilities for workers engaged in experimentation and investigation. He outlined in detail a scheme for postgraduate instruction. In his opinion, the need for postgraduate instruction throughout Great Britain, was likely to be much more general and urgent, should the system of outpatient medical clinics be set up in the near future by the Ministry of Health. Being of the opinion that in existing circumstances the minimum fees of 2s. 6d. (sixty-two cents) and 3s. 6d. (eighty-four cents) prescribed for primary vaccination performed at the homes of the persons vaccinated are inadequate, the Minister of Health had decided to issue an order amending in this respect the vaccination orders. The effect of the new order, which is to come into force in December, 1919, is to increase the minimum fee in every such case to 5s. (\$1.25). It will, however, be understood that the sum of 5s. (\$1.25) is only a minimum, and that it is open to the Poor Law Guardians, if they so desire, to pay a higher fee, subject to the Minister's approval.

* * *

Like James I of England and VI of Scotland in his counterblast against tobacco, John Evelyn, the well known diarist and contemporary of the immortal Pepys, the even better known diarist, promulgated a very energetic tirade against coal smoke in London. Evelyn published his *Fumifugium* in 1661 and inveighs in unrestrained terms against "the hellish and dismal cloud of seacool which maketh the City of London resemble the suburbs of Hell." Therefore, more than two hundred and fifty years ago London was notorious for its dirty fogs. In recent times several distinguished men of an esthetic turn of mind, including John Ruskin, who hated the "plague cloud" and was one of the founders of the Coal Smoke Abatement Society, of which the celebrated artist Sir W. B. Richmond is now president, have inveighed against the use of soft coal. Pure fog, such as is occasionally seen in New York, is comparatively innocuous; but the fog of London is a different affair. It is a moist fog with the addition of soft coal smoke and other dirty particles. Light is essential to the healthy growth of children. It furnishes one of the "vitamines" without which children suffer from that form of disturbed metabolism known as rickets. At least, recent researches have seemed to demon-

strate that the lack of sufficient sunlight predisposes to rickets and is one of the causes of that condition. The prolonged obstruction of sunlight is favorable to the development of respiratory diseases. Tuberculosis, bronchitis, influenza, and bronchopneumonia all flourish when sunlight is absent. Moreover, coal smoke, in addition to cutting off a considerable proportion of the sunlight in many British cities, enters, irritates, and injures the air passages and the lungs themselves. When a smoke fog is present adequate ventilation of the house is precluded, for it is choosing the lesser of two evils to close the windows tight and exclude the smoke laden air. A black fog is harmful, in particular, to the young and the old. It especially injuriously affects the children in the dark winter months, and it is obvious that the old, with lowered vitality and prone to bronchitis and other respiratory affections, often drop like dead leaves when a lengthy, dirty fog is in progress. The prevention of fogs in London and some other British cities is easy. As is pointed out by a medical correspondent of the *London Daily Telegraph*, October 16, 1919, no crude soft coal should be burned at all. He further draws attention to the fact that if New York can prohibit the use of soft coal, and if our chemists can extract a host of precious things from our soft coal and then provide us with admirable fuels as a residue, why should not the air of London be kept as pure, and its buildings and the lungs of its citizens as clean, as those of New York?

There seems to be a prejudice in England against the use of the gas fire for cooking purposes and for heating purposes. In American cities its employment for heating purposes is not wide, because the great majority of houses are centrally heated, but for cooking purposes its value is thoroughly recognized. All the points of superiority of the gas stove over the soft coal grate or range have been clearly defined in the *London Lancet*. While the indoor heating advantages of soft coal fires are open to doubt, it is patent to the least observing that the harm to health of the use of bituminous coal in large cities is alone sufficient to draw up an unanswerable indictment against it.

* * *

In the fifth annual report of the Medical Research Committee, of which Viscount Astor, Secretary of the Ministry of Health, is chairman, especial stress is laid upon the need for the consistent support and the adequate endowment of medical research. It is pointed out that much of the progress in medical science achieved during the war was due to the fact that the war presented problems of immediate practical significance and absorbing interest and gave opportunities for inquiry on the largest scale, and further that the men fitted for the work received, perhaps for the first time, a large measure of public support. It goes without saying that it is in the highest national interests that the results attained by the intensive study should be applied to the service of the country in time of peace and that the impetus given to investigation should be maintained. It is obvious that many results of re-

search, begun at first with purely military objects, are directly applicable to medical work in civil life. For example, the studies made of the nature of wound shock, and of the best methods for replacing lost blood, have during the past year found fruitful application in the surgical theatres of some of the great hospitals. The fresh studies of the organs and mechanism of respiration which arose from the need for better prevention and treatment of the effects of poison gases have revealed and helped to remove unsuspected gaps in our knowledge, and the results will bring certain benefits to the daily work of the physician if he is able to avail himself of them.

Laboratory studies of the important subject of wound infections and the causes of wound gangrene have not only gained some of their immediate and practical objectives, but have led to advances both in basic knowledge and in manipulative technic that will stand as permanent gains in this branch of science. It is moreover asserted that the research fund had an important influence in promoting the general cause of medical research. It helped to accelerate the movement toward widely using the services of officers in suitable cases for new investigation as distinguished from routine technical work. Before the end of the war most of the men best fitted for original inquiry were given opportunity for it, and given pay for it from public funds, and in the main this national system of medical research was welded into a coherent intellectual service. Throughout the past year, however, this national service of research has been mostly disintegrated, and at a time when it is more than ever vitally necessary to the well being of the country that it should be preserved and extended. Its activities should now be directed to the problems of civil life and to the perennial warfare against inefficiency, disease, and pain.

In medical research even more obviously than in other kinds of scientific work there should come no relaxation upon peace, for to take the merest utilitarian view, the casualties or mortality of peace are not smaller or less painful, but only less conspicuous and unfamiliar than of war.

If this lesson needed any enforcement, this has been sharply given already in all countries during the past year. Since the armistice, the epidemic of influenza has killed more young people in a few months than fell in the battlefields throughout the war. The report emphasizes the point that a large number of men who have shown themselves fitted for scientific medical research are demobilized and are either unemployed or going back to ill paid posts. The argument of the drafters of the report is that it is a pity and may be a calamity that these men whose brains have been trained in research work should be debarred from continuing studies calculated to be of inestimable good to the community. It is insisted that it would be to the benefit of all if funds were found to carry on medical research work; that thereby much disease would be prevented and the conditions of life generally be greatly improved.

Editorial Notes and Comments

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PROGRESS.

It is very disconcerting to be jarred loose from old moorings that have held us fast and comfortable for many years. It is not easy to discard the warm robes that protect us and bring in our incomes—the warm robes that protect us in our senility, taking us back to the padded swaddling clothes of our infantile existence. But Progress is a nagging mistress and insists upon flinging aside the theories we have so carefully built up in an effort to have a structure to lean upon. She sends bright darts to stimulate our imaginations and light the fires of discontent. She helps us construct new edifices, knowing full well that at some future day she will awaken the incredulity of our children, who will find themselves unable to tenant the places we so laboriously constructed.

And the old battles are refought, the persecutions and criticisms hurled by our ancestors against some of our other ancestors we agree to label as bigoted and narrowminded. "How could they be so shortsighted?" we ask in amazement. And so the fight goes on. Attacks are launched against psychanalysis, when a superficial and about to be discarded psychology should cause a realization of the futility of attacking the most successful method at hand for exploring the fertile field of the unconscious. Feeble common sense should give better advice. Contentment at juggling with the little understood conscious field at a lucrative fee may be partial explanation:

cowardice to face one's own unconscious; an ego disturbed by the realization of having supported a faulty institution and the rationalization of a defense in the name of loyalty; or, again, it may be laziness and a feeling of not having the courage to revise the textbooks we have so carefully dusted the greater part of our lives. "Keep the unconscious in the dark, where it has reposed these many centuries," is the cry. It is analogous to the teachings of the not long dead gynecologists who advocated blind vaginal examinations under the protection of a sheet. The prudery of these men did not increase chastity.

It requires the courage of a big man to come out and frankly admit the failings of old teachings as compared with the new. This Stoddart has done in the preface to the third edition of his new textbook (*Mind and Its Disorders*. P. Blakiston's Son & Co., Philadelphia, 1919) with the announcement that he was in error in underestimating the value of psychanalysis. No excuse is offered, and he advises an investigation of this new science. When he finally deals with the subject he presents it in a lucid manner, clearly and unmistakably. He realizes that the subject is in its infancy and that much progress is yet to be expected. He makes no extravagant claims and only explains the work as outlined by Freud and corroborated by his own clinical use of the methods.

So it is with Einstein's theory, now no longer new, but even when confirmed by recent astronomical observation scoffers are found aplenty who feel offended at having an upset in the oldest science, in which they felt so secure. What a lot of new figures these reluctant learned men will be obliged to calculate! How annoying! And that there should be a limit to space. How provoking! But Progress has little compassion on these mental greybeards.

No theory is good enough when another more nearly approaching the truth comes to light. It is the makers of the newer theories who prove themselves of service to mankind and who will be remembered, and not the obstructionists. Even the ones who seek to test the soundness of the accepted theories are valuable, for they build the scaffolding, also necessary, as any builder will testify. They also will not be forgotten. The theories may be of value only for a day, but they will remain as the building blocks of the edifice of science which will endure as long as the search for truth continues.

THE ANTIGENS AND ANTIBODIES IN THE SERUM AND URINE OF TUBERCULOUS SUBJECTS.

The procedure of fixation of the complement of Bordet and Gengou gives interesting results when applied to the study of tuberculosis. To obtain the best results the reactions of fixation of the complement and the dose of the alexin should be carried out according to the modified technic devised by Biot, and it is likewise well to take a drop as a unity of volume.

The alexic power is dosed by measuring the reactivating power of the serum, which should always be taken in the same conditions, in opposition to a hemolyzable system. This system is composed by a mixture of fixed strength, of red blood corpuscles of the ox and antiox rabbit's serum. The bacillary antibodies are found by means of the bacillary pulp and the antituberculin by means of tuberculin. With Maragliano's bacteriolysin and Marmorek's serum the endobacillary and tuberculin poisons are placed in evidence. At the time of each reaction it is necessary to dose the absorbing power of all the products employed and in order to obtain this result Biot employs a fixed volume of the patient's serum, antigen and alexin. The only variable quantity is the number of drops of the hemolyzable system.

It appears possible to attribute an immunizing value to the antibodies and a pathogenic power to the antigens. Clinical observation shows that sera rich in antibodies are not always agglutinative and conversely. The reactions of fixation of the complement are negative in subjects free from tuberculosis and positive in tuberculous persons; therefore, they possess a real diagnostic value.

The sera which gives Wassermann's reaction may very likely not fix the complement in the presence of tuberculin so that this peculiarity is not sufficient to eliminate the diagnostic signification of the reactions. The study of various clinical examples of tuberculosis shows that the existence of antibodies should be regarded as a sign of humoral defense and that of the antigens as evidence of bacillary impregnation. Therefore these reactions furnish elements for the prognosis.

The research for the antigens and antibodies must not be merely undertaken on the serum and from this point of view the serum and urine should be compared. The verification of the tuberculous antigens and antibodies in the urine more often indicates a general bacillary impregnation and in itself does not allow one to make a diagnosis of a tuberculous localization in the urinary system. With these reserves, the urinary reactions bring forward

an important argument in favor of the tuberculous essence of certain cases of nephritis in tuberculous subjects, as well as of the syndrome of pretuberculous albuminuria. From the viewpoint of the prognosis one cannot attribute an important part to the dose of the alexin, in the present state of our knowledge; but on the other hand, from the viewpoint of the prognosis, the alexic power appears to be a sufficiently useful element.

The doses of the alexic activity and the phloridzin test give results which coincide in the vast majority of cases. This concordance is yet another confirmation of physiological experiments on the hepatic origin of the complement. All these data appear to furnish an explanation of the influence, noted clinically of the functional state of the liver on the evolution of tuberculosis. It is by impoverishing the blood in alexin that the exhaustion of the liver accelerates the progress of the bacillosis.

The verifications made by Biot on the antibodies and the antigens and on the alexin are susceptible of therapeutic applications which are far from being devoid of interest. The research of the antigens and antibodies, by indicating the impregnation and the defense of the organism, can guide the physician in the choice of the various specific agents employed in the treatment of tuberculous infection.

The dose of alexic activity of the serum appears in this respect to assume an interest of the highest degree, inasmuch as the awakening of the functional activity of the liver, when it has become below par, should be regarded as a powerful adjuvant to the therapeutic measures employed.

SURGICAL CLEANLINESS OF TEETH.

The most important place in advertising in recent years has been usurped by preparations which guarantee the cleansing of the teeth. They all promise much, that is the way of the advertiser, but the question is, how much of good or perhaps of evil comes from them. All sorts of dental preparations of the most complex kind are an inheritance from the period when salves and healing waxes and soothing unguents and other applications of many kinds were being recommended as cures for wounds. The medieval physicians recommended rubbing the teeth with a compound containing equal parts of cuttlefish bones, small white shells, pumice stone, burnt stag's horn, nitre, alum, rock salt, burnt roots of orris, aristolochia, and reeds. All of these substances were to be carefully reduced to powder and then mixed. They recommended also a vinous decoction of wild mint and pepper to be used for rinsing the mouth as a preventive of decay.

This rather elaborate program for the care of the mouth, we recognize now, did almost nothing to preserve the teeth, though perhaps the strong wine with pepper and wild mint did act as an antiseptic. These old medieval surgeons had found that strong wine often enabled them to get union by first intention in wounds and this was doubtless their reason for using it in the mouth. Such men as Guy de Chauliac, however, appreciated very well that proper cleansing of the teeth often became impossible by the scrubbing method, no matter what the dentifrice used, because of the presence of what he called "hardened limyness," a very interesting descriptive expression for tartar. When that was present only the use of rasps and scrapers of various kinds, spatulina, as they were called, would succeed in removing it. It is clearer now than it was in Guy de Chauliac's time, some six centuries ago, that there is nothing that will dissolve the "hardened limyness" known as tartar. It must be removed. No amount of brushing and no applications that can be made will remove it. The dentist must be appealed to, and under present conditions the dentist must also be looked to for maintaining the essential cleanliness of the teeth.

The theory that certain preparations serve to neutralize injurious secretions and antisepticize the mouth is wholly speculative, founded of course on the desire to create a state of mind favorable to the purchase of the remedies in question. Any antiseptic that would really kill microbes would almost surely inflict more harm on the living cells of the gums than the microbes themselves. That is always the underlying objection to the use of antiseptics. Bacterial life is probably more resistant to poisonous materials, as a rule, than the cells of human beings. This is what might be biologically expected, because with the higher development of life, there usually come refinement and delicacy of structure, accompanied by a lessened resistance to harmful agencies. As for neutralizing the secretions in the mouth, that may be done perhaps for a time, but the almost constant flow of saliva and mucous secretion very soon removes chemical agents from the oral cavity, and, as the secretions constantly accumulate because of some underlying condition in the system, this condition must be corrected to secure an enduring good effect.

For a time war experience in surgery seemed to vindicate the old theory of antiseptics and of the possibility of finding certain substances that would act selectively on bacteria and not prove injurious to human cells. Before the end of the war, however, it came to be recognized that the all important element in the treatment of wounds that had be-

come infected was to give nature a reasonably unhampered opportunity to dispose of infectious material and the results would be favorable. Undoubtedly the most important development of wound treatment was what the French called *débridement*, that is, the thorough removal of all injured portions of tissues which in the course of disintegration would interfere with Nature's processes and afford an excellent culture medium for the growth of bacteria. If wound surfaces were freshened then rapid and satisfactory healing might be looked for. It did not much matter what the chemicals used nor what the mode of treatment, so long as this was done.

We have no reason to think then that we can create mouth antiseptics. What we can do is to remove foci of infected material, get rid of irritating deposits, and keep on doing so, thus giving the natural powers of the cells of the mouth an opportunity to protect themselves against invasion. All the much advertised preparations for mouth cleansing are the equivalents of the wound applications of the older time or the elaborate antiseptics of more recent years. The hope for the preservation of the teeth lies in giving Nature a chance to take care of herself. Prevention means much more than cure in this matter.

CRIME AND DRUNKENNESS IN CANADA UNDER PROHIBITION.

Startling facts are set forth in a *Blue Book* dealing with criminal statistics throughout the Dominion of Canada for the year 1918. This *Blue Book* was recently issued from the office of the dominion statistician and therefore the source of information cannot be questioned. According to the returns during 1918 there were 21,747 charges and 17,370 convictions for indictable offenses in the several provinces of the dominion. When these statistics are compared with those of 1917, where do the bald assertions come in that prohibition had resulted in a diminution of crime? And where do similar assertions oftentimes made that alcohol was conducive to the venereal diseases take their place.

In the year 1917 there were 19,559 charges and 15,559 convictions, thus showing an increase in 1918 of at least twelve per cent. in charges, and an increase of eleven and one half percent. for convictions during the year. The number of convictions increased during the year in all the provinces excepting Alberta, British Columbia, and the Yukon. The higher increases were in Ontario—that province of great uplift—Quebec, Manitoba, and Nova Scotia. The number of summary con-

victions jumped from 98,452 in 1917 to 105,199 in 1918.

Drunkenness decreased by nearly twenty-five per cent. in all of Canada; but increases were reported from Manitoba and Alberta. In the last named province the convictions for drunkenness in 1918 numbered 825, as compared with 391 in 1917, an increase of 111 per cent. In Manitoba convictions grew from 1,085 in 1917 to 1,123 in 1918—an increase of three and one half per cent. Throughout the entire western part of Canada prohibition is a laughing stock and a scandal.

Two well known members of the medical profession in Canada have recently rushed into print to deny that Canada has anything like the enormous amount of the venereal diseases assigned to the country, asserting that there was no authentic figures to warrant any such extravagant assertions. The facts remain, however, that there are sufficient numbers to inaugurate a dominion wide campaign, backed with the money of federal and provincial governments, for the eradication of the venereal diseases; that there is incontestably more crime under prohibition laws; that prohibition is almost, if not completely, a lamentable failure.

News Items.

Mt. Sinai Clinical Society, Philadelphia.—Dr. A. I. Rubinstein was elected president of this society at a recent meeting, Dr. H. B. Shmookler, vice-president, and Dr. Louis Edeiken, secretary.

Medical Society of Woman's Hospital, Philadelphia.—The following officers have been elected by this organization: President, Dr. Margaret F. Butler; treasurer, Dr. Mary Spears; secretary, Dr. Catharine Macfarlane.

Fort McHenry Hospital Being Reduced.—The bed capacity of Fort McHenry hospital is to be reduced from 2,400 to 2,000, and the number of enlisted personnel will be decreased accordingly. There are at present 1,951 enlisted patients and 132 officer patients. The chance to study scenario writing is now being offered patients at Fort McHenry.

Surgeon General to Issue Medical Publication.—A semimonthly medicomilitary review, for officers of the medical department, will be issued by the Surgeon General of the army. The review will contain medicomilitary news, information bearing on the problem of disease control, extracts of current medical literature, and notes on investigations being carried on in the army.

Society of Medical Jurisprudence.—At a meeting held on December 8th, the following officers were elected by this society for the ensuing year: President, Dr. Nathan B. Van Eften; vice-president, Charles Oakes, Esq.; treasurer, Charles P. Blaney, Esq.; corresponding secretary, Dr. Edward E. Hicks, Brooklyn; recording secretary, Dr. L. Howard Moss, Richmond Hill.

Greeks Combat Malaria.—The Greek ministry of public assistance has decided to open sanitary stations in eastern Macedonia for combating epidemic conditions, particularly malaria.

County Hospitals to Be Consolidated.—The Board of Supervisors of Wayne and Ontario Counties, N. Y., plan to consolidate the county tuberculosis hospitals for economy and efficiency of management.

Civil Service Opportunities.—The Civil Service Commission of the State of New York announces an examination on January 24, 1920, for the position of bacteriologist-pathologist, State Department of Health; salary \$2500 to \$3000; ages twenty-five to forty-five years. Candidates should have a degree in medicine and considerable experience in both bacteriology and pathology.

Medical Men Sued.—Dr. George A. Marion and Dr. E. J. States, of Rochester, are defendants in a suit brought in the State Supreme Court by Albert A. Monroe. The trial opened December 17th. Mr. Monroe sues for \$15,000, and alleges that the defendants were negligent in the case of his daughter, who died June 24, 1919, after swallowing a jackstone. James T. Lewis, counsel for the New York State Medical Association, appears for the defendants.

Charities Board Denies Approval to New Hospital.—The State Board of Charities has denied the application for the incorporation of the Richmond Hill and Woodhaven Hospital Association on the ground that no public necessity for such an institution has been shown. The establishment of a new hospital in that portion of Queens has been opposed by the Jamaica Hospital and St. Mary's Hospital, both of which serve the entire territory proposed to be covered by the new institution.

Merger of Medical Journals.—Announcement is made that on January 1st the *Medical Herald* of Kansas City, Mo., and the *Medical Fortnightly* of St. Louis, will joint forces and thereafter will be issued as one journal. Dr. Thomas A. Hopkins, who has edited the *Fortnightly* for nearly fourteen years, has joined the staff of the *Herald*. The history of these two journals includes a number of mergers. Several years ago the *Herald* absorbed the *Kansas City Medical Index* and the *Lancet*. About the same time the *Fortnightly* took over the *Laboratory News*, which in turn had several years previously succeeded the *General Practitioner* and *The Clinique*.

May Sue United States in Speedway Hospital Case.—Unless the Government accepts the new Speedway Hospital at Chicago when completed, the question of the validity of the contract will be carried to the Supreme Court. Edward Hines, wealthy lumberman, is said to be willing to accept a loss of \$1,000,000 and turn the hospital over to the Government in sixty days at the original contract price of approximately \$3,000,000. Surgeon General Blue opposed completion of the hospital and acceptance of it by the Government on the ground that there now was no use for so large a structure. The contract was entered into by the Government during the war.

Industrial Physicians and Nurses Organize.—The Philadelphia Association of Medicine for physicians and nurses in industrial work was organized recently, with the following officers: President, Dr. C. L. Taylor; vice-president, Dr. L. E. Hastings; secretary, Dr. J. Gay; treasurer, Dr. F. Cummings. There are twenty-six charter members.

Ex-Kaiser's Castle for Maternity Home.—The former kaiser's castle at Urville, near Metz, is to be turned into a maternity rest home where women can go for a short time before entering the regular maternity wards or to recuperate afterwards. The American Red Cross contributed funds for the establishment of this home, which will be controlled jointly by the two departments of the Meurthe and Moselle.

Influenza Kills London Cats?—A disease which has many symptoms common to influenza was recently reported as causing the death of hundreds of cats in London. The disease is not thought to be communicable to human beings, but medical men are unable to confirm its exact nature. It spreads with amazing rapidity and the symptoms are said to resemble closely that of poisoning, except that death usually takes place within two days.

Doctors Who Testify against Patient Reprimanded by Court.—Two medical men who made use of material facts learned by them in the treatment of a patient in testifying against him were reprimanded by Justice Guy in the suit of Arthur Bauch, a moving picture operator, against Charles A. Schultz, who ran over Bauch in his automobile. The two physicians treated Bauch, and then testified at the trial for Schultz. Justice Guy said the case presented a question for the association of the bar and the medical societies.

American Society for the Control of Cancer.—The annual meeting of the American Society for the Control of Cancer was held November 15th at the executive office in New York city. Dr. Charles A. Powers, of Denver, was elected president to succeed Dr. George C. Clark, deceased; Sir Arthur Newsholme, honorary vice-president; Dr. Francis Carter Wood, New York, and Dr. Robert B. Greenough, Boston, members of the executive committee; Dr. Edward Reynolds, Boston, chairman, board of directors; Mr. Thomas M. Debevoise, New York, secretary, board of directors. It was decided to institute a campaign for an increased membership.

Public Health Officers' Election.—The American Public Health Association, at its annual meeting held October 27th and 30th in New Orleans, elected the following officers for the ensuing year: President, Dr. Watson S. Rankin, of Raleigh, N. C.; vice-presidents, John Armyot, of Ottawa, Ont., Dr. William H. Robin, of New Orleans, and Dr. Guilford H. Summer, of Des Moines, Iowa; secretary, W. H. Hedrick, of Boston; treasurer, Lee K. Frankel, Ph. D., of New York; directors, Dr. John Dill Robertson, of Chicago; Dr. Henry F. Vaughan, of Detroit; Dr. Mazyck P. Ravenel, of Columbia, Mo.; Dr. Haven Emerson, of New York; Dr. John A. Kappelman, of Canton, Ohio, and Dr. Eugene R. Kelley, of Boston. San Francisco was chosen as the next place of meeting.

World Union Against Tuberculosis.—At a meeting of American, British, and French representatives held recently in Paris under the presidency of M. Leon Bourgeois, president of the national committee of defense against tuberculosis, it was decided to hold a conference at Paris in October, 1920. The conference is planned to draw up the constitution of an association which will include delegates of national antituberculosis societies of all countries belonging to the Society of Nations.

Unusually Low Autumn Mortality.—Extremely favorable health conditions for the present season are reported by the industrial mortality records of one of the large life insurance companies. The low death rates for the months of July, August, and September were followed by a mortality rate in October which was only slightly in excess of that for September and which was much lower than the normal. Instead of the increase usual in November, the rate declined over eight per cent. from the figures for October. The low November mortality was due largely to a sixteen per cent. decrease in the death rate for tuberculosis.

Island Wants Doctor.—The Maryland State Board of Health has been appealed to in behalf of Smith's Island, which has 800 people and no doctor. With winter here and the island in the Chesapeake likely to be shut off by ice from the mainland, and no doctor nearer than Crisfield, ten miles away, the inhabitants of the island are uneasy. It is the custom of the island to employ a physician through a board of trustees, a regular salary being paid him from a common fund, and his services are free to all patients. Communication on the island is by speed boats. If the patient can't get to the doctor, he is taken to him and then returned to his home. All distances in the "circuit" are two miles or less. In the summer time these speed boats make the ten-mile trip to Crisfield, on the mainland, in forty minutes, but in the winter it is a different story.

Investigations of Rockefeller Institute.—The hospital of the Rockefeller Institute for Medical Research confines its work to selected cases that bear on a limited number of subjects chosen for investigation. In line with this policy a bulletin has been issued stating that during the autumn and winter the following diseases will be the subject of special study:

1. Acute lobar pneumonia and other acute pulmonary infections, influenza, bronchitis, bronchopneumonia, etc.
2. Cardiac disease, especially the more advanced stages of heart failure. Patients showing completely irregular pulse and suffering from fibrillation of the auricles are especially desired.
3. Acute rheumatic fever, patients with acute polyarthritis and children with recurring endocarditis, pericarditis, and myocarditis of supposed rheumatic origin, and those with chorea, polyarthritis and acute cardiac complications.
4. Nephritis. It is desired to admit patients with acute nephritis and young persons or those in early adult life suffering from chronic nephritis of only moderately severe grade. Physicians desiring to send patients should communicate with the resident physician.

Nurses' Union Formed Under A. F. L. Charter.

—More than five hundred nurses employed in hospitals in New York and Brooklyn are reported to have formed a union affiliated with the American Federation of Labor, and will present demands, both to the city authorities and hospital superintendents for a readjustment of hours and wages. The new organization is the Trained Nurses' Association, Local 16,461, A. F. of L.

Oklahoma State University Hospital Completed.—The newly completed State University Hospital of Oklahoma was dedicated November 13th. The hospital was established primarily to serve those citizens of Oklahoma who would otherwise be unable to secure satisfactory hospital service, and owing to its connection with the State University School of Medicine excellent medical and surgical service is made available. The hospital contains 175 beds, five operating rooms, diagnostic laboratories, and the most modern x ray equipment. A wing of one of the floors has been set aside for teaching and research laboratories.

Mayo Clinic Physicians Hold Annual Meeting.—The Association of Resident and Ex-Resident Physicians of the Mayo Clinic held its second annual meeting at Rochester, Minn., October 8th and 9th, under the presidency of Dr. Harold L. Foss, of Danville, Pa. Dr. Clarence G. Toland, of Los Angeles, was elected president and other officers were elected as follows: Dr. Francis G. Aud, of Cecelian, Ky., vice-president; Dr. Harold L. Foss, of Danville, Pa., secretary; Dr. Archibald H. Logan, of Rochester, assistant secretary; Dr. Arthur H. Sanford, of Rochester, treasurer; Dr. Edward S. Judd, Dr. William F. Braasch, and Dr. Donald C. Balfour, all of Rochester, board of governors.

Physicians Who Fail to Report Communicable Disease to Be Prosecuted.—The Department of Health of New York City announces, through its weekly bulletin, that it will prosecute physicians who fail to report cases of communicable disease.

The report of a case of communicable disease by a physician to the department is valuable not only for statistical purposes, but because it locates a source of infection, and thus helps the department to exercise such measures as lie within its power to prevent the transmission of disease. An adequate knowledge of the location of infectious disease, of the age groups of those affected and, so far as possible, of the sources of infection, are of fundamental importance in that they may suggest modifications or improvements in our methods of prevention and control.

When the officers of the department of health ascertain that such information has been withheld by physicians, dispensaries or hospitals, it becomes their unpleasant but imperative duty to bring such delinquency to the notice of the commissioner. The latter has no alternative but to make a thorough inquiry, and, if the facts warrant such procedure, to resort to legal action to enforce compliance with the sections of the sanitary code which make compulsory the reporting of communicable diseases by both physicians and institutions. A number of instances of such delinquency have recently occurred which give special point to this statement.

Health Department Building Plans Turned Down.—The Sinking Fund Commission has denied the formal application of the New York City Health Department for assignment of the site of the old tenderloin police station in West Thirtieth street, on which to erect the proposed new building. It was pointed out that the Health Department now occupied an excellent building in the heart of the civic centre, and that about twelve years ago the department moved down from Fifty-fourth Street to be in the civic centre.

World Red Cross Director Here.—Sir David Henderson, director general of the newly formed League of Red Cross Societies, is in America for a short stay to complete the plans of organization of the league. Commenting on the typhus plague in eastern Europe, Sir David Henderson is reported by an interviewer to have stated that the situation is far too grave for the Red Cross societies of the world to cope with, and that the governments of Europe have been asked to come to the assistance of the stricken people. He also stated that the league contemplates the establishment of a demonstration laboratory at Geneva where medical men from all parts of the world can observe the latest developments in their particular domain. In addition to this the league will collect all details of discoveries and publish them in convenient form for the benefit of the entire profession.

Report of Surgeon General Ireland.—The report of Major General Merritte W. Ireland, surgeon general of the army, for the fiscal year ending June 30, 1919, has been submitted to the Secretary of War. In a letter of transmission which accompanies the report, the surgeon general states that at the beginning of the war the entire medical department, including commissioned officers, contract surgeons, army nurses, and civilian employees, numbered 8,634. This personnel reached a maximum of 354,796. The medical corps increased from 833 to 30,591, commissioned ambulance service from 0 to 209, contract surgeons from 181 to 939, commissioned sanitary corps from 0 to 2,919, and other branches of the service accordingly. During the year the number of men requiring medical treatment was 2,833,204. Of this number 2,422,362 cases resulted from disease, 182,789 from ordinary injuries, 228,053 from battle injuries. Influenza was the leading cause of admission, with measles the next most important during 1917 and 1918. The total number of deaths for the two years, including killed in action, was 103,137. Of this number 50,714 were from disease, 33,711 killed in action, 13,725 died of wounds, 648 lost at sea, 4,329 from ordinary accidents. Of the men mustered into military service, 115,664 were discharged for disability. The reports thus far received show that 227,855 wounds were received in battle that required admission to hospital. Of the cases admitted to hospital for wounds 148 were the result of aeroplane bombing, 181 bayonets, 71,453 gas, 870 hand grenades, 12 sabre, 144,682 gunshot missiles. Reports show that 18,268 died in hospital as the result of battle injuries, 10 being the result of bayonet, 1,200 gas, 70 hand grenade, and 12,526 gunshot missiles.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 907.)

Both in adults and infants, scurvy has sometimes been mistaken for rheumatic disorder. While not an invariable manifestation of the disease, inflammation in or near joints is a rather common accompaniment, and in unrelieved cases the condition may be so marked as to result in ankylosis and persistent deformity in joints such as the knee, ankle, and elbow. Joint pains and rheumatoid muscular pains in the back are frequent as early symptoms of the disease. Later hemorrhagic effusion into the joints may be met with.

In the scurvy of infants—Barlow's disease—there is decided pain upon manipulation of the body, in particular the extremities, which at first sight leads to a suspicion of some joint disturbance. The child cries when he is being dressed or bathed, and if all the limbs are involved, makes no attempt to move them voluntarily, his condition offering a marked contrast to that of the healthy infant, almost constantly in motion when awake.

Swelling of affected joints may be observed in advanced cases, and the great tenderness of the parts may suggest the presence of some acute inflammatory disorder. As in the scurvy of adults, hemorrhagic effusions in the joints sometimes occur. Robert Hutchison, 1914, states that he has time and again had well marked cases of infantile scurvy sent to him with a diagnosis of rheumatic fever; in one instance, indeed, the affected limb had been painted with iodine, the child's discomfort being thereby much increased. According to Kerley, 1914, too much stress has been laid on cutaneous ecchymoses as an accompaniment of Barlow's disease. Such ecchymoses have been unusual in his experience, and do not constitute an early manifestation of the disorder, sometimes occurring only two, three, or more weeks after the first appearance of the disease in the extremities. This fact may account partly for the frequency with which infantile scurvy has been confounded with rheumatic fever, the practitioner expecting in the former condition to find ecchymoses, which as a matter of fact were not a necessary accompaniment in the early stages.

Differentiation of scurvy from rheumatic disease is most difficult in sporadic cases in which, among adults, unsuspected errors of diet or hygiene exist, or in which, among infants, the disorder is in its incipency and tenderness on manipulation is as yet the only clinical sign. In the average case, however, a number of differential features are available, and detection of the disease depends largely

upon the mere recollection of the examiner that apparent joint tenderness is sometimes due to scurvy. The onset of scurvy is usually gradual, with lassitude, pallor, and other symptoms suggestive of anemia. The characteristic swelling of the gums, followed by ulceration, fetor of the breath, and loosening of the teeth, may not appear for several days or even weeks after the preliminary loss of general vigor. Other important features are the absence of fever, the petechiæ and the bleeding from mucous surfaces not infrequently met with, painful nodes in the extremities due to subperiosteal extravasations, weak heart action, usual history of a defective or one sided diet and a simultaneous illness of several individuals exposed to like unnatural dietetic or hygienic conditions, and the remarkable disappearance of the symptoms, even when severe, upon administration of a generous mixed diet.

In infants the fundamental distinguishing factor is that rheumatic fever is rare below the age of eighteen months, so that rheumatoid symptoms in an infant should at once bring to mind Barlow's disease, and indicate more careful inquiry for the associated features of this condition. Absence of fever is a salient differential point. The onset is insidious. The child is feverish and fretful, yet lies unnaturally quiet, with its thighs and legs strongly flexed, obscure, tumorlike prominences characteristically extending from the epiphyseal junctions adjacent to the knee or of the forearm along the shafts of the bones; boggy overlying tissues; decided asthenia and anemia; subsequent change of the position of the limbs to eversion, with pseudoparalysis; hemorrhages from mucous surfaces, and in particular, a history of feeding almost or quite exclusively with prepared foods lacking in vitamins, together with the prompt, striking results from appropriate treatment, form a combination of diagnostic features which preclude error in any carefully observed case.

In the treatment of scurvy in adults, as in infants, the chief measure is so to change or supplement the diet that a free supply of antiscorbutic vitamins shall be available. Although some have suspected an infectious cause in certain epidemics of scurvy, the most efficient treatment has always seemed to consist of diet alterations coupled with a change of residence, removing the patient from unhygienic living conditions. Of the citrus fruits considered most highly antiscorbutic, the orange has been recently shown to be more effectual than limes, long recommended as yielding the most active juice of all. Various vegetables, especially when fresh, possess antiscorbutic vitamins, though in less degree than orange juice, while various other products, such as milk, malt infusion, and meat juice, have also been recommended in the treatment of scurvy.

(To be continued.)

Treatment of Flail Joints.—Harry Platt (*Journal of Orthopedic Surgery*, November, 1919) found flail joints of the upper limb following gunshot injuries one of the most difficult problems of military orthopedic surgery. The type of joint considered was the one dependent on an actual loss of bone and not on secondary muscular paralysis. The latter type of flail joint was rarely seen. The majority of cases seen were those in which a wide excision of the articular ends of the bones had been carried out in the early stages of the wound. These were undoubtedly life and limb saving procedures. Flail joints were also seen that had followed excisions for ankylosis. These were unnecessary. While extensive resections had been done, it was difficult to see why the flail joint was always inevitable. It was thought that if the correct postural fixation of the limb in the intermediate stages, after the subsidence of the acute sepsis, had been accomplished, many of the joints would have presented fair stability with a little motion or sound ankylosis in a good position. In most of the cases of flail shoulder joint the head of the humerus had been removed, the line of section passing well below the tuberosities. The acromion, coracoid, and glenoid fossa were in most cases intact. The deltoid muscle rarely escaped direct involvement, atrophy, loss of origin, and partial or complete replacement by fibrous tissue. The recognition of the presence of an active deltoid muscle and an estimation of the degree of its future functional capacity after treatment are important factors in the determination of the operation selected.

Every case requires separate consideration particularly in regard to the functional capacity displayed by the scapular and deltoid muscles. The success of the operation will depend on the development of muscular sufficiency and coordination. If the deltoid and scapular muscles retain a moderate degree of function, joint stability should be possible without the production of ankylosis. In all cases a fixation of the shoulder joint should be attempted. Before operation physiotherapeutic treatment must be given. The arm should be maintained in an abduction splint, and intensive training of the scapular muscles and the deltoid must be carried out. The operation should be performed in two stages. In the first stage the adherent scars are excised, the glenoid fossa and the upper end of the humerus exposed, and the block of scar tissue removed for bacteriological examination. The deltoid insertion can be affected and the result of direct faradic stimulation noted. The second stage is designed to produce fixation: a, classical arthrodesis; or b, reconstruction of the head of the humerus.

The operation of bone lengthening of the head of the humerus has been adopted as routine for flail shoulder joint. The success depends on fixation. Fibrous ankylosis answers for practical purposes. A large graft is taken from the tibia, shaped like a wooden mallet; the shoulder joint is exposed; the wide upper end is brought into contact with the glenoid cavity. Most of the flail elbow joints also have other serious coexisting lesions of the soft tissues and only a slight degree

of usefulness may be expected. Two classes of operation are suggested: a, a simple approximation of the bone ends; b, increase in the length of the humerus by the shoulder joint operation described. The first type of operation may be done by binding the bone ends together by strips of fascia lata, taken from the patient. The limb is held up at 45° flexion and a period of aftertraining similar to the preliminary training is carried out. Active flexion in a limited range is encouraged, the upper arm being retained against the body; when stability from the position of 90° to full flexion is present, training is instituted in the position of abduction at the shoulder, the development of the stability in this position being the test of the operation.

Treatment of Sarcoma of the Long Bones.—William B. Coley (*Annals of Surgery*, December, 1919) presents a report of cases of sarcoma of the long bones that have come under his observation during five years. He advocates conservative treatment, but admits that many surgeons have not accepted the principles of conservative treatment. The diagnosis is not discussed. The pain is of a deep boring character, steadily increasing in severity, and is frequently one of the earliest and most important signs of sarcoma of the long bones. Many patients were first treated for some rheumatic condition until the disease had produced a palpable tumor. The pain was often present for some time prior to the discovery of the tumor by palpation or x ray. Pain was more important in periosteal growths than in central tumors. The latter would attain a large size prior to the manifestation of pain.

In cases where there is a doubt of the diagnosis an exploratory operation is advised. If the tumor is a periosteal sarcoma, an early diagnosis is desirable. It is unwise to sacrifice the limb without a positive diagnosis, and also unwise to subject the patient to toxin or radium treatment unless the diagnosis is certain. If the tumor has progressed to a considerable size, as much of the tumor as possible should be removed in order to derive the most benefit from the treatment. The histological type of tumor may aid in making a prognosis. The danger of metastases from an exploratory operation are considered slight.

Great confusion has existed regarding the malignancy of so-called giant celled sarcoma of the long bones. The employment of conservative treatment is advocated, not only for benign giant celled tumors, osteitis fibrosa, but also for sarcomas both of central and periosteal origin. If it was always certain that a giant celled sarcoma was being dealt with, ample curetting, or in advanced cases resection, would suffice. Often it is difficult to determine whether a case in question is a giant celled sarcoma of benign type, or a sarcoma with malignant features. In the light of more recent study it may be possible to differentiate the malignant from the benign tumors in a larger number of cases. The myelogenous or mixed giant celled sarcomas, particularly of the lower end of the femur, are usually malignant. In a small number of cases of periosteal and highly malignant tumors of

the long bones, the limb and life of the patient can be saved by the prolonged use of mixed toxins of erysipelas and *Bacillus prodigiosus*. If the tumor seems to be benign, curetting alone will often effect a cure. This type of tumor is rare.

In dealing with periosteal tumors another proposition is encountered. Here the tumor is always malignant and operation rarely saves the patient. This condition warrants the use of any measure where the limb of the patient may be saved. The microscopic diagnosis is not difficult. Owing to patients refusing the operation of amputation, which was advocated, it was found that the limb could be saved by the use of mixed toxins. A case with recovery after metastases is recorded. Resection with or without bone implantation is not indicated. It is difficult to estimate the definite proportion of cases in which one can succeed in saving life and limb in sarcoma of the long bones. It depends largely upon the stage of the disease at the time treatment is begun.

Hysteria in War.—Tom A. Williams (*Military Surgeon*, November, 1919) found that ten per cent. of the evacuations during an attack were caused by functional nervous disease. The majority of these men suffered from hysteria and most of them, if properly managed, could be returned to the firing line in a state of efficiency. Some of these cases were considered anxiety neurosis, but this is slow in onset and occurs after long continued duty.

A small number of men evacuated during battle were found to have cerebral commotion, or true shell shock. This was characterized by:

1. The history of long continued coma followed by torpidity or inertia.

2. A period of obnubilation and confusion often accompanied by hallucinations, delusions, and erratic behavior.

3. Modification of the reflexes; the cutaneous reflexes may be absent and the plantar reflex in extension; the tendon reflexes may be exaggerated, diminished or asymmetrical at different periods; the pupils are usually widely dilated, although they react except during the initial coma.

4. Vasomotor disturbances, pallor, cyanosis, hypertension with asymmetry in the different limbs.

5. Alterations of the cerebrospinal fluid, characterized by a disproportionate abundance of serum globulin and albumin, with a relatively small increase of cellular elements unless hemorrhage has also occurred; in hypertension of the fluid, usually marked in the early stages, nearly always over forty mm. and often over 100.

6. Labyrinthine disturbances revealed by reaction to galvanism, rotation, and douching tests.

7. Distinct amnesia is usually present, even after the confused state ceases. It is, however, an error to believe that the recollections which disappear are the more recent. In many cases the memories lost are those of childhood, while those of the war persist.

The symptoms of these patients are not removable by psychotherapy. The suggestibility of the men in this state is highly increased and many hysterical symptoms show in commotioned patients.

The removal of these by psychotherapy is not proof that the man has not been commotioned. Trauma, or diseases which interfere with the activity of the cerebrum, increase suggestibility. Neither the presence nor the rapid cure of an hysterical accident excludes a diagnosis of commotion.

Emotional patients may be called hysterical. These men are not suggestible. It is difficult to obtain access to them for they are struggling against their anxiety. They often show tachycardia, vasomotor disturbances, excessive sweating, nearly always insomnia, often with nightmare. Appetite is poor, or they bolt their food, they are disinclined to smoke or do so feverishly and rapidly. They are very restless. The symptoms are increased by bombardment and by contrarities. They rarely show focal symptoms, such as paralysis, contracture, mutism, deafness or vomiting. True convulsive attacks do not occur, although an emotional crisis may be mistaken by a careless observer. They are not amenable to suggestion, although they are amenable to rational psychotherapy, which penetrates the mechanism of their disturbance.

When the patient is wounded the clinician may be derailed from a psychogenic interpretation of a case of war hysteria. The condition is common although frequently overlooked and leads to the assertion that hysteria does not occur in the wounded. There have been thousands of wounded men in whom an hysterical syndrome has grafted itself on the wounded part and has become so fixed as to require intensive psychotherapy for removal. It is extremely difficult to treat and correctly diagnose cases of trauma without external wound or visible bruise, where there is a sprain of a ligament or tendon. After the initial damage is healed the patient may hold the part in an awkward attitude and complain of pain when the part is moved. The same holds in local neuritis, myositis, or aponeurotic fibrositis, arthritis, tenosynovitis, resulting from a chill or toxicosis. The faulty position interferes with the function of the limb and disturbs the locomotory balance, as well as the patient's mental attitude toward his functions.

The suggestion which arouses the psychological symptoms may be due to disease, the most frequent being where the digestion is disturbed, the foundation being a breakdown in dealing with food as a result of fatigue, irregular and hurried eating, and the taking of excessive quantities in conjunction with severe exertion. The suggestions derived from treatment furnish the basis of the hysterical gastropathy. In some cases the only symptom is persistent vomiting. In these cases there is little loss of appetite, scarcely any loss of weight, pain is absent in many cases. The circulation may be disturbed by paroxysmal attacks of tachycardia. The attack may only last a few minutes but the tachycardia may persist for several hours. Relapses of cured hysteria will occur unless the men are imbued with intense military fervor. Those who are not capable of this are met on lines of communication, at the depot, and in the regiment, by a firmness of dealing gained from instruction of the officers regarding the nature of the condition and manner of prevention in cured soldiers.

Treatment of Calcaneocavus.—Naughton Dunn (*Journal of Orthopedic Surgery*, December, 1919) calls attention to the complete paralysis of the muscles controlling the foot and the slight deformity in infantile paralysis. Where the deformity is most marked some of the muscles are active, as always occurs in calcaneocavus deformities. The increase in deformity appears to be due to the effort of the other posterior tibial muscles attempting to assume the function of the tendo achilles, and not to its paralysis. If the calf muscles are paralyzed or weakened the tibialis anticus and posticus pull up the arch while the flexor longus digitorum, flexor longus hallucis and peroneus longus, passing behind the ankle to their insertions in front of the foot, draw the pillars of the arch together. The heel drops, the arch rises, and the structures on the plantar surface of the foot shorten. A radiograph shows the anteroposterior arch of the foot high. This is due to an upward and forward tilting of the forepart of the os calcis on the astragalus, and a dropping of the forepart of the foot to the mediotarsal joint. The relation of the astragalus to the bones of the leg is not much altered, but owing to the stretching of the posterior ligaments of the ankle from continued strain, the line of the body weight tends to pass through the posterior astragalocalcaneal facet at the point of the heel. It is suggested that in case of a tendency to deformity arthrodesis of the subastragaloid joint should be part of the operative procedure.

The methods which have been tried are:

1. Shortening of the tendo achilles and plication of the posterior portion of the capsule of the ankle joint. This operation has been advised in cases where there is a weakness but not a paralysis of the tendo achilles. The weak muscle is permanently stretched; a direct contradiction to the axiom, that relaxation will hasten recovery of a muscle which is too weak to perform its function.

2. A transverse incision through the subastragaloid joint, displacing the foot backwards, and if necessary transplanting the peroneal and posterior tibial tendons into the os calcis. The results are good in mild or moderately severe cases. The backward displacement of the foot is difficult, but the arthrodesis of the subastragaloid joint which results is a most important factor in increasing the stability of the foot.

3. Whitman advises the removal of the astragalus through an external incision, the articulating surface of the leg bones and the os calcis are denuded of cartilage, the foot is displaced backwards, so that the malleoli overlap the anterior portion of the os calcis. The peroneal tendons, if active, are inserted in the os calcis. The foot is fixed in plaster in the equinus position with slight valgus for six weeks and later a brace applied for support. The weight of the body is thrown more on the centre of the tarsus; the cavus is gradually corrected and the security of the foot is maintained. This procedure gives a more stable foot, but if recovery takes place in the tendo achilles or the muscles replacing it, the short fibrous ankylosis resulting does not allow a useful range of movement. The limb is shortened by one half to three quarters of an inch.

4. Where paralysis of the calf muscles is complete, the double wedge operation has given good results in a number of cases. The steps of the operation are as follows:

STAGE I.—a, If the plantar fascia is contracted, divide it subcutaneously and straighten the sole by force; b, on the inner side of the foot make a three inch incision to the bone, the centre of the incision being opposite the convexity on the dorsum. Separate the soft parts from the tarsus with an elevator until the inner dorsal and plantar surfaces are accessible; c, remove a wedge of bone, with a chisel, large enough to completely correct the cavus; d, close the wound, correct the cavus by flexing the foot dorsally and after applying the dressings, bandage the foot to the tibia. The cavus is cured, but the calcaneus is apparently much worse.

STAGE II.—(four weeks later). a, Make a longitudinal incision at the back of the heel, the centre being opposite the ankle joint. Open the joint. b, Remove the wedge from the astragalus sufficient to permit the foot being brought at a right angle to the leg and arthrodesis to the tibia. c, Close the wound. Correct the deformity. Immobilize until union is complete.

Treatment of Hypertrophied Anal Papillæ (Papillitis).—Charles J. Drucek (*Illinois Medical Journal*, November, 1919) states that the only satisfactory method of procedure is amputation of the papillæ under local anesthesia and the width of the anesthetized field may be modified according to the extent of the disease in each case. When but a few papillæ are to be removed, the infiltration may be confined to the diseased masses. The needle is inserted into the mucous membrane at the base of the tumor and gradually advanced toward the apex, injecting as it goes. Ten drops of anesthetic solution to each papilla is usually enough. When a number of papillæ are enlarged and the sphincter is hypersensitive it is better to anesthetize the whole anal ring and the sphincter muscle. The anesthetized papilla is drawn out with forceps and cut off close to its base. The wound is not sutured and local sepsis (careful cleansing after each defecation and a warm sitz bath once a day) is all the aftertreatment required.

Treatment of Hemorrhoids.—Carroll Smith (*Journal of the Missouri State Medical Association*, December, 1919) describes his method of doing a clamp and cautery operation without post-operative discomfort. He incises the mucocutaneous area at the base of the pile, and then applies the clamp parallel to the long axis of the rectum with outer portion of the clamp in the gap caused by the incision at the base of the pile. He further protects the deeper tissues by a sheet of asbestos under the clamp. While ether anesthesia is usually satisfactory, there is no reason why a clamp and cautery operation should not be performed under local anesthesia. Hackenbruch's method of infiltration is quite efficient in blocking the nerves of the anal region. A large syringe is used with a long needle, injecting .5 per cent. of novocaine or apothesine in four places around the anus and these are connected subcutaneously.

Serum Treatment of Bacillary Dysentery.—Bernard G. Klein (*Lancet*, November 1, 1919) draws his conclusions from an extensive use of antidisenteric serum, and says that the serum should be given in large doses—from sixty to 100 mls.—and is best given intravenously by the slow gravity method. Its efficacy is greatest when it is given early in the disease and from the point of view of serum treatment severe cases of bacillary dysentery may be divided into three stages. The first stage extends from the onset of the disease until the fifth or sixth day, and during it the intravenous administration of serum has a most favorable effect in hastening recovery and in preventing a fatal issue. The second stage extends from about the sixth to the tenth days and a patient in this stage is likely to die or to recover irrespective of serum treatment, although serum may still influence favorably the rate and completeness of recovery if given in large doses. The third stage begins after the tenth day and is marked by profound dehydration and intoxication. During this stage serum treatment is practically useless. In a minority of cases which have passed beyond the tenth day, but in which the third stage symptoms have not developed, large doses of serum may still be of benefit. Persistent colitis, lasting for a month or more after the acute stage of dysentery, occurred only twice among fifty-one patients treated with serum as compared with its occurrence twenty-eight times among 134 patients not given serum. The use of serum also almost wholly prevented the development of "dysentery arthritis."

Abortion of Syphilis by Arsenical Injections during the Incubation Period.—Louis Fournier and L. Guenot (*Press médicale*, October 1, 1919) administered intravenous injections of organic arsenicals to forty women who had had sexual contact from a few days to three weeks before with syphilitics with infectious genital lesions—chance or mucous patches. The secretions from all these lesions showed the spirochete and the Bordet-Wassermann reaction was positive in all but four or five, whose chancres were of less than ten days' standing. The women were free of all indications or history of syphilis and the fixation reaction was negative in all. The total dose of the drugs injected was small—one to 1.2 grams of arsenobenzol; 1.2 to two grams of novarsenobenzol, or 0.65 to one gram of luargol. In three cases in which the sexual contact had been very recent only 0.6 gram of arsenobenzol in two injections, and 0.4 and 0.45 gram of luargol in four injections, were given. In none of these women did the least sign of syphilis subsequently appear, and the Wassermann test, made four or five times in each case at intervals of two or three months, remained uniformly negative. Twenty of the women were kept under observation for two or three years, and remained free of syphilis. Five control patients who had obstinately refused treatment developed syphilis at the usual time after exposure. The conclusion reached is that the arsenical treatment, if given during the incubation period, is definitely capable of preventing the onset of syphilis, the only exceptions being, perhaps, the rare cases in

which the arsenicals fail completely at any stage of the disease. The abortive treatment described is indicated in all cases in which there are definite reasons for believing syphilitic contamination has occurred. Infective syphilitics should be carefully questioned as to their recent sexual activities and compelled to undergo the treatment if contamination has probably occurred. The treatment is also indicated in the presence of any accidental injury, suffered professionally or otherwise, where inoculation of the spirochete is feared. It is not necessary to adhere to the small doses used by the authors in the cases above referred to. They now give two to 2.5 grams of novarsenobenzol in six to eight injections.

The Belladonna Treatment of Epilepsy and Other Spasmodic Diseases.—A. E. Vipond (*American Medicine*, November, 1919) is convinced that the rational treatment of epilepsy, convulsions, enuresis, habit spasm, whooping cough, spasmus nutans, tetany, and laryngismus stridulus is the use of belladonna. He prefers the tincture of belladonna, as it is easy to handle and the dose can be easily regulated. The dose for a child of six months is one to three drops every four hours; at one year the dose is two to five drops; from two to five years the dose is four to eight drops.

A Simple Treatment for Burns.—George E. McGeary (*Minnesota Medicine*, December, 1919) describes his method of treating burns as consisting of first washing with Dakin's solution and then applying a paraffin preparation prepared at the Minneapolis City Hospital. This paraffin preparation has the following formula:

Resorcinol	10
Oil of eucalyptus.....	20
Olive oil	50
Petrolatum	250
Paraffin	670

The resorcinol is dissolved in alcohol and added to the paraffin and petrolatum while they are hot, thus driving off the alcohol. When cool the eucalyptus and olive oils are added. This preparation is applied daily, in each case washing off the surface with Dakin's solution.

Treatment of Typhoid Fever with Diluted Typhoid Vaccine.—Pedro H. Dedomenici (*La Semana Medica*, October 9, 1919) corroborates the reports of other Argentine workers as to the value and the innocuousness of this method of treatment. When used early the vaccine almost always produced a very short course of the disease, with a beginning of lysis after from twenty-four to thirty-six hours and a disappearance of abnormal temperature in from two to six days more. The method followed was invariably the subcutaneous with dilutions of antityphoid vaccine of one in ten, one in twenty, one in fifty, and one in one hundred, the two former strengths giving the best results. The dose was an initial administration of two c.c., followed two or three days later by one c.c. In many cases the first injection occasioned a defervescence of the fever either by lysis or by crisis. The writer presents six typical charts to illustrate the efficacy of this method of treatment.

Miscellany from Home and Foreign Journals

Antihemorrhagic Serum Reaction.—H. Dufour and Y. Le Hello (*Presse médicale*, October 1, 1919) comment on the unreliability of such measures as injections of ergotin, pituitrin, emetine, or adrenaline, ingestion of calcium chloride, or injections of gelatin solution, horse serum, antidiphtheritic serum, or serum from horses repeatedly bled, in improving blood coagulability. Increased coagulability does definitely result, however, at the time when a serum injection induces a state of anaphylaxis or a serum reaction. Active anaphylaxis requires a number of days to develop, and is therefore too slow to be of therapeutic value, but immediate passive anaphylaxis can be induced by injecting a little serum from an animal already in an anaphylactic state. The authors use rabbits into which repeated minute amounts of diphtheria antitoxin have been injected. The rabbits are bled twenty-one days after the first injection, and the serum collected aseptically, without subsequent sterilization but with addition of a trace of phenol. Injected subcutaneously in man, this serum induces an almost immediate hypercoagulability, and was used successfully in arresting numerous hemorrhages, including several of very serious extent. It rarely causes any serum reaction, and the latter is but slight where it does occur. Sixteen cases are reported illustrating prompt arrest of hemorrhage by the procedure. They include instances of metrorrhagia, grave epistaxis, postoperative hemorrhages, uterine tumor, hemophilic swelling of the knee, etc.

Uterine Myomata and Their Complications.—E. E. Montgomery (*American Journal of Obstetrics*, September, 1919) notes that a submucous myoma of considerable size, as it dilates the cervix, may undergo caries of its covering, adding to the hemorrhage an offensive discharge. Such cases suggest cancer; differentiation is effected by a recognition of a pedicle and the absence of any infiltration of the cervix. Pedunculated subserous fibroids on the right side in pregnancy are not infrequently mistaken for appendicitis; the possibility of such a condition should be considered in every suspected case of appendicitis complicating pregnancy. In a uterus with a number of growths, especially subserous, the tumor in order to adapt itself to the contour of the pelvis becomes twisted on its vertical axis, the veins become obstructed, the uterus enlarges from edema, and severe pain may result. Increase in the torsion leads to necrosis, necessitating prompt operation to save the patient. If she is pregnant, the condition may require enucleation to prevent abortion or save her from serious risk to life. In a growth involving a good portion of the uterine wall, partial or complete hysterectomy is preferable to any attempt to save the crippled uterus. The diagnostician should realize that growths may arise not only from the uterus but also from the ovaries, tubes, rarely in broad ligaments, and not infrequently in the abdominal muscles. A growth from the anterior abdominal wall

may fill up the abdominal cavity as would a growth from the uterus. The operator attempting to conserve procreative power by enucleation of the growths rather than sacrificing the uterus should remember that in all such cases growths will subsequently recur. Whenever growths occur in different parts of the uterus hysterectomy is to be preferred, as the uterus otherwise patched up may be unable to accommodate the ovum until completion of pregnancy or to expel it successfully. Complete, rather than partial, hysterectomy should be performed when the cervix has been much injured in previous pregnancies, or where there is a suspicion of malignancy complicating the myoma. The author's mortality in 102 partial hysterectomies was 4.9 per cent. and in 144 complete hysterectomies, 5.5 per cent. Intestinal, omental, and vesical adhesions may be such as to render the operation extremely difficult. Where extensive adhesions have been present, the raw surfaces should be sutured, if possible; if not, they may be covered with gauze packing.

Arsenical Treatment in Gangrene of the Lung.

Maurice Perrin (*Presse médicale*, September 25, 1919) approves of the customary general tonic treatment in pulmonary gangrene, as well as of palliative or symptomatic measures and of bronchial antiseptics by means of oil of turpentine, terpin hydrate, eucalyptus, sodium hyposulphite, inhalation of oxygen or phenol vapor, etc. In a few instances pneumotomy and drainage, and particularly artificial pneumothorax, have given good results. In addition, Perrin has seen excellent effects from organic arsenical injections. In a case of recent tuberculosis with gangrene of the right apex due to Vincent's organisms and various other organisms and fungi, the gangrene was completely cured by two intravenous injections of 0.45 gram of neoarsphenamine, given one week apart. Another case was one of influenzal pneumonia with axillary and apical gangrene, and very unfavorable prognosis. The sputum showed a wide variety of organisms, including the *Bacillus ramosus* of Veillon and Zuber and the Vincent fusiform bacilli and spirilla. Under repeated ascending intravenous injections of neoarsphenamine the condition gradually subsided and the sputal flora returned to normal in five weeks. In a third patient suffering from chronic diffuse bronchitis and a sluggish pulmonary gangrenous process after gas poisoning, ten intramuscular injections of hectine on alternate days were followed by recovery from the gangrenous condition. The measure seems most useful where the Vincent organisms are concerned. Albuminuria and hemoptysis, unless very marked, should not be considered as contraindicating the treatment. The neoarsphenamine may be given in large doses at relatively long intervals, or in small doses at short intervals, according to apparent indications in the individual case. In very grave cases, the author would administer 0.15 gram of neoarsphenamine daily.

An Epidemic of Relapsing Measles.—G. Desbours (*Annales et mémoires de la Société médicale des hôpitaux de Paris*, May 22, 1919) notes that in the month of June, 1918, Murmansk was practically the only outlet from Russia open to persons leaving that country. Improvised living quarters in railway cars and long continued privation had reduced the fugitives from Russia to a low state of systemic resistance. An epidemic of measles occurred, involving thirty subjects of all ages, and of these three died from bronchopneumonia. In four patients under the author's observation, a typical unquestionable measles eruption recurred sixteen, thirteen, twenty-seven, and sixteen days after the first eruption, and according to Sabolotka, three other cases with recurring eruption had already occurred in the same epidemic before the author's arrival and the patients had left on a steamer. Thus seven out of thirty cases of measles had shown a recurring eruption. That this peculiar feature actually arose from concomitance of epidemics of measles and of rubella seems improbable in view of the fact that oculonasal catarrh, which is nearly always absent in rubella, was present with both eruptions in the recurrent cases. Furthermore, had two epidemics existed, there should have been no fairly definite time relationship between the appearance of the two eruptions in a given case.

Hysteria.—Arthur F. Hurst (*Lancet*, November 1, 1919) says that the war afforded an opportunity for studying hysteria in men such as never occurred before, and the lessons learned can be applied to the elucidation of many of the problems presented by hysteria in civil life. He proposes the following new definition of hysteria: "Hysteria is a condition in which symptoms are present which have been produced by suggestion and are curable by psychotherapy." This definition does not recognize an hysterical condition apart from the symptoms of hysteria. The author then proceeds to show that the so-called physical and mental stigmata of hysteria are merely artifacts, and are usually produced by suggestion on the part of the examiner. Thus he shows that there is no narrowed field of vision in hysteria unless it is suggested by the method of examination and that by conducting a simple examination for the fields of vision in opposite ways on the two eyes of the same person one field can be made to show a progressive spiral narrowing while the other shows a progressive spiral widening. The same rôle of suggestion is equally important in the matter of the so-called hysterical anesthesia, no anesthesia being present unless definitely suggested. Abnormal suggestibility is clearly a predisposing factor, but hysteria may develop in perfectly normal persons under the influence of suggestion which is sufficiently powerful or sufficiently prolonged, and the normal individual is far more subject to suggestion than is commonly thought. The manifestations of hysteria which develop from terror are merely the perpetuation of symptoms which in themselves constitute the body's normal responses to the emotion. Similarly hysterical paralyses and contractures following trivial wounds are solely the products of continued suggestion and can be removed at once by

reeducation and psychotherapy. Even the anatomical changes found in portions which are subject to hysterical paralysis can be shown to be merely those associated with disuse from any cause, and they rapidly disappear with the cure of the hysterical paralysis or contracture. Very great stress is laid upon the frequency with which hysterical symptoms develop in organic diseases or as a result of them and many types of such hysterical perpetuation of symptoms of organic lesions are given. It is urged that every case of organic disease should be tested by reeducation and psychotherapy to determine accurately the extent of the hysterical nature of the symptoms and to relieve the victim to the extent of their cure. It is to be specially noted, in this connection, that the presence of definite physical signs of organic disease does not in any way exclude hysteria, and its presence can be determined only by the results of attempts to remove such of the symptoms as are hysterical.

Edema in a Monkey.—A. Harden and S. S. Zilva (*Lancet*, November 1, 1919) observed the development of a more or less generalized edema in one of three monkeys fed on a diet sufficient in all food constituents save the fat soluble A fraction. All of the animals were kept for 198 days on such a diet, during which time they did not grow, although they showed no signs of ill health. Then one of the animals had a small daily allowance of butter fat added to its ration and the second received olive oil. The third continued on the original diet. The addition of the butter fat did not restore growth but it kept the animal alive and well for the whole 299 days of the experiment. The olive oil, which supplied fat but not the A fraction, failed to prevent the animal's steady decline and death after 262 days. The third animal continued to decline also and after 289 days edema began to develop, followed by diarrhea and progressive weakness. No organic lesions were found at postmortem. The authors suggest the possibility that these observations may throw some light on the so-called hunger edema or on that occasionally found in underfed children, but further experiments are required to show the connection.

Prostatectomy and Urea Elimination by the Kidneys.—E. Michon (*Paris médicale*, September 27, 1919) points out that few prostatic patients reach the stage of retention and surgical intervention without renal impairment. Testing the renal function by the injection of methylene blue is a useful procedure, following rather closely the elimination of urea by the kidneys. The blood urea should be estimated before prostatectomy is resorted to. Urea retention in prostatics, however, is not always due to renal impairment, and is less unfavorable prognostically than it is in Bright's disease. Where the blood urea ranges between 0.7 and 0.9. Ambard's constant should also be established, as it may accentuate or moderate the unfavorable prognostic impression derived from the blood urea. Retention of urine or fever, being temporary unfavorable influences, greatly reduce the danger from operation when they accompany urea retention, even if pronounced.

Fixation Reaction in the Diagnosis of Tuberculosis.—L. Boez and E. Duhot (*Presse médicale*, September 25, 1919) applied the fixation reaction, with the technic recommended by Calmette and Massol, in 141 tuberculosis cases or suspects and in sixty subjects in normal condition or with affections other than tuberculosis. The alexin used in this method is that of fresh guineapig serum, previously standardized. The hemolytic serum is prepared by systematic injection of goat erythrocytes in horses; it is inactivated by heat and standardized. The patient's serum is decanted and inactivated by heating to 56° C. for thirty minutes or to 58° C. for ten minutes. Two antigens are used. The first is made from tubercle bacilli extracted with distilled water and standardized by means of serum from cattle in an advanced tuberculous condition of known titre. The second is a peptone antigen obtained from an emulsion of tubercle bacilli in ten per cent. Witte's peptone, sterilized, macerated for two or three days at 65° C., filtered and standardized. Clinically, a positive fixation reaction was obtained in 77.77 per cent. of the cases of known tuberculosis in the first stage; in 82.05 per cent. in the second stage, and in 63.6 per cent. in the third stage. In seven healthy persons the reaction was uniformly negative.

Excluding all subjects of syphilitic disease in whom the reaction is frequently positive—especially when the Wassermann reaction is also positive—patients suffering from disorders clinically other than tuberculosis furnished only 7.69 per cent. of positive fixation reactions. The method is thus of marked, though not positive, diagnostic value. The presence of the antibodies in tuberculous cases does not seem to be an expression of a defensive process, but rather of a reaction to infection. Their amount increases as the disease progresses, but in spite of their persistence, when the intradermal tuberculin test becomes negative, the prognosis is unfavorable. When they disappear, a fatal termination is imminent. At present the fixation reaction is in the front rank of the biological diagnostic tests for tuberculosis.

Use of Antidysentery Serum.—W. E. Waller (*Lancet*, November 1, 1919) analyzes the results obtained in 341 consecutive cases of bacillary dysentery, 148 of which were treated with antidysentery serum given subcutaneously in doses ranging from 100 to 140 mls in twenty-four hours in two or three subcutaneous injections. The results tend to show that in cases treated early by serum the acute stage is of shorter duration, the tendency to chronicity is less, and the convalescence is more satisfactory than in cases treated by other methods. Even when first given after the acute symptoms have lasted for as much as three weeks serum may be followed by appreciable improvement, especially in the pyrexial cases. Diarrhea during convalescence was much less common in the serum cases than in the others. Of the total of 148 cases receiving serum, serum sickness developed in fifty-six per cent. All the patients showed a rash and an increased tendency to intercurrent diseases seemed to be present during the period of serum sickness.

Pleural Spirillosis in Traumatic Hemothorax.—Edgar Lancereaux (*Presse médicale*, October 1, 1919) reports the case of a soldier who was wounded in the chest by a small shell fragment and developed a hemothorax, which became infected with numerous actively motile spirochetes on the fifteenth day. The organism stained poorly with the ordinary stains and might be overlooked unless the ultramicroscope or the silver method were used. Since neither the blood nor the sputum contained this organism, it is believed to have been introduced at the time of injury. Neoarsphenamine was injected intrapleurally and the patient soon recovered. The author lays stress on spirillosis and spirochetosis as the causes of an increasing number of recognized clinical conditions.

Mammary Abscess Due to Umbilication of the Nipple.—J. Duvergey (*Presse médicale*, October 1, 1919) describes a special variety of breast abscess developing independently of pregnancy, of mammary secretion, of trauma, of affections elsewhere, such as sore throat, of skin lesion, and of any trace of scarring. The condition runs a slow course, one or two months elapsing before suppuration sets in. There is no fever; pain, redness, and heat are generally slight, swelling being the main feature, with some lymphatic reaction in the axilla. The slow course is ascribed to the low virulence and small number of the causative organisms and to the minute portal through which they enter, viz., a macerated area or erosion of the areola and nipple, which are always umbilicated. The pus in these cases has a special odor similar to that of the umbilicus in uncleanly persons. The abscess extends deeply in the breast and is surrounded by a thick shell of chronically inflamed tissues which, histologically, present a sarcomatous appearance.

These mammary abscesses are of great importance clinically, because they strikingly resemble some cases of malignant breast tumor, inducing a hard mass, roughening of the skin, depression of the nipple, a visible network of veins, hardened axillary nodes, and fusion of the diffuse tumor with the mammary gland. The physician unfamiliar with the condition is certain to diagnose cancer breast cancer when he encounters it. There are, however, certain differential features, viz., the umbilication of the nipple has been present since birth, and is generally somewhat more marked on the affected side. The mammary swelling in the abscess cases is sometimes painful and always tender—as are likewise the axillary lymphatics—whereas in cancer tenderness is always lacking. In abscess the overlying skin is often reddened and nearly always edematous, the redness, however, sometimes appearing late. Exploratory puncture should always be carried out in these cases and will settle the diagnosis. The treatment of the abscess consists of incision and drainage in the usual manner. The patients should be watched for hemorrhage after incision, and if it occurs, direct pressure in the wound itself applied. Prophylactically, any woman with a congenitally retracted nipple should be particularly cleanly in this region. In certain instances, outward suction of the nipple with a suction bulb may be necessary.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-ninth Annual Meeting, Held at Harrisburg, Pa., September 22 to 25, 1919.

Dr. GEORGE E. HOLTZAPFLE, of York, in the Chair.

SECTION IN MEDICINE.

(Continued from page 1008.)

Significance of Heart Murmurs Based upon Examinations in the United States Army.—Dr. EDWARD H. GOODMAN, of Philadelphia, said that the question of murmurs, as it appeared to him, was that diastolic murmurs generally indicated valvular disease and that systolic murmurs might or might not do so. He called attention to the fact that mitral stenosis and aortic insufficiency were seriously regarded simply because the diagnosis had been made from the murmur, and that, he thought, was about all that had been learned from the murmurs. It was known that these lesions were serious because the myocardium suffered most and because nearly always decompensation was eventually present. This eventuality was not necessarily recognized by the murmur; recognition might be by the most casual inspection. While murmurs were useful for diagnosis, the chief concern of the patient was his margin of safety and how much the valve lesion would shorten his days. Prognostically, except always in mitral stenosis, diastolic murmurs alone were of questionable value. With the systolic murmurs the case was different; some were innocent, others not, and it was important to distinguish between them. Here, as in diastolic murmurs, the greatest importance lay in the behavior of the muscle. The diagnosis of aortic insufficiency was of service in prevention of overexertion. An estimate of the efficiency of the heart muscle would emphasize the insignificance of murmurs in some instances.

Dr. A. E. ROUSSEL, of Philadelphia, pointed out that Mackenzie had written much concerning the insignificance of systolic murmurs in the second and third decades of life. Observations made by the war examiners had been drawn largely from those decades, and Doctor Roussel cautioned that these murmurs had a much greater relative importance after that period of life. In mitral stenosis the nitrite of amyl test in which the patient broke the capsule, passing it in front of his face, was to Doctor Roussel of particular value. In many instances the murmur would come out where before it had been only suspected.

Dr. CHARLES REA, of York, endorsed the note of warning given by Doctor Piersol that all evidence should be weighed in cardiac cases. In determining the presence of presystolic murmur he had found helpful the principle that when there was uncertainty just when the first sound began, a presystolic murmur was present.

Dr. ARTHUR C. MORGAN, of Philadelphia, reported in a series of 1,400 men examined at Camp Lee,

a large number of effort syndrome cases in which the men were classified for domestic service and rushed overseas. At Camp Lee there had been found a large number of men with palpable thyroids from the western part of Pennsylvania.

The Early Recognition of Diseases of the Heart.—Dr. THOMAS McCRAE, of Philadelphia, stated that the lengthened average duration of life was due to the decreased death rate in the earlier years of life; that for the ages over fifty the death rate from diseases of the circulatory system appeared to be increasing. The important points in the attempt to lessen this increase were an endeavor to reduce the injury resulting from acute infections, and the recognition of the earliest signs of disease of the myocardium. In both instances the chief concern was with the myocardium. The alertness of the general practitioner in his opportunity to see early cardiac conditions meant much to the patient. The following etiological classes were discussed in detail: 1, Acute infectious disease; 2, syphilis; 3, subacute and chronic infections; 4, arteriosclerosis; 5, renal disease.

The points to be given particular attention during and following infectious disease were rate, rhythm, character, heart, lungs, and blood pressure. In every case of syphilis, myocardial involvement should be regarded as probable. In subacute and chronic infections special attention should be directed to infection of the gallbladder and prostate in the prevention of serious myocardial changes. With a chronic bronchitis there might be damage both from the infection and from the mechanical effects of coughing. In arteriosclerosis when cardiac symptoms appeared the damage as a rule was already accomplished. In the means of recognition of early acute cardiac disease Doctor McCrae placed emphasis upon the importance of the myocardium and cautioned that the interest of endocarditic and pericardial disease should not detract from the study of the state of the muscle. In endocarditis two forms demanding particular care were the aortic lesion of syphilis and the endocarditis of rheumatic fever, especially in children. The recognition of myocarditis was stated to be the most important part of the problem, and first in value here was the use of the electrocardiograph.

SECTION IN SURGERY.

Dr. DONALD GUTHRIE, of Sayre, in the Chair.

Hospital Morale.—Dr. DONALD GUTHRIE, of Sayre, Pa., in his address as chairman of the section, said that to maintain good hospital morale it was important to have the closest cooperation between the management of the hospital, the medical staff, and the nursing force. The patient should be considered from a psychological standpoint from the time she was admitted until after she left the institution. During her entire stay her mental welfare and comfort should receive the same careful consideration as her physical welfare—for the majority of patients were mentally, as well as physi-

cally ill. Good hospital morale demanded loyalty on the part of the nursing force and the medical staff to the chief on duty. Dissatisfaction on the part of the interns was extremely contagious and spread quickly from the training school to the patients. Doctor Guthrie believed that if interns were given more consideration and attention, if they were more often asked for their opinions and suggestions, we could make cheerful coworkers of them, instead of dissatisfied critics. Good food, well cooked, served hot in an attractive way, was a great asset to the hospital. No convalescent should be allowed to be hungry, if there was no reason why the diet should be restricted.

The surgical or medical chief should examine all patients when they were ready to leave the hospital. At that time the disease or operation should be explained to the patient in detail, all final instructions for aftercare should be carefully given her, besides telling her that her home physician would be written to about her case. This would give her a sense of security at home, and the request that she should send to the hospital a report of herself from time to time was met with delight, for she felt that the interest shown in her at the hospital would not come to an end when she left.

Diagnosis and Treatment of Congenital Pyloric Stenosis.—Dr. ALBERT F. HARDT, of Williamsport, Pa., read a paper on this subject in which he said that the first symptom which attracted attention was vomiting, frequently beginning as a regurgitation which gradually became worse until it became distinctly projectile in character, the vomit often being projected several feet. It occurred after each feeding or after several retained feedings, and there was nothing distinctive about the character of the vomitus. Of all the symptoms, the vomiting was the most alarming. There was a peristaltic wave which appeared after food was taken and radiated from the cardia to the pylorus. This was elicited by giving two or three ounces of food and, while the infant lay on its back in a favorable light for observation, the wave would appear. A tumor might be felt to the right and above the level of the umbilicus, usually a small movable mass. There were scanty stools and urine and progressive loss of weight. The scanty stools were, of course, due to the reduction of the amount of food reaching the bowel.

As regards the weight curve, it was interesting to note that it was not uncommon following the initial loss of weight after birth to have a steady though not marked upward curve. This, however, continued but a short time after vomiting began. It then became stationary and loss of weight became rapid. It was now generally agreed that only in the mildest cases with partial retention and little or no loss of weight should medical or expectant treatment be tried, but in all other cases operation should be advised at once. As regards mortality, a low mortality would depend upon early diagnosis and early operation; the longer the duration of the vomiting, the greater the surgical risk. Patients who had vomited over two weeks were usually in such poor physical condition that operative mortality would necessarily be high.

Dr. LEVI J. HAMMOND, of Philadelphia, said that at times the tumor could be felt in the region of the pylorus, though more often the liver, which was invariably enlarged to once or twice its natural size, so covered it over as to prevent its being palpated. In two of his cases, the tumor could certainly not be felt; in one, doubtful; in the fourth it was distinctly felt. The peristaltic wave was typical in all. The other symptoms were those naturally to be expected and incident upon persistent vomiting, such as loss of flesh, progressive emaciation, exhaustion, subnormal temperature, and the classical picture of marasmus. As the condition was surgical from the onset, he considered that medical treatment should not be employed longer than was necessary to establish diagnosis. This applied alike when the cause was either persistent spasm or hypertrophy, for even though the obstruction was due alone to spasm, which is hardly conceivable, such patients died from inanition if the spasm was intense, prolonged and frequently recurrent, hence, under such circumstances, it was equally dangerous with hypertrophy. Within a few hours after operation had established free drainage, nourishment could be taken in small quantities, and increased to full feeding in three days. Surgical treatment should consist in either pyloroplasty or posterior gastroenterostomy; the former was indicated where the pathology was demonstrably localized. As this was not in his experience often possible, he had always elected posterior gastroenterostomy, which he believed would meet the greater number of indications. Early recognition of the precise nature of the condition and prompt operative treatment as indicated, before tissue cell resistance had too greatly ebbed away, should result in recovery of at least eighty per cent. of these patients.

Dr. JOHN J. GILBRIDE, of Philadelphia, said that congenital stenosis of the pylorus had a fairly definite symptomatology. Having a child with persistent vomiting in the presence of constipation, he thought that one might well suspect the presence of a stenosis of the pylorus and the mere fact that the practitioner suspected such a condition led him a long way toward making a correct diagnosis. In the cases he had seen relative to the Rammstedt operation the pylorus was in most instances rather hard and almost of a cartilaginous consistency, which increased the difficulty in carrying out that technic. One should be reasonably certain about the diagnosis before recommending operation, as operation on these little patients demanded a very careful and painstaking technic in order that the lives of these frail individuals should not be needlessly sacrificed.

Fractures of the Pelvis.—Dr. SAMUEL P. MENGAL, of Wilkes-Barre, Pa., read this paper, saying that there was no doubt that if x ray examinations were made a matter of routine in all doubtful cases, there would be found a greater number of fractures of the pelvis, and incidentally, fewer recorded deaths from internal injuries. Fractures involving the crest of the ilium which, owing to its position, was frequently exposed to trauma, were often of little moment, usually caus-

ing no great inconvenience and were very rarely complicated. Fractures of the pubes and ischium, on the contrary, occurred more frequently, were often multiple and complicated, and had a high mortality.

In a series of sixty-nine cases admitted at the Wilkes-Barre Hospital during the past eight years, there was no mention made of fracture of the body of the ischium. Complications were numerous and often severe. Owing to the intensity of the fracturing force, in many of the cases the pelvis was crushed, with extensive damage to the soft parts. In this group of cases there were complications in forty-six.

The time requisite for a complete cure in these cases was directly proportionate to the extent of injury and the displacement of the bones. Too often these factors were not carefully weighed, and the patient was allowed out of bed and on his feet before bony union had occurred, with the result of increased deformity, or perhaps a cripple for life.

In a number of instances, Doctor Mengal had seen patients with far greater deformity at the end of nine months or a year than they had had when discharged from the hospital. Suspected cases of ruptured bladder should have an exploratory laparotomy as early after the injury as possible. The one great factor in these cases was thorough drainage, and the earlier it was established the better were the chances for recovery.

Dr. WILLIAM L. ESTES, of South Bethlehem, said that he wanted to emphasize the fact that these fractures of the pelvis occurred very much oftener than one would suppose. While it was true that the nature of the work of miners and the various accidents of their trade brought about these injuries in them perhaps oftener than in many others, it was a fact that in industrial establishments they also occurred very frequently. If any patient entered the hospital under the care of a surgeon with the symptoms which would suggest some injury about the pelvis, it was exceedingly important that he should have not only clinical examination, but he should always have an x ray. Case after case had passed through their hands in which they could not detect the fracture, which could be seen by a well taken skiagraph, and he thought that was an exceedingly important method of pursuing the investigation.

Dr. JOHN B. ROBERTS, of Philadelphia, said that he had recently been called to see a patient, seventy-eight years of age, who had been knocked down by an automobile. She had a paralysis of one side of the face and was violently shocked. She had fractures of both bones of one leg. X ray examination showed fissures of the vault of the cranium running horizontally. There was a good deal of contusion about the hips. Doctor Roberts suggested that an x ray examination be made, although there was no trouble with the urine. The x ray showed a fracture of the ramus of the right pubes and of the ischium. He was astonished to see how rapidly the patient improved, this case being entirely different from the others described.

Surgical Observations of War Industrial Activities at the Methodist Episcopal Hospital, Philadelphia.—Dr. LEVI J. HAMMOND, of Philadelphia, said that serious injuries in industrial plants during the war became at once most formidable because of inadequate means on the part of the industrial plants to furnish even first aid care. As proof of this, 738 patients suffering from infected wounds had been received at the hospital. The climate during the winter of 1917 had been most unfavorable, being throughout too cold to be compatible with work in low land, and as a result, gangrene from frostbite necessitated the amputation of the limbs. He thought that the energy of the laborer during this period was greater than ever before exhibited, each one, without murmur, enduring a greater amount of physical hardship than he would have tolerated under ordinary circumstances. Crushing injuries of the head, the pelvis, the thorax, the face, and extremities had been far more numerous than they would have been among an equal number of skilled laborers. For example, there had been 135 crushing injuries of the body, fifty-three of the brain, twenty-eight of the pelvis, etc. Altogether there were 7,805 severe injuries treated at the Methodist Hospital from the beginning of the war until the beginning of 1919, entirely exclusive of the minor injuries. It had been necessary to amputate in eighty-one cases of fracture. The immediate mortality was high, there having been eighty-seven deaths from all classes of injury during the period of the war activities.

Dr. WILLIAM P. WALKER, of South Bethlehem, stated that all he could say was that in Bethlehem, at St. Luke's Hospital, he could echo what had been said about the number of cases. Fractures were numerous and of the various types, but nothing new in the way of surgery had been introduced. Dakin's solution, used by the drop method, had been given a fair trial. Fractures, except those of the femur, were treated by immobilization and plaster bandages and they resorted to a good many plating operations.

Empyema.—Dr. J. STEWART RODMAN, of Philadelphia, said that in the prewar days it had been the rule to see empyema cases drain for weeks and not uncommonly for months, necessitating drastic procedures later to obliterate the pus cavity which had formed. In this respect the newer methods of treatment were great steps in advance and it would be no less of a surgical triumph to put the patient back to a civilian occupation at the end of two or three weeks than it had been to return the soldier to duty in that length of time. It was his earnest conviction that this was entirely possible if we remembered our war experience in treating empyema henceforth. He wished to outline his own experience in treating some 240 cases of empyema. He referred to the empyema caused by the Streptococcus hemolyticus following in the wake of a violent epidemic of measles, complicated by bronchopneumonia, in the epidemic of 1917 and 1918, during which in a little more than the three months of November, December, and January one-third of the command of the Thirty-sixth Division, some 8,000 troops, suffered from measles. It was a most per-

nicious type of measles in that the complications of bronchopneumonia, leading to empyema, mastoiditis and other metastatic infections, were common. The diagnosis was interesting and taxed the watchfulness of the medical side of the hospital. X rays proved of great value in localizing early collections and those that became "walled off" later on. In the first group of fifty cases the plan had been followed of draining the chest cavity as quickly and in as simple a way as possible; thoracotomy without rib resection had been done, for the most part under local anesthesia, and drainage provided for with one rubber tube of a large dimension. Often this was done in the ward as it was not thought wise to attempt moving the patient to the operating room. The mortality in this first group was high and not a few patients died within several hours of the thoracotomy, enough, in fact, to lead to the belief that this plan of treatment, while apparently based on sound surgical principles and civil experience, was not the one best calculated to deal with this particular type of empyema. Accordingly after the first fifty cases it was decided to aspirate in the worst cases, and they had found to their great relief that this procedure was a distinct advance in treatment. As the fluid was thin at first it was possible after diagnostic puncture had been done to aspirate away by means of the Potain aspirator the greater part of the fluid. The improvement in the general condition, as a rule, was marked, the patients appearing less toxic and respiration becoming easier. Of course the chest cavity would soon fill up again and aspiration had to be repeated usually after the lapse of three or four days. The patients also after several aspirations were in much better condition to withstand the shock of this more formidable procedure. The surgical treatment of choice then became aspiration, late operation, and thoracotomy with rib resection. To this was added irrigation after one week had elapsed with normal salt solution and later Dakin's solution. He confessed to having had a prejudice at that time against irrigating an acute empyema cavity which he had entirely lost since.

Dr. A. RALSTON MATHENY, of Pittsburgh, said that Doctor Rodman's paper gave a very good history of experience in the Army hospitals. He based his remarks on cases at Camp Gordon, Atlanta, as well as at Camp Grant. At Camp Grant they had eighty-three cases; the first fifty cases were treated by the old fashioned method and the mortality was eighty per cent. This procedure was stopped by the War Department. Orders were sent out not to operate because it had been found that they were dealing with a new type of empyema.

Dr. W. W. BABCOCK, of Philadelphia, said that for a time the medical men did not know what they were up against. The patients were taken ill usually after malaise and some exposure and died rapidly before anything was done; they were not treated by operation. A number of autopsies were made and the medical officer in charge pointed out that the cavities were filled with turbid fluid and the surgeons got busy. At the beginning of the epidemic when nothing was done every patient died; the mortality was about 100 per cent. Later on,

when they began to do resections and drainage operations the mortality dropped to about eighty per cent. So the surgeons congratulated themselves and thought these results were due to those early operations. This went on until spring when the Empyema Commission got into the field and the mortality was reduced. The commission decided to observe the effect of treatment as opposed to no treatment. They had twenty-seven or twenty-eight cases and they held off and did aspiration and found that in these only one patient died.

Pulse Pressure in Traumatic Cerebral Compression.—Dr. HARRY M. ARMITAGE, of Chester, Pa., read this paper saying that in severe fractures of the base with widespread hemorrhage, the blood pressure symptoms were valueless. In traumatic cerebral compression, where the local symptoms suggest a blood clot or a depressed fracture pressing on the brain as evidenced by x ray, palpation or paralysis, the general symptoms, such as slowed pulse and blood pressure findings, might be of little value if the medulla was not involved by pressure. Operation was the only rational treatment in these cases. In cases with major symptoms of choked disc, headache, disturbed sensorium, coma, increased pressure of the cerebrospinal fluid as registered by the spinal mercurial manometer, and slow pulse, there would invariably be found a high pulse pressure. The systolic pressure was too uncertain a factor to be of any value whatever in diagnosing the amount of pressure. Our decision as to whether a patient should be trephined should be determined after grave reflection and consideration of the entire group of symptoms, but in all cases of head injury frequent estimations of the pulse pressure and pulse rate should be made. The issue was unmistakable. The subject had passed out of the realm of thought and presented itself as a clean cut fact. Where there was an interesting pulse pressure and a falling pulse in traumatic cerebral compression an operation should be performed without any delay.

Dr. LYNDON H. LANDON, of Pittsburgh, said he dared to state that in at least eighty per cent. of the cranial cases the surgeon was called upon to see the patients were suffering from the effects of increased intracranial pressure, whatever the underlying lesion, and regardless of the necessity of relief from the subjective discomforts from which these patients suffer, the important feature for consideration, especially in the acute cases, mostly resulting from trauma, was an alleviation of the interference which this increased tension imposed upon the proper functioning of the vital medullary centres. It was unfortunate that in so many of these cases procrastination seemed to be the order. Any means, therefore, of which we could avail ourselves in arriving at the proper line of action were most acceptable. Of course in many of these cases our duty was unmistakable. It was in the borderline types that we needed finer diagnostic help and he thought that Doctor Armitage's cases clearly showed the value of careful observations of the pulse pressure as a guide to the proper prognosis and treatment, especially the former. Personally, aside from and in conjunction with the general symptoms which

should never be lost sight of, he had come to rely very largely upon the direct estimation of intracranial pressure by the spinal mercurial manometer. Frequently repeated, this not only showed the exact pressure existing, whether it was increasing and to what extent, but by lumbar puncture we procured the added information as to the presence or absence of blood, while the withdrawal of safe amounts of cerebrospinal fluid, guided by pressure readings, was often of distinct therapeutic value. The most important thing for us to remember in dealing with cerebral compression was not to postpone decompression until the intracranial pressure reached 40 mm. or 59 mm. of mercury, until the pulse pressure far exceeded the pulse rate and all the symptoms of Kocher's third stage had appeared. The time to consider operation was when there appeared signs of beginning compression. The utter futility of operating after compensation had become exhausted, as in the fourth stage of Kocher, should not need comment.

Dr. CHARLES H. FRAZIER, of Philadelphia, said that he wished to subscribe to the statement which had been made that decision as to trephining should be determined after grave reflection and consideration of the entire group of symptoms, but in all cases of head injury frequent estimations of pulse pressure should be made. Those who fully followed the literature of the subject had seen articles appear from time to time in which the writers, many of them younger men, had laid great emphasis on the symptoms of pressure, rise of blood pressure, and choked disc. It was his opinion that if one were to rely on these two objective symptoms as giving the indications for or against the operation it would be done in many instances in which it should not have been done and would not be done in many instances where it should have been done. In determining the indications for or against operation, one had to take the whole clinical picture into consideration.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Ecstasy. By LOUIS COUPERUS. New York: Dodd, Mead & Co., 1919. Pp. 240.

Couperus, the Dutch writer, like Ibañez, the newly discovered Spanish author, has recently become a favorite in the American fiction reading world. In *Ecstasy*, a brief and simple tale, Couperus gives an excellent portrayal of Dutch life—one phase of it—from perhaps a bourgeois point of view. He does this in all of his writings, and the impression he conveys is the helplessness of it all. The strivings, yearnings, and desires are all shown, and in the finality of things there is a powerless protest against existing forms and conditions, and an ultimate defeat.

In addition to his bleak background, Couperus

produces in *Ecstasy* a character, an emotional extremist, who dreams of an idealistic existence but through a longing for freedom from the restraints which are imposed on him flings to the winds everything he holds beautiful and dashes off on a wild escapade. He revels in a series of debauching enterprises and then, in a semiremorseful state, returns to an unshaven and indolent retrospection. If humility is his condition he does not annoy the populace with it, for he secludes himself in a nook of his old haunts and finally emerges, to gaze longingly on the things he is really supposed to desire, his true love, the object of his so-called fantasy. His goodness is recognized by a supposedly eccentric and misunderstood lad who admires him no matter what the eternal damning circumstances may have been. There also seems to be a faint understanding of his character on the part of the woman who, from a mood of antipathy, finally finds herself deeply in love with him.

If the characters appear a bit weird at first, it is well to consider their surroundings. A better understanding of provincial Dutch life will reveal a more grotesque environment than an ordinary human with the love of adventure—or even the desire to live and do things—can surmount without appearing abnormal. Extremely beautiful lines are found throughout the book, and it is a credit to author and translator that such rich passages could be brought to the reader after a transposition from another language. A high pitch is maintained throughout and there is no let down or halting. The text is full of interest to the very end. The book is an excellent psychological study and should lead one to pause and consider the cell like existence that narrows these unfortunate people.

Births, Marriages, and Deaths.

Died.

DEARBORN.—In Nashua, N. H., on Sunday, November 30th, Dr. Edmund Gerrish Dearborn, of Antrim, N. H., aged forty years.

FRAME.—In Philadelphia, Pa., on Friday, December 12th, Dr. Christopher A. Frame, aged seventy-four years.

HOSKINS.—In Westchester, Pa., on Saturday, December 13th, Dr. Percy C. Hoskins, aged sixty-two years.

LANZ.—In San Francisco, Cal., on Monday, December 8th, Dr. Paul R. Lanz, of Oakland, aged forty-four years.

MAYS.—In Newman, Cal., on Sunday, November 30th, Dr. William H. Mays.

METZGER.—In Philadelphia, Pa., on Tuesday, December 9th, Dr. John Louis Metzger, Jr., aged twenty-nine years.

PILLSBURY.—In Saco, Me., on Wednesday, December 3rd, Dr. Charles Wesley Pillsbury, aged sixty-eight years.

RAYMOND.—In Rochester, Minn., on Wednesday, December 3rd, Dr. Alfred Raymond, of Seattle, aged fifty-nine years.

SHOWER.—In Baltimore, Md., on Thursday, December 11th, Dr. Edmund G. Shower, aged seventy-three years.

WARD.—In San Francisco, Cal., on Tuesday, December 16th, Dr. Florence Nightingale Ward, aged fifty-nine years.

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Original Communications

THE SCIENTIFIC BASIS OF DRINK CONTROL.

By RT. HON. LORD D'APERNON,
London, England.

The scientific study of inebriety is the specific aim of this paper; and that aim is not merely for the theoretical interest of the matters at issue—great and varied as that interest is—but also with the practical motive of contributing to the advancement of temperance. You will, I am sure, agree that no question can have a stronger or more direct claim on your attention than this question of the application of scientific data to the solution of the liquor problem.

And the moment is, I think, particularly opportune for the discussion of the subject from this special point of view. The war has given a new aspect to the drink problem. It has brought about a clearer and more general recognition of the risk that alcoholism involves for the health and efficiency of the nation, and it has prepared public opinion to accept, and indeed, to demand, the adoption of thorough and effective measures of reform. For the lesson which the war has taught is no less valid for the days of peace. In the industrial struggle on which we are entering, as surely as in the military struggle from which we have just emerged, we cannot afford to allow the energies of the community to be impaired by such a prevalence of intemperance as has obtained in this country in the past. I need not labor this point: it is not disputed by any responsible and unbiased student of social affairs. Now that the possibility of vast improvement has been demonstrated and is no longer open to doubt or discussion, no serious person would propose to revert to the old and evil conditions of prewar alcoholism. It is not a question, therefore, of considering whether reform is or is not necessary—reform of some sort is inevitable—it is a question of deciding on what principles our measures of reform are to be based; and with what definite purpose they are to be directed. And it is here that, in my judgment, the guidance of scientific knowledge is essential. I do not, of course, wish to suggest that the drink problem is purely a problem of physiology, but I do most certainly maintain that the physiological factor of the problem is so far fundamental that no efforts to combat alcoholism can be successful which are not guided by the indications of physiological science.

In a paper three years ago, I had occasion to comment on the regrettable lack of trustworthy data regarding many points in the action of alcohol which have a practical bearing on the question of inebriety. I am glad to be able to say that since that date much has been done, and more is in process of doing, to repair these deficiencies in our knowledge. At the instance of the advisory committee of the central control board, a distinguished physiologist, Dr. E. Mellanby, has carried out an exhaustive research into the influence of the more important conditions which are capable of modifying the intoxicating action of alcohol. The results obtained in his experiments, which are fully described in the report of his work published by the medical research committee, have been confirmed in their essential points as regards the human subject by two independent investigations—one carried out by Dr. H. M. Vernon, who has taken speed and accuracy in typewriting as a measure of nervous efficiency, and one by Professor McDougall and Miss May Smith, who have used a variety of psychological tests for the same end.

The facts which we owe to Doctor Mellanby's work, and to that of the investigators referred to, supplementing the previously acquired data, and taken in connection with the results of practical administrative experience during the last three years, provide sufficiently clear indications of the chief principles to be followed in framing a scientifically sound system of liquor control. In a broad view there are three main ends to be sought by such a system, namely, 1, the discouragement of the use of beverages of excessive alcoholic strength; 2, avoidance of drinking alcohol on an empty stomach; and 3, avoidance of continuous or frequently repeated drinking of alcoholic liquors. Or, to express it more briefly, we may say that the governing principle of physiological control should be dilution, including the specially important sort of dilution effected by food, and discontinuity of drinking hours.

For convenience of discussion, I propose for the moment to take these two principles separately, but I should like to point out at once, as I shall have occasion to show in detail later on, that they are not to be regarded as independent, but as complementary principles, and that the full effect of the practical enforcement of either of them is only obtained from their association.

Turning then, first, to the question of dilution, I may remind you of the well established fact that

the drinking of alcohol in concentrated solution has a directly damaging action on the mucous membrane of the stomach; and it is, indeed, the view of some pathologists that the local injury so brought about is largely responsible not indeed for simple drunkenness, but for many of the graver bodily disorders

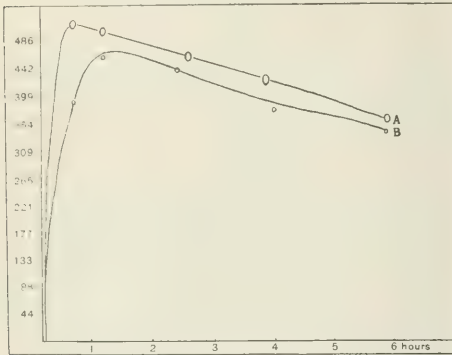


FIG. 1.—Alcohol content of blood after administration of forty c.c. absolute alcohol: A, in twenty per cent. solution; B, in five per cent. solution. C. M. M. S. of alcohol in 100 grams of blood.

of chronic alcoholism. The prevention of this directly injurious effect is then one important point in favor of dilution. Again, it is probably safe to assume that dilution will tend on the whole to decrease the risk of drunkenness, for the simple and obvious reason that with the weaker beverages it is necessary to drink an inconvenient bulk of fluid in order to obtain an excessive dose of alcohol. This is a familiar fact to which I need make no further reference as I do not desire to overemphasize its importance. It is notorious that with many drinkers the limit of consumption is fixed by the attainment of a given narcosis or euphoria and not by the satisfaction of thirst, in its legitimate sense. We enter on new ground when we come to inquire whether dilution has any specific influence on the intoxicating action of alcohol; whether a given dose of alcohol is rendered less inebriating by the mere fact that it is taken in dilute form. This question has been carefully investigated by Mellanby, who has determined the alcoholic content of the blood in dogs after the administration of identical doses of the drug in dilute and in concentrated solutions, and his experiments have shown quite clearly, as you will see from diagram 1, that with dilute solutions the maximum level of alcohol in the blood is lower and more slowly reached than is the case when the drug is taken in concentrated form. Now both these conditions—the level of alcohol in the blood and the rapidity with which that level is reached—are factors in the production of drunkenness, though we are not able to give any exact mathematical expression of their relation; and, as they are both affected by dilution in the way this diagram shows, we must conclude that dilution *per se* tends to decrease the liability to intoxication.

And there is a further point to be considered in this connection. In terms of the beverages in or-

inary use in this country dilute solutions generally mean beer, and concentrated solutions mean spirits. In the experiments to which I have just referred, Mellanby used solutions of alcohol in water; but he has also investigated the comparative effects of beer and spirits, administering equivalent doses of alcohol in the form of each of these beverages, and he has thus found, as shown in diagram 2, that with beer, the maximum level of alcohol in the blood is much lower and is reached much more slowly than could be accounted for by the mere influence of dilution. To test this point more definitely he has compared beer with spirits diluted to such a degree as to give equal bulks of fluid as well as equal doses of alcohol in the two cases, and you see from diagram 3, that he has got a confirmatory result, so far at least as the rate of absorption is concerned, showing that the same amount of alcohol is decidedly less intoxicating when taken in the form of beer than when taken in the form of spirits.

The cause of this difference is still under investigation: the most likely explanation is that beer contains substances which have a definitely retarding influence on the absorption of alcohol; we might expect that the dextrins, for instance, would have such an influence, whether in virtue of their colloid character, or because of their food properties. For it has also been shown in the course of these experiments, confirming in this respect the conclusions of general experience, that alcohol taken with food, especially with certain kinds of food, is much less intoxicating than when taken on an empty stomach. You see in diagram 4, that alcohol taken two and one half hours after a meal is absorbed more slowly, and its maximum level in the blood relation to dose is lower, than in any of the curves which we have examined: with longer intervals in between the meal

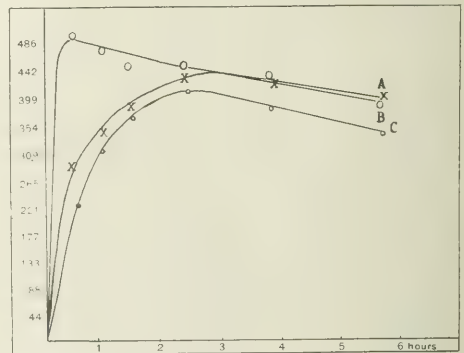


FIG. 2.—Alcohol content of blood after administration of a given dose of alcohol: A, in whiskey at 50 u. p. (28.6 per cent. alcohol by volume); B, strong stout (5.8 per cent. alcohol), and C, stout (1.9 per cent. alcohol). C. M. M. S. of alcohol in 100 grams of blood.

and the drinking of alcohol, the effect is less marked, but even after six and one half hours there is still a decided difference as compared with the upper curve which shows the results when no food has been taken.

To sum up, then, the results of our examination

of the factor of dilution, we find that, in addition to the advantages which it involves through avoiding direct injury to the stomach wall and through tending to decrease the total intake of alcohol, dilution *per se* retards the absorption of alcohol into the blood and thereby diminishes its inebriating ef-

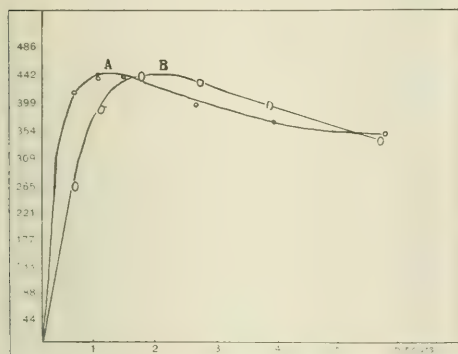


Fig. 3.—Alcohol content of blood after administration of a given dose of alcohol in equal bulk of fluid in form of: A, dilute whiskey; B, stout. C, M. M. S. of alcohol in 100 grams of blood.

fect; further, that when alcohol is drunk in the form of beer, its intoxicating action is decreased to a much greater extent than can be explained by the mere fact of dilution, so that the presence in beer of some retarding or correcting element must be surmised. Finally, alcohol taken with food is absorbed far more slowly, and the level which it reaches in the blood is much lower, than when it is drunk on an empty stomach.

A theorist might argue from these conclusions that all distilled spirits should be prohibited unless diluted to the strength or below the strength of beer, and that no alcohol should be served except for consumption with or after meals. There would notably be ample justification on physiological grounds for the prohibition of the cocktail—which has recently been introduced into wider European practice—for it appears to combine the objectionable features of highly concentrated alcohol consumed at the worst time, i. e., on an empty stomach.

But violent applications of theoretical principle may prove in practice to be too drastic an interference with personal taste and established custom, and it is probably more statesmanlike and more practical to pursue the objective—the avoidance of intoxicating action—by less severe methods, rather than to strain after a logically perfect policy. We have to recognize the fact that beer and spirits have each a place among the beverages in ordinary use, and our application of the principles of dilution must accordingly be adjusted to meet the somewhat different conditions connected with the consumption of each of these sorts of liquor. So again with regard to the second point, the avoidance of taking alcohol on an empty stomach: the habit of many classes of eating at one place and drinking at another, and of eating at one time and drinking at another, is too firmly established to be broken down

suddenly even at the teaching of science. It is probably wiser to multiply opportunities for food with or before alcohol, and to diminish opportunities for drinking alcohol before food, than to attempt by direct prohibition to prevent the use of alcoholic beverages apart from meals. The process of change must be gradual; progressive and educational change, proceeding from increased facilities for reasonable physiological practice, will undoubtedly be more permanent, and will create less opposition than imposed and dictated changes, enforced, so far as they can be enforced, by prohibition and restriction.

We have next to consider the second of our two main principles of physiological control, the principle of discontinuity of drinking hours. Very much as in the case of dilution, it may be assumed that any restriction of drinking hours will tend to decrease the evil of drunkenness, simply by diminishing the amount of liquor drunk by the consumer. But this reduction of total consumption is much less than was thought probable when restricted hours were first imposed. Both the trade and temperance reformers were surprised by the smallness of the reduction.

Discontinuity of drinking, however, means much more than mere shortening of hours during which liquor is procurable. It involves considerations of a different and more complex character, the full significance of which can only be appreciated when they are regarded from the physiological viewpoint.

Most important among these considerations is the effect of discontinuity on the degree and persistence of alcoholic action in the body. As you will have already observed from the curves which I have shown, alcohol is rapidly absorbed into the circulation, so that the maximum level in the blood is at-

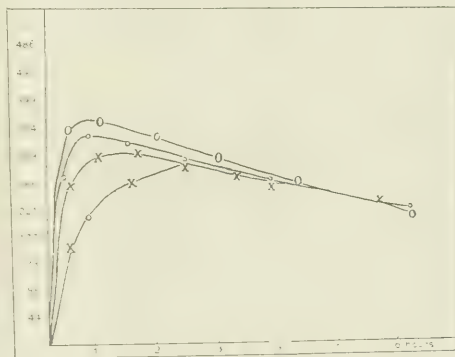


Fig. 4.—Alcohol content of blood after administration of a given dose of alcohol without food and at varying intervals after a meal: O, no food; x, six and one half hours after bread and milk; x, three and three quarters hours after bread and milk; z, two and one half hours after bread and milk. C. M. M. S. of alcohol in 100 grams of blood.

tained after a comparatively short period. You see that in the sharp ascent of the curves. On the other hand, the rate at which it is burned in the body is relatively slow, as is indicated by the very gradual descent of the line from the maximum point. If, then, a second dose is taken during this period when

a substantial amount of alcohol still remains in the blood, there will be a cumulative effect; and you will see, from diagram 5, which is a record of an actual experiment, that this is in fact what occurs.

The chief aim of discontinuity of drinking hours is to prevent, or at all events to minimize, the risk

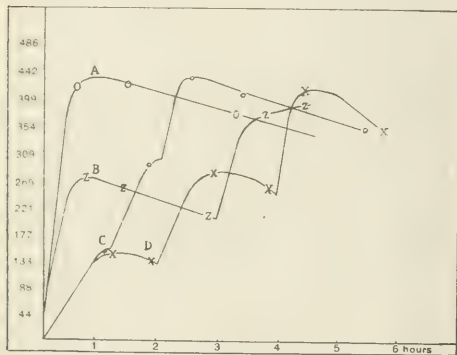


FIG. 5.—Alcohol content of blood after administration of fifty c.c. of absolute alcohol in dilution: A, in a single dose; B, in two drinks separated by an interval of three hours; C, in three drinks separated by an interval of one hour; D, in three drinks separated by intervals of two hours.

of this cumulative effect, and thus to decrease the dangers of immediately detrimental action, that is to say, of drunkenness, and also the liability to the more remote but much more serious evils which arise from the persistent excessive action of alcohol on the tissues of the body. Now it is of the first importance, from this point of view, to know how long it takes to eliminate moderate doses of alcohol from the blood, or in other words, to know what interval of time should elapse between the periods of drinking so as to guard against the danger of a cumulative effect.

On this point Doctor Mellanby's researches have furnished some very interesting and suggestive data, which, if they are confirmed by further experiment, and more particularly by observations on man, should serve to give us an approximate standard of practice. Mellanby has found that in the dog the rate of combustion of alcohol is .185 c. c. to the kilogram weight an hour, and that this rate is fairly consistent whatever be the dose of alcohol taken. At this rate a man of average weight, say 145 pounds, should be able to dispose of about twelve c. c. of alcohol in an hour. To illustrate what this means by a concrete example, one may suppose that our average drinker has taken a couple of pints of beer containing about eight per cent. of proof spirit, that is to say roughly some forty-five c. c. of alcohol. To insure the complete elimination of this dose from the system he should allow an interval, on the basis assumed above, of from three to four hours before drinking again. Otherwise the fresh dose will be superimposed on what remains in the blood from the alcohol previously taken, and the risk of an inebriating effect will be enhanced accordingly.

We have now completed our examination of the two main principles of physiological control: we

have seen how each of these principles can contribute to the prevention of alcoholic excess, and we have also seen, by implication, in what way the efficiency of each in this respect is subject to limitation. Thus it is evident that, while dilution greatly decreases the risk of intoxication, it is nevertheless possible for the drinker to absorb an excessive dose of alcohol from even the weaker beverages if he goes on imbibing such beverages over a large part of the day. And it is equally clear that, even when drinking hours are considerably curtailed, the opportunity for drunkenness will remain if liquors of high alcoholic strength can be consumed within this limited period.

You will now understand why, at the outset of my remarks, I laid special stress on the association of these two principles as the essential condition for a scientifically sound system of drink control. They are complementary principles, each of them supplying what is lacking to the action of the other; and further, of course, their practical application can be so arranged that they can reinforce one another in effect, as when drinking hours are regulated in such a way as to bring the use of alcoholic beverages into close relation with the ordinary meal times.

Now it is probably due to the combination of these principles that the reduction of drunkenness during the last three years has so far exceeded expectation. Nothing in the statistical history of this or any other country justified a forecast at all equal to the event. The result attained has to be explained by the action of some new force, or some new combination of forces not previously in operation. Measures which appeared sensible, and which it was hoped would be effective, were taken, but no one could foresee the extent to which they would be effective, however sensible they might be. Now that results have accrued, it is necessary that the forces which have produced so great an improve-

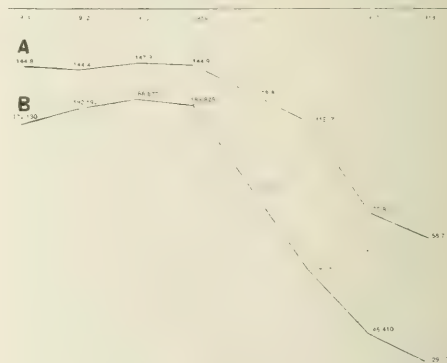


FIG. 6.—Consumption of alcohol compared with convictions for drunkenness in England and Wales: A, consumption of alcohol (millions of proof gallons); B, convictions for drunkenness.

ment should be analyzed and dissected so as to obtain guidance for the future. As you will have gathered from the trend of my argument, physiological regulation aims at promoting temperance by what may be termed qualitative rather than by

quantitative methods; its object is to diminish alcoholism by modifying the conditions of drinking, rather than by decreasing the amount of alcohol drunk; and its beneficial effects should accordingly be apparent in the reduction of drunkenness and of alcoholic disease, more than in any fall in the total consumption of alcoholic beverages. And so far as available evidence from statistics enables us to determine the point, this is, in fact, exactly what has occurred in this country since 1914.

The diagram to which I wish now to direct your attention (diagram 6) shows the consumption of alcohol in beer and spirits, stated approximately in terms of proof spirit, during the years 1907-1918, compared with the number of arrests for drunkenness in England and Wales during the same period. The figures of consumption, it may be noted, include the beer drunk in Scotland and Ireland, no separate statistics of beer consumption being available for the subdivisions of the United Kingdom, and are, therefore, too high; but this fact does not affect their value for the comparison which we have here in view. To avoid having too many lines in the diagram I have taken the statistics of drunken-

the prewar year 1913, convictions for this offense in 1916 had decreased by 55.4 per cent. Alcoholic mortality, I may add, decreased correspondingly by 53.4 per cent. On the other hand the decrease in the consumption of alcohol in 1915 amounted only to 12.2 per cent, and in 1916 to 21.7 per cent. of the 1913 figure. Now it was in 1915 that the system of physiological regulation of the liquor traffic was brought into operation, being extended in the following year to practically the whole of Great Britain; and it is obvious that this system must have been the main factor in causing the sudden and marked reduction in alcoholism which occurred during these two years. You will observe, therefore, and this is the point which I want to emphasize, that under the system of physiological regulation, the decrease of intemperance as measured by the statistics of drunkenness and also by the statistics of alcoholic mortality has been out of all proportion to the reduction in the consumption of alcoholic beverages.

The practical inference from that fact is evident: the question "how the nation drinks" is more important than the question "how much it drinks."

CONSUMPTION OF ALCOHOL COMPARED WITH CONVICTIONS FOR DRUNKENNESS AND DEATHS FROM ALCOHOLISM IN ENGLAND AND WALES.							
	1907.	1912.	1913.	1914.	1915.	1916.	1917.
Consumption of alcohol (million gallons proof spirit).....	144.8	144.4	147.0	144.0	129.8	115.7	70.8
DEATHS FROM ALCOHOLISM.							
Male	1,008	903	1,112	1,136	867	620	358
Female	572	611	719	680	584	333	222
Total	1,580	1,514	1,831	1,816	1,451	953	580
CONVICTIONS FOR DRUNKENNESS.							
Male	196,532	147,842	151,112	146,517	102,660	62,046	34,103
Female	127,718	147,750	157,795	157,311	112,245	73,397	42,222
Total	324,250	295,592	308,907	303,828	214,905	135,443	76,325

ness as the measure of alcoholic excess, but, as you will see from the figures in the accompanying table, the mortality from alcoholism shows just the same movement.

Now in looking at this diagram it is immediately evident that in the years 1907-1914, there is a general correspondence, or at all events there is no marked divergence, between the line indicating consumption and the line representing drunkenness; they both run on a high level, and their fluctuations in each year are roughly of about the same range. In these years the system of physiological control did not exist, and of course, there was no limitation on the output of alcoholic liquor. Again, in the last two years of the series, 1917 and 1918, the lines also run parallel, but now on a very low level. This is the period during which the food controller's restrictions on brewing and on the release of spirits from bond were in full force, and these restrictions were obviously the main cause of the decrease in consumption, while they also, of course, contributed in some measure to bringing down drunkenness to the very low level at which it stood in the years referred to. Now, separating these two periods of parallelism between the curve of consumption and the curve of drunkenness, there come the two years 1915 and 1916 in which a different state of things is seen. In 1915 drunkenness shows an abrupt and decided fall, which is much more accentuated during the following year, so that, as compared with

Regulate on sound physiological lines the modes and times and circumstances of drinking, and, within reasonable limits, the amount of consumption may with confidence be left to the operation of economic forces, among which I include appropriate taxation.

And this is a conclusion which should be full of encouragement for the temperance reformer. For it is quite evident that the intelligent regulation of the conditions of drinking, though it may require more knowledge, more thought and more study than a simple limitation of the amount drunk, will be less unpopular and will have many practical advantages. Unless recourse is had to rationing, to which there are obvious objections, a policy of restricting the supply of alcoholic beverages must give rise to rush drinking, and to inequality of distribution, and will almost inevitably open the door to cornering and to the operations of the profiteer. It tends to combine the maximum of irritation to the public and the maximum loss to the revenue, with the minimum of benefit to real temperance.

On the other hand, if by the method of regulation on physiological principles we can secure adequate results for the health and sobriety of the nation, these results will be attained with less apparatus, with less risk of creating alternative evils, with less loss of revenue, with less disturbance to trade and less abrupt violation of the habits of the community.

QUARTZ ULTRAVIOLET THERAPY AND KINETIC ENERGY.

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There are two simple purposes for which this paper is written: 1. To suggest how to coordinate and raise the index of our patients' kinetic drive, which Dr. George W. Crile has named metabolic efficiency; this is a constant problem of every physician. 2. To reveal a specific function which quartz ultraviolet light can be made to play in establishing a healthier degree of metabolic equilibrium. I shall speak of the latter objective first, and the description will then be seen to cover the first objective as well.

We have known for some years that cellular protoplasm, under the microscope, while transparent to rays of sunlight, becomes opaque when ultraviolet rays are thrown upon it. In other words the protoplasmic structure absorbs ultraviolet light. The human body is a highly specialized and delicately coordinated protoplasmic structure. When ultraviolet light is applied to the skin, a protoplasmic structure of specialized function, we have the phenomenon of sunburn, with heat, pain and swelling. If the ultraviolet dose is sufficient, there also occur other subjective symptoms of a metabolic disturbance typical of anaphylaxis, with anorexia, chilliness, lowered blood pressure, fatigue and the symptom complex of surgical shock. In fact, ultraviolet therapy as used in the treatment of constitutional disturbances of the human body acts distinctly as a surgical procedure. The singular feature of this type of surgery is that: no knife is employed, there are no bleeding vessels to clamp, no aseptic operating room procedures to observe, no anesthetic employed. An important question arises in this connection: Why does a metabolic disturbance typical of anaphylaxis occur after a dose of ultraviolet light? Slowly we are gaining knowledge on this subject. Let us for a moment consider the constitutional disease, diabetes. Here we have an endocrine breakdown.

We now know that ultraviolet light affects the acetone components of metabolism by increasing or activating their decomposition to gas formation (1). It has been my observation that in the application of quartz ultraviolet light to the human body, the individual's oxidation index is invariably raised to a higher percentage. For instance, a patient free from diabetes, whose urine reveals a proportion of urea nitrogen to total nitrogen of fifty per cent. will, after the application of several months' treatment with quartz ultraviolet light, have this proportion raised twenty to thirty per cent. Ordinarily there exists an idea that diabetes is a disease of suboxidation. This idea is a fallacy; it is not borne out by chemical facts, for invariably the urine oxidation index of this type of endocrine breakdown is above eighty-five per cent. urea nitrogen to total nitrogen. My last two diabetic cases revealed a peak of eighty-nine per cent. and eighty-eight per cent. oxidation respectively. As quartz ultraviolet light stimulates the oxidizing power of the synthetical forces of the body and as,

in my judgment, diabetes is a superoxidization process, treatment with ultraviolet light cannot be administered at all so long as the patient's metabolism is not in chemical equilibrium. During the past four years of my work with ultraviolet light in constitutional disorders, I have tried it repeatedly in diabetes, from small to moderate doses. Always the same result occurred, namely, the patient reacted poorly and gave every indication of increased toxic distress similar to anaphylactic shock. As a result of these detrimental toxic experiences I, today, do not administer ultraviolet light to a diabetic.

My experience as yet has not been sufficient to permit any hard and fast rules except "don't" in diabetes. However, once the blood sugar has become normal and the endocrine system again working with sufficient coordination to maintain this normal sugar equilibrium, it may be that the use of small, graduated doses of light will be of marked benefit. Future work must be done to prove or disprove this theory. So long as the acetone components of metabolism are increased or activated by ultraviolet light to a decomposition state of increased gas formation, this light is contraindicated in diabetes. The check upon this, however, will be the urine oxidation index. Experience has taught me not to depend upon urine sugar in diabetes as the index of endocrine efficiency. The vital thing to know is where the sugar percentage stands in the blood. Not until blood sugar is normal is it safe or is it fair for the patient to begin to climb up the ladder quantitatively on a diabetic diet and then only by means of a pair of scales and a carefully graduated sequence of diet lists. The best I have found for the purpose are those worked out by Dr. N. W. Janney, formerly of the Postgraduate Hospital, New York. (10.)

Let us move further ahead in the effort to explain why large doses of quartz ultraviolet light causes a metabolic disturbance typical of anaphylaxis.

Kober and Eberlein (2) have proved that two amino acids of the protein molecule, phenylalanine and tyrosine, show special absorptive affinities for the extreme ultraviolet wave lengths, that is, the wave lengths at the shorter end of the ultraviolet spectrum. They also have proved that this special absorptive quality occurs with the alkaline and acid salts of these two aromatic amino acids. The absorption for the other amino acid constituents of the protein molecule is of a general but not specific character. The question arises: What happens as a result of this absorption, both special and general, and why? We now know what happens in the special field of bacteria of certain types. For example:

Harris and Hoyt (3) in some very recent work with ultraviolet light show a specific absorption of the amino acid tyrosine as a protective agent against the toxic effect of ultraviolet light in *Bacillus subtilis*, *Staphylococcus aureus*, and *Bacillus mucosus capsulatus*. They took cover slips containing these organisms and exposed them to the action of ultraviolet light at a distance of twelve cm. from source for periods of from five to 200

seconds. Death occurred in every instance in spite of all effort to incubate the bacteria. Further experiments were then carried out whereby a quartz beaker containing one per cent. of the amino acid tyrosine was interposed between the ultraviolet light and the exposed bacteria. *Bacillus subtilis* and *Staphylococcus aureus* survived exposure for forty minutes after tyrosine was interposed, whereas these organisms were killed in ninety to 150 seconds without interposition of the tyrosine. The *Bacillus mucosus capsulatus*, which was normally killed in twenty seconds, survived after exposure for ten minutes in the interposition of the tyrosine experiment. All three organisms survived exposure for 3,200 seconds when a solution of amino benzoic acid was interposed between the light and the bacteria.

The conclusions drawn by Harris and Hoyt were that these bacteria contained certain amounts of aromatic amino acids affected by ultraviolet light and that those ultraviolet wave lengths from the quartz burner that are not absorbed by tyrosine and phenylalanine are nontoxic. Also that the toxic radiations for protoplasm vary in wave lengths from 2,470 to 2,710 Å. The conclusions drawn regarding the reason for the *Bacillus mucosus capsulatus* surviving for ten minutes and the other two, *Staphylococcus aureus* and the *Bacillus subtilis* surviving for forty minutes, is that the *Bacillus mucosus capsulatus* contains greater amounts of tyrosine and phenylalanine. This research adds greatly to our fund of knowledge on this vital subject.

Experiments have been carried out which show that ultraviolet rays affect protein in solution so that albumins reveal the character of globulins (4). This brings up an important question: To what extent could ultraviolet therapy advance the human body's assimilation of globulins after they had been chemically split off from the grosser albumin molecule? This is a problem to work out in our future research.

Bovie, of Harvard (5), in some experiments at the hospital of the United Fruit Company, Santa Marta, Colombia Republic, South America, has shown that the complement taken from guineapig serum was not only highly absorptive but was almost destroyed by ultraviolet light. The amoceptor was taken from rabbits and sensitized to human red blood corpuscles. Another fact has been nailed fast to the mast in our efforts to find the sequence steps in the solution of the question of why ultraviolet light is helpful in some cases and in others is harmful. It is that a twenty per cent suspension of red blood corpuscles possesses absorptive power to protect blood serum from the toxic action of ultraviolet light (6). In other words, we now know that there exists in red blood corpuscles certain protective bodies against the destructive effects of actinic light. In some recent work done by Hertel he proved that diphtheria toxin was destroyed in five minutes by ultraviolet light, but that diphtheria antitoxin was not destroyed in thirty minutes.

Furthermore, we now know that there are certain other substances known as catalysts or optical sensitizers that act constructively in the chemical

upbuilding of the tissue molecules. We know that in the vegetable kingdom the carbon dioxide and water of the leaf in the presence of ultraviolet light produce starch and oxygen. It is herein as an optical sensitizer that the bodies known as catalysts perform their function. They are the middlemen between the driving force of the actinic ray and the organic structure in need of dynamic light pabulum.

Again and again research work has been done which has proved beyond any doubt whatsoever that ultraviolet light has a place in our medical therapeutics the same as fresh air, pure water, food of a proper chemical balance, sleep and recreation. Those of us who have been working with the ultraviolet light have utilized its proper germicidal power in infections, both local and systemic.

As long ago as 1905 Hertel exposed bacteria to ultraviolet light at 4,480 Å. U. with no germicidal effect; at 2,800 Å. U. the same light killed bacteria in sixty seconds. Hertel then used light at 5,180 Å. U. which alone had no effect, but when used in the presence of eosin the bacteria were killed in from twenty to ninety seconds. This illustrates the meaning of optical sensitizers, and suggests the possibility of the therapeutic use of eosin internally in our patients being treated by ultraviolet light when a greater oxidation index is required.

Certain inorganic salts, especially iron, possess absorption capacities, as has been experimentally demonstrated. (7)

The idea has been current that penetration of ultraviolet light is the essential factor in its value as a therapeutic aid. From my experience, I am reaching the conviction that absorption is the more important factor in energizing the human body. We can ignorantly give a patient an absorptive dose of ultraviolet light with a Nagelschmidt lamp, the surgical shock of which will put him to bed for two weeks, and yet the penetration of the ultraviolet light does not exceed from two to four millimetres. The amount of shock occurs in direct proportion to the dose absorbed. The fact of the matter is that there are energy changes involved as a result of the light absorption, and these changes produce certain reactions. Different chemical changes of the patient's blood and tissue chemistry must be reckoned with. In some patients the speed or velocity of a metabolic reaction will be much slower than in another. Just how to explain the physics or the why of these changes of energy, I know no student so capable as Professor Bayliss, of London, who says, (8) "If the vibration period of a molecule coincides with that of any of the light waves falling upon it, the molecule will be set into resonant agitation by means of the light energy absorbed. This vibration usually leads to a chemical change. The first stage is always associated with taking up of energy."

From my own work in this special field of constitutional therapy I am convinced that the later stage in the patient's reconstruction and restoration to a healthy metabolic equilibrium is chiefly due to the evolution of the forces stored and at times liberated by ultraviolet absorption the same as in the chlorophyll system in plant life. As a definite and very

specific aid to our armamentarium in medicine, we certainly have a powerful and subtle force in ultraviolet light in raising the index of constitutional vitality of a patient. Radium in its circumscribed field exerts a most positive influence. The x ray does likewise in its sphere of usefulness. There exists a zone of light waves between the x ray and the wave lengths of sunlight that also occupy a vital sphere of power and usefulness. The utility of these wave lengths of sunlight from the violet to the red end of the spectrum is common knowledge, as is also the utility of the invisible wave lengths of light that make wireless telegraphy possible.

In nasal or pharyngeal infection, local neuritis, lumbago, arthritis, the general types of low oxidation with poor circulation, deficient scalp nutrition, chronic leg ulcers, boils, systemic colds, uric acid diathesis, acne and other skin diseases, chlorosis, neurasthenia, influenza, pneumonia, both lobar and lobular, and asthma, whether renal, cardiac or bronchial, quartz ultraviolet therapy has proved in my experience to be the most efficient medication in our entire materia medica, when backed up with a chemical intake of food that does not exceed the chemical outgo.

I shall not go into the detailed technic of handling ultraviolet light in the treatment of constitutional disorders or of metabolism "riots" or "strikes" by whatever name a functional disorder may be termed. It is sufficient here to state that the endocrine system of internal secretion glands is compelled to raise its standard of efficiency and also produce a better degree of coordination. Better oxidation occurs as a natural sequence, hemoglobin is raised, high blood pressure and uric acid percentages are reduced, and the general pathological phenomena of acidosis symptoms are relieved and even eradicated, if treatment is patiently and persistently applied over a period of many months. Increased urine urea is eliminated and the ratio between the total nitrogen (Kjeldahl) and the urea nitrogen of the urine is brought up to or near its eighty-five per cent. normal. It is my routine practice to get the blood chemistry of the patient. This means ascertaining the quantitative uric acid, urea, sugar, creatinine, creatin, hemoglobin, red blood corpuscles, white blood corpuscles, differential, microscope and Wassermann. In the domain of the urine, not only is the routine examination made for the organic condition of the kidneys, but for their functional efficiency as well, in obtaining the oxidation index percentage of total nitrogen as compared with urea nitrogen. The patient's nitrogen intake is corrected and made to balance with the nitrogen eliminated. The body weight is checked, likewise the blood pressure, and an electrocardiogram of the heart made which tells in millivolts just how strong a patient's cardiac muscle fibres are and their latent energy possibilities.

Comparative electrocardiogram photos are taken of my patients at intervals of from six to nine months, as are also comparative blood and urine chemical analyses. Invariably the cardiogram graphics reveal a constructive change in the muscle tone and nerve reserve force.

From the biological research work in the Rocke-

efeller Institute of Jacques Loeb in the field of tropisms (9) we have additional evidence of the chemical effect of light in kinetic energy. The results of his research have entirely upset our traditional beliefs and empirical dogmas, and have added greatly to our fund of knowledge on this important subject.

For every colleague who expects to utilize ultraviolet light in metabolic disorders, there are a few axiomatic rules:

1. Know the strength of your quartz burner, i. e., whether the shorter rays down to 1,650 are cut off or not, otherwise you are likely to produce a severe anaphylactic surgical shock and send your unwilling patient to bed for a week or two.

2. Know your distance and time doses.

3. Watch carefully the patient's reaction for twenty-four hours. Vinegar, boric acid, and ether sprayed on the inflamed erythematous surface, and the hot bath, are useful aids in affording subjective relief. One of my patients in the usual two months' probationary stage of his metabolic adjustment, carried around with him his little box of boric acid powder for frequent use on the area exposed to the light. But above all, allow and encourage radiation by avoiding heavy bed covering or thick underwear.

4. As fast as one rayed area has completed its cycle of sunburn phenomena, move on to another area of the body and remember the entire spinal area is the core of the sympathetic nervous system. Constant dosing in this region after the skin has become tanned will rapidly improve general coordination of nerves, muscles, digestive secretions, and special organs, and by semiannual examinations of the patient's blood chemistry, urine oxidation, and electrocardiogram voltage, the vitality index of the human body can be raised to its maximum functional power and maintained there.

To summarize: A technic for the better coordination of the kinetic bodily forces may be divided into two parts, one relating to internal, the other to external technic.

Internal technic involves the accurate quantitative knowledge of the constituent chemical ingredients of the blood and urine and a heart electrocardiogram. It further involves the regulation of the chemical food intake to the chemical outgo, so that a nitrogen equilibrium is maintained.

The external technic involves the treatment of the body skin surface with quartz ultraviolet light, the absorption of which stimulates tissue metabolism. In toxic quantities quartz light produces anaphylactic shock. With the exception of diabetes, however, quartz light results in a raising of the factor of tissue vitality, or, as it might be termed, of the patient's prophylactic resistance to disorders of nutrition, whether of acidosis or other low oxidation states.

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- 24 WEST FIFTY-NINTH STREET.

DEFORMITIES OF THE HAND.*

By A. BRUCE GILL, M. D.,
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In preparing this paper for the benefit of the general practitioner one is confronted by the difficulty of presenting a subject which is, for the most part, of interest only to the specialist. It seems best, therefore, to enumerate briefly the various deformities to which the hand is subject and then to dwell more fully on one or two conditions which are of particular interest to the general practitioner.

A deformity of the hand may be either congenital or acquired. The axis of the hand normally is the continuation of the axis of the forearm. If there is any change in the relation of these two axes a condition of club hand results. Congenital club hand may be due, therefore, first, to a partial or complete defect in the bones of the forearm, or second, to a condition analogous to club foot, i. e., there is no bony defect. The latter is very rare; the former is fairly common. Congenital deformities of the fingers include contracture of the fingers, syndactylism, or webbed fingers, polydactylism, or supernumerary fingers, partial or complete suppression of the fingers, and hypertrophy of the fingers.

In cases of syndactylism, in which the webbing extends all the way to the nails, operations may not be entirely satisfactory. The best results are secured by plastic operation, in which the skin from the dorsum of one finger is used to cover entirely the skin defect in the other finger, and in which a flap from the dorsum of the hand is employed to cover the raw surface of the first finger. The difficulty is that sometimes there is sloughing of the flap; or the flap may not have been large enough to extend to the tip of the finger; or if the flap has been large enough to cover the entire raw area, and no sloughing has resulted, even then contracture occurs along the line of the suture and the finger becomes curved to one side. Secondary operation may be attempted later to remove scar tissue and to transpose another pedicled flap from the dorsum of the hand.

Polydactylism is a fairly common condition and is usually hereditary. The supernumerary digit should be amputated. In deciding which is the supernumerary digit the surgeon should be guided by the x ray, which will indicate which finger is the direct extension of the metacarpal bone. Sometimes

there may be a supernumerary metacarpal or a metacarpal may be branched. In such cases the supernumerary metacarpal or the branched portion of the metacarpal should be excised.

The acquired deformities of the hand comprise the various forms of club hand and deformities of the fingers. Club hand may be due to:

1. Curvature of the bones of the forearm from disease or from fracture.

2. Defect in the bones of the forearm. Osteomyelitis may destroy a portion of the shaft of one of the bones of the forearm and thus cause a comparative shortening of the bone. More commonly the lower epiphysis is destroyed, the bone ceases to grow equally with its fellow, if, as is usually the case, the patient is a child; and soon a marked and serious lateral deviation of the hand occurs. The treatment of this condition presents great difficulty because the child has many years of development ahead of him. If the long bone should be shortened by the excision of a portion of its shaft, or if the defective bone should be lengthened by a bone transplant at its lower end, the deformity of the hand might be temporarily corrected; but it would soon recur as the normal bone continued to outstrip the diseased bone in growth. Should the surgeon defer operation until the patient reaches maturity, the deformity may have become so obstinate that it could not be corrected by any procedure. A deliberate destruction of the growing epiphysis would possibly solve the difficulty, but the surgeon hesitates at so radical a measure. It is apparent that in any case the affected arm must become shorter than the other arm. It is possible for a fracture through the lower epiphysis of a bone to destroy the growth of the epiphysis and produce a similar condition of club hand.

3. Madelung's deformity of the wrist. This consists of a spontaneous backward dislocation of the ulna which does not seem to be caused by any specific disease. It is said to occur chiefly in washerwomen and in pianists. There is a loosening of the ligaments of the lower radioulnar articulation, and a progressive displacement of the ulna backward. If seen early some form of support may be sufficient to prevent the progress of the condition; if it should not, operation may be performed to plicate the ligaments, or to secure a bony or fibrous union between the radius and the ulna.

4. Destructive disease of the bones of the wrist and the carpus. Osteomyelitis and tuberculosis of the carpal bones are not uncommon and they produce serious disability of the hand which is out of proportion to the amount of deformity present.

5. Certain paralytic and muscular conditions. Spastic paralysis, infantile paralysis, Volkmann's contracture, which will be discussed later, may produce various types of deviation of the hand at the wrist.

6. Burns of the wrist and forearm, infections and injuries that result in cicatricial adhesions of tendons and muscles. These are to be treated, if mild, by physiotherapy; if severe, by plastic operation.

Deformities of the finger may be classified as follows:

*Read before the Philadelphia County Medical Society, October 18, 1910.

1. Contractures which are of cicatricial origin, involving the skin only. These are due usually to burns. I have seen the deformity so severe that all of the fingers were flexed tightly into the palm, and were bound fast to the very tips. Fairly good results can be obtained by plastic operations. In the severe forms it may be well to amputate one or two of the fingers and utilize the sound skin from them to cover the defect in the palm. Usually the surgeon has to resort to the pedicled skin graft.

2. Contractures of fascial origin—Dupuytren's contracture. I believe the best result is to be secured by a complete excision of the palmar fascia through the distal transverse crease of the palm and the insertion of a free fat transplant beneath the skin. (1).

3. Deformities of the fingers due to affections of the tendons. First, cicatricial contractures from infections or injuries; second, interference with the movement of a tendon within its sheath, producing a condition known as snap, jerk, or trigger finger; and, third, a partial or complete traumatic avulsion of an extensor tendon from its insertion into the distal phalanx, known as mallet finger. This is seen chiefly in baseball players.

4. Contracture of the fingers resulting from lesions which have destroyed more or less of the muscle substance of the flexors or extensors of the fingers. Infections of the forearm and Volkmann's ischemic paralysis illustrate this group of cases.

5. Various forms of arthritis, osteoarthritis, and gout.

6. Nervous disorders, such as spastic paralysis, infantile paralysis, obstetrical or birth palsy, the definite nerve palsies, such as musculospiral and ulnar, and certain forms of muscular dystrophies.

7. Deformities arising from such diseases of the bones as syphilis, tuberculosis, and tumors.

Of all the many kinds of deformities of the hand, I believe that the two which are of the greatest practical interest to the general practitioner are those which are due to Volkmann's contracture and to malunion of Colles's fracture.

Volkmann's contracture usually results from a fracture at the elbow or the wrist. It occurs within the first twenty-four hours, even within the first two or three hours after the fracture is dressed for the first time, and is due to interference with the blood supply to the muscles of the forearm. The best teaching is to dress a fracture at the elbow in acute flexion of the elbow, the so-called Jones's position. Occasionally the attending physician, be he a general practitioner, a hospital intern, or a surgeon, does not secure full reduction of the lower fragment or fragments of the humerus, and these make pressure in the flexure of the elbow and prevent complete flexion. The attending physician forces the flexion, thereby compressing the vessels at the elbow, and shuts off, in part or in whole, the blood supply to the forearm. If the fracture is first reduced it is found that complete flexion of the elbow is easy, not requiring force, and the blood supply is not interfered with. In other words, the arm should not be dressed in flexion until the fracture has been fully reduced. Difficulty in securing

complete flexion is an indication that this reduction has not yet been accomplished. Dressing the arm in flexion will maintain reduction of the fracture, but it will not accomplish it.

Of course it is possible for a tight bandage so to constrict the circulation as to cause Volkmann's contracture. When the circulation of the muscles is interfered with, the muscles suffer a consequent degeneration, in whole or in part, and are replaced by fibrous tissue. The muscles, with the tendons, become contracted, and the hand is flexed at the wrist, and the fingers and thumb are flexed into the palm. Not infrequently there is disturbance of sensation of the hand and forearm, even a complete anesthesia in the distribution of a particular nerve. If the condition is not cured, the forearm and hand do not develop *pari passu* with the other hand and forearm. I have seen a shortening of three inches in the forearm of a child twelve years of age due to Volkmann's contracture. The cure of this condition is extremely difficult. The best results are to be obtained by complete dissection of the muscles involved, whereby they are freed from one another and from the overlying and underlying tissues. This dissection should be followed by implantation of a free fat transplant to prevent readhesion (2). Not infrequently the tendons at the wrist require lengthening. Therefore emphasis is placed on the fact that Volkmann's contracture is a severe and permanent deformity; that it occasions partial or complete loss of function of the hand, which is one of the most useful members of the body; that this condition is due to improper treatment of a fracture at the elbow, or occasionally a fracture in the forearm; and that it occurs usually at the first dressing. This first dressing is frequently made by the general practitioner.

Another almost equally disabling deformity of the hand may follow Colles's fracture. It is well known that many persons who have suffered a Colles's fracture are unable to resume active work for many months, or even years. The chief cause of the disability is the stiffness of the hand and the fingers, which prevents the grasping of objects firmly or even at all. This condition of immobility in the joints develops within the first few weeks, and may persist indefinitely despite treatment by baking, massage, and manipulation. The stiffness of the fingers is accompanied by more or less swelling of the fingers and the hand, glossiness of the skin, blue discoloration, and coldness. It is not infrequent to find rather marked pitting on the dorsum of the hand three months after the fracture. What is the cause of this deformity and disability? It is due chiefly to interference with the blood supply to the hand. While some of the limitation of the motion of the fingers may be due at times to fixation of the tendons at the wrist in the callus at the site of the fracture, yet it has often been apparent during operation when the tendons have been freed from all adhesions, that there persists a rigidity in the joints of the fingers and the hand which is the main cause of the disability, and which cannot be overcome even by the use of considerable force. The resistance to motion is not in the tendons of the fingers, but in the intimate struc-

ture of the joints. In other words, a condition of arthritis and fibrous ankylosis has developed in the hand. Physiotherapy continued through many months will frequently fail to secure good function. I have found, however, that after operation whereby the deformity at the point of fracture is reduced or the soft tissues are freed from adhesion to the bone, the return of function in the hand, while delayed, is yet much more rapid than it was preceding the operation. Therefore, the condition which results in the hand following a Colles's fracture may be likened somewhat to the condition in Volkmann's contracture. The malposition of the fragments may indeed interfere with the normal function of the tendons as they pass in close relation to the bones of the wrist; but what is much more important, the malposition interferes with the blood supply to the hand. A condition of congestion of the bloodvessels results, swelling and edema occur, and plastic material forms about the joints producing a fibrous ankylosis. If the fracture had been completely reduced and the splint properly applied, the blood supply would not be interfered with, the little swelling of the hand which had already occurred or should occur within the first twenty-four hours would speedily subside, and it would be found that the patient, within a few days after the fracture, would have fair or even unrestricted motion of the fingers.

If swelling of the fingers or hand persists for a week after the fracture, or at least is not rapidly improving, I think we may consider that the fracture has not yet been sufficiently reduced. It certainly is evident that something has interfered with the normal circulation. I believe this condition of the fingers and hand is the best test we have of knowing whether or not the fracture has been sufficiently reduced. In some patients the x ray plates show fairly good reduction of the fracture and yet the swelling and disability of the hand continue. In other patients the x ray plates show more or less marked displacement of the lower fragment and yet the function of the hand is good. It is impossible by x ray examination to tell absolutely whether or not a good result will be obtained.

What, then, may be done to prevent or to remedy this condition which may result in long continued disability of the hand and even in inability of the patient to earn a livelihood? If the fracture had been completely reduced, the condition would not arise. Reduction is more readily and certainly obtained under a general anesthetic. But even under an anesthetic absolute reduction is not always to be secured. Shall the surgeon then resort to open operation? This question must be answered in the light of what has been stated above. Absolute reduction is not always essential to restoration of normal function, nor, indeed, in Colles's fracture is it commonly obtained. Comparatively few such fractures are completely and absolutely reduced, and yet the majority of patients secure good function of the hand within a reasonable length of time. If, however, the swelling and other signs of interference of the circulation persist beyond the first week, or do not show signs of rapid subsidence at

the end of that time, I believe we should conclude that there is something still interfering with the circulation at the wrist and that the surgeon should then do an open operation.

One hears much discussion as to the sort of splint that should be used in Colles's fracture, and I fear that in our medical schools and hospitals too much attention is given to the form of splint and too little to the reduction of the fracture or to the observation of the conditions mentioned above. No complicated splint is necessary. If the fracture is reduced it is rare for the bones to become redisplaced except by violence. A well padded straight posterior splint is one of the simplest and most efficient means for maintaining reduction. Students are sometimes taught to place an anterior and posterior pad at the wrist. These pads will not secure reduction if it has not already been accomplished. I believe that they are not necessary to the maintenance of reduction and they are likely by pressure to interfere with the blood supply. I should not advise their use.

The hand should be removed daily from the splint, and a gentle massage, which consists of stroking movements only, can be given to aid in the return of normal circulation. At the end of ten days to two weeks massage should be more thorough and should include the hand and the forearm. I see no objection to allowing the patient to move the fingers within a few days after the fracture; and the splint may be applied only as far as the metacarpophalangeal joints, in order to allow motion in the fingers. Undoubtedly both active and passive motion assists the circulation.

I have dwelt at length on these two conditions of Volkmann's contracture and Colles's fracture, because fractures at the elbow and the wrist are among the most common of all fractures, and because it is unfortunately true that many patients are disabled thereby for much longer periods than they should be, or are even permanently prevented from pursuing their vocation in life.

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THIRTEENTH AND SPRUCE STREETS.

Quinine Metrorrhagia.—A. J. Chalmers and R. G. Archibald (*Journal of Tropical Medicine and Hygiene*, October 15, 1919) report a case of metrorrhagia in which, after excluding all other possibilities, by clinical and laboratory examination, they concluded that the hemorrhage was due to the quinine bishydrochloride the patient had been taking for some months as malarial prophylactic. The drug was discontinued and the patient placed, after a short interval, on calcium lactate in ten grain doses twice daily. The metrorrhagia, previously present for several months, quickly ceased. A slight recurrence took place with the next menstrual period, but this was soon controlled by treatment. During the subsequent nine months the patient remained quite well. Similar treatment is recommended for menorrhagia of the tropics.

PRINCIPLES OF THE NEW METHOD OF ADMINISTERING DIGITALIS.

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During the last few years many new facts about the action of digitalis have been brought forward, both by laboratory workers and by the physicians in hospitals where clinical investigations are encouraged. We have come to a new understanding of digitalis through our more accurate knowledge, and new methods of using the drug have been the result. Digitalis has been found to be more effective in the treatment of the patient with heart disease when his body is well saturated with the drug, than when it is present in small amounts only. The best therapeutic results are obtained when the patient is not far short of that stage of saturation at which the earliest manifestations of poisoning appear. Therefore if we wish to be sure of producing results, we should give digitalis in fairly large doses, watching carefully for these early manifestations, and should not stop the drug until they appear. Digitalization has come into use to mean the giving of digitalis to this point of saturation.

It has been found that the amount of digitalis which will cause the appearance of these early signs of poisoning bears a definite relation to the weight of the patient. On the average a total dose of two minims of the tincture to each pound of body weight (1)—300 minims then for a patient of 150 pounds—will produce these early toxic signs. The susceptibility of different patients has been found to vary considerably from this average, variations from half of this amount to over half as much again, so that a patient weighing 150 pounds might vomit after 150 minims or not until he had received as much as 500 minims.

The variable susceptibility of different patients is an important thing to recognize because it makes it quite plain that we should never give the total calculated average dose to any patient at one time.

If a patient, whose susceptibility is greater than the average, should receive such a dose, he would certainly be in danger, and fibrillation of the ventricular muscle, with death, is the danger we must always have in mind from an overdose of digitalis.

Those patients whose susceptibility for digitalis is less than the average must also be carefully borne in mind, for they can take more than the average dose of the drug and in all probability they need more. We must always realize that these people exist, and if the average dose is insufficient to produce clinical improvement and has not caused the appearance of toxic signs, we must continue to give the drug watching carefully for the signs of early poisoning and not stopping digitalis until they appear. These patients frequently cause the physician to become dissatisfied with the preparation of digitalis which he is using. He feels that the particular tincture or infusion is weak, whereas it is really the patient's susceptibility which is slight.

It must also be stated emphatically, for this has heretofore been a very common error in the giv-

ing of digitalis, that the average dose will not be sufficient if it is spread out over a period of many days. During such a period the body will be continually disposing of some of the drug, so that the total amount will never be available for action upon the patient's heart.

The average rate at which the body disposes of the drug has been found to be twenty-two minims of the tincture a day (2), but here again there are considerable variations from one individual to another, as low a rate as ten minims and as high as forty minims daily being encountered. In spite of this the dose of ten minims twice a day, beginning three or four days after an initial digitalization, will not bring any patient to the toxic stage again very quickly, even though he may dispose of the drug at a much slower rate than the average.

Just as the variations in susceptibility tend to lead the physician to erroneous conclusions, so do these variations in the rate of disposal. Those patients who dispose of the drug much more slowly than the average may be mistakenly considered to be unable to take digitalis at all because of the promptness with which vomiting appears, when the drug is resumed a short time after an initial digitalization. On the other hand, those who dispose of the drug much more rapidly than the average, constitute another source of misunderstanding, for they, like the patients who have a low susceptibility to the drug, often become a cause of dissatisfaction with the preparation which is being used. Though they may be receiving an average dose, such as ten minims three times daily, yet they are not being benefited by it for they dispose of it faster than it is received. It is an interesting fact that those who have low susceptibility, who need large amounts for the initial digitalization, are not therefore liable to be able to dispose of the drug more rapidly than the average. These two physiological reactions are quite independent of each other.

Nausea and vomiting are the evident outstanding features in most cases of early poisoning, and are sufficiently unpleasant to the patient so that we should endeavor to stop the drug even before their appearance. This can be done in almost all cases, if sufficient care is exercised by the physician in observing the patient during a course of administration of the drug. There are two general types of abnormal findings which precede the stage of vomiting and which may be recognized by a careful observer in time to stop the drug and prevent the vomiting. Sometimes there will be disturbances of the rhythm of the heart, perhaps premature beats arising in the ventricles or the auricles, or dropped beats due to heart block, or when auricular fibrillation is present, a very slow ventricular rate, fifty-five or even forty-five a minute. These disturbances of rhythm may be evident for only twelve to thirty-six hours before the appearance of vomiting so if the patient is not seen daily they may be missed.

Much more frequent than these as a precursor of nausea and vomiting, but a thing which may be more easily overlooked, is a curious mental depression which comes upon the patient, perhaps accompanied by a headache or perhaps loss of appetite.

He is weak, drowsy, and prostrated and resembles somewhat one who is suffering from seasickness which is not in the active stage. This condition usually precedes vomiting by twenty-four to forty-eight hours. Practically all patients who have been made to vomit by digitalis will admit having had these symptoms when carefully questioned, and if the patients are forewarned by the physician, they will readily recognize symptoms when they appear.

It seems obvious then that if either the disturbances of rhythm or the mental depression make an appearance, the patient is showing the very earliest signs of digitalis poisoning, and is very near to the stage of nausea and vomiting. No more of the digitalis should be given now, for if this is done the nausea and vomiting will appear, and no more need be given for a time at least, for we know that the patient is thoroughly digitalized.

When we feel that a patient needs to receive digitalis, it is usually desirable to obtain the full therapeutic effect as soon as is reasonably possible. Even if the signs of heart failure are not of great urgency, it is certainly better to give the drug so as to obtain the effect in four or five days than to have a week or more lapse before we know what help it will be able to give us in our treatment. We must then give the maximum therapeutic dose in this short period of time. The situation is very much as if we were attempting to exactly fill a bucket with water. We know, though, that the body can destroy and excrete a certain amount of the drug each day, so that the bucket is leaking. If we do not pour in water faster than it runs out we shall never be able to fill it. If, on the other hand, we know the exact measure of the bucket, we can exactly fill it with one effort. In the case of the human body we do not know the exact measure of the individual patient; we know only the average amount necessary for filling, so that there is always the danger of overfilling a small sized bucket, with dangerous toxic effects, should we give the total average dose all at once.

The procedure which I would recommend is to start with a large dose on the first day, perhaps a half of the calculated average dose, which will be one minim of the tincture to each pound of the patient's weight, and then to complete the course with smaller doses at four hour intervals on the days following. If these smaller doses are each one-eighth of the remaining half of the calculated dose, they will vary from twelve to twenty-five minims according to the weight of the patient, and if this dose is given every four hours, then the total calculated amount, the average effective dose, will be received within a period of three days at the most. When the susceptibility of the patient is greater than the average, he may show the early toxic signs even as soon as the second day; when the susceptibility is less than the average it may be necessary to continue the four hourly doses for one or two days longer before the signs of poisoning appear. For a patient weighing 120 pounds this method of giving the drug would mean an initial dose of 120 minims of the tincture,¹ followed

by doses of fifteen minims every four hours; while for a patient of 160 pounds the initial dose would be 160 minims followed by twenty minims every four hours. By such a method of dividing the doses we are able to reach the end point rapidly, but not so rapidly that we cannot usually manage to stop in time to avoid vomiting.

Should the physician find that with this dose he is unable to perceive the approach of the vomiting stage soon enough to stop the drug in time to avoid vomiting, or should the patient not be under daily observation, then it would be advisable to go more slowly as we approach the point of saturation. The four hourly doses which have been recommended should be given only three times a day, i. e., fifteen or twenty minims three times a day in the case of the two patients instanced above, so that the duration of these premonitory signs of poisoning will be longer.

One precaution which must always be taken if digitalis is to be given in this way—the patient must not have taken any of the drug for a period of at least two weeks previous. The total dose of digitalis probably does not disappear from the body for about three weeks, but after two weeks the amount remaining will not be sufficient to lead to dangerous results with the method of administration which has been recommended. To return to our leaky bucket, it is obvious that if it already contains a certain amount of water, and we suddenly pour in one half of its total capacity, it is quite possible that we shall make it overflow. This would almost certainly occur if the patient happened to have much less than average susceptibility.

By the method outlined the patient will have been brought to a condition of saturation with digitalis, which borders on poisoning. The drug should now be stopped, and we should carefully observe the clinical aspect of the patient for a day or two in order to decide whether we have benefited his condition. We hope to find the heart rate more nearly normal, the dyspnea less, the edema diminishing, the veins less congested, fewer râles at the bases of the lungs; these are the signs which give the best indications of improvement. If improvement has taken place, then it will do no harm to wait five or six days or more before resuming digitalis, and it is even possible that in an occasional case we may not need to use it again at all. The patient may continue to do well without it. Some patients will have been definitely improved by the first course; but after the drug has been stopped for several days the pulse will become more rapid, and the venous congestion, dyspnea, and edema may increase; or if they wholly disappeared during the course of treatment, they may appear again. This is especially likely to happen with patients who have auricular fibrillation, but may occur when the rhythm is normal, though more rarely. In patients showing uncertain improvement after a thorough digitalization, such as has been outlined, it is always advisable to continue the digitalis on the fourth or fifth day after it was stopped. There are patients in whom the heart failure is due to conditions which are so severe that even the benefit of thorough digitalization will

¹It must be emphasized that the tincture of digitalis will give about two drops to a minim, so that ten minims may be from seventeen to twenty-three drops, according to the dropper used.

not suffice to improve the circulation, or will restore it but imperfectly. Nevertheless, even in these cases stimulation of the heart muscle by the drug will never do harm, and after several days may bring about an improvement which at first seemed wholly lacking.

Whenever we decide to continue the drug, we must take into account the nearness of the toxic stage, and if the number of days is small we must use small doses. The patient is disposing of the drug all of the time, but *slowly*, and if the time since the digitalization is short it will not take much to bring him again to the stage of poisoning. In such a case we must not give the drug much faster than he is disposing of it, but, as has been already said, the dose of ten minims twice a day, beginning even as soon as three or four days after the drug has been stopped because of signs of poisoning, will not bring any patient to the toxic stage again very quickly, no matter how slowly he may dispose of the drug. If the period since the digitalization is long it might be well to use the larger four hourly doses again for a day or so, in order to raise the patient's saturation to a more effective level.

During this second course as during the first one,* we must be always on the lookout for the early signs of poisoning which have been described. Should the patient continue to progress favorably on this dose it can be continued indefinitely. Should the rate remain rapid or venous congestion or other signs of heart failure persist, then we may know that we are dealing with one or two conditions, either, as has been mentioned before, the heart muscle is so diseased or so handicapped by the mechanical difficulty of a valve lesion or of high blood pressure that even the stimulation of digitalis cannot produce a proper circulation, or we are dealing with one of those patients who are able to rid themselves of the drug more rapidly than the average. In either case the indication is for further digitalis, and the doses which were used in the last part of the initial course should be used again, i. e., a number of minims every four hours, which are equal to one-eighth of the patient's weight in pounds, in order to bring his body rapidly to the full saturation which he can tolerate. Again careful watch should be kept for the appearance of early signs of poisoning and the drug stopped as soon as these are perceived.

If the toxic signs reappear after only a few of these larger doses, then the patient was not far from the toxic stage. He was not, then, one of those who dispose of digitalis more rapidly than the average, and as he had been near the saturation point for some days, and therefore getting the full therapeutic effect for that time, we can see at this stage how much we can expect digitalis to do for this patient. If the toxic signs do not reappear until after many of these larger doses, then the patient was far from the toxic stage and therefore had been disposing of the drug faster than the daily twenty minims which he was receiving. He will need more than the daily twenty minims which he was receiving. He will need more than the average amount to keep him near the saturation point, and must receive this larger daily dose if he needs to be kept under the influence of digitalis.

It is not at all intended to give the impression that our patients must repeatedly be made to vomit in order to be sure that they are receiving the full digitalis effect. The object of this paper is quite the opposite, for I have pointed out how we may recognize when the vomiting point is drawing near, so that we shall be able to stop digitalis in time to avoid the vomiting. We must keep a constant lookout for dropped beats in the radial pulse, premature beats of the heart, a very slow heart rate, or for the characteristic depressed mental state which has been described. When any of these symptoms appear, we know that we have done enough. The digitalization of our patient is sufficient for the time being, and no more of the drug should be given for a period of three or four days. It is immaterial whether or not the patient has been benefited by this amount of the drug, more of it at this time will be of no greater benefit and will only lead to the recurrence of vomiting. After a rest, and the patient has had time to excrete or destroy some of the digitalis, then we may resume, if advisable, but using small daily doses, attempting by these to retain the patient at a high level of saturation with digitalis, the condition under which the beneficial effects are most likely to be obtained.

The points which should be especially emphasized in this matter are three: 1. The initial dose must be sufficient to bring the patient to the stage of slight poisoning, a thing which cannot be accomplished within a reasonable time unless we use doses larger than have been used ordinarily heretofore. 2. If a continued digitalis effect is desired, it will not be obtained satisfactorily unless the patient is kept at a high level of saturation with the drug; his body must be nearly full, not nearly empty, or any failure to obtain good results cannot be interpreted as a failure of digitalis therapy. 3. The nausea and vomiting which result from digitalis poisoning can be avoided if special care is used in observing the patient during the periods when he is receiving a daily dose which is above the average rate of twenty minims of the tincture a day at which the body can dispose of the drug.

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74 WEST FORTY-EIGHTH STREET.

GASTROINTESTINAL SYMPTOMS IN DISTURBANCES OF THE THYROID.

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The thyroid gland in health may be regarded as an adjuvant regulator of body function and potentiality, whereas in disease it is often a notorious disturber of these attributes. That it is endowed with an inherent function has been recognized through experimental evidence and through dissection of its constituent makeup. We well recall the symptoms that administration of thyroid gland substance into the body is capable of producing; the

remarkable picture of thyrotoxicosis in overdose to a normal animal; the slightly aggravated neurosis in smaller doses; the decided improvement or restorative tendency toward the normal when given in proper dose to subjects of cretinism; the distinctly reverse condition when this substance is denied the body as in the experimental removal of the thyroid from animals. These enumerated results make the thyroid gland a most worthy organ for consideration in the solution of disease within the body.

In diseases of the thyroid gland, if early recognized, the patient may be benefited in some instances by early medication and mental as well as physical rest. In advanced cases operation is often resorted to. The association of symptoms apparently removed from the thyroid, at once advises us that disease in this organ is not merely local but far-reaching in its effect. Usually symptoms referable to the eyes, heart, circulation, skin, gastrointestinal tract, and kidneys make an appearance. Symptoms involving these organs are, however, dependent for their origin to a disturbance in the internal secretion of the thyroid. It is asserted that products are generated within the thyroid which are capable of stimulating the subdivisions of the vegetative nervous system in such a manner as will result in the creation of certain distinct symptoms throughout the body. These two subdivisions, the vagus and sympathetic, will, therefore, in accordance with the character of the stimulating forces aroused within the thyroid, as a rule, acquit themselves in a distinct manner. When the vagus is in predominant control, the condition known as vagotonia manifests itself. When the sympathetic is in control, the condition known as sympathicotonia occurs. When both systems are in partial control and the stimulation of the one system does not in effect adequately neutralize the stimulations of the other, a mixed vagosympathicotonia is found. Some of the findings to be noted in the respective conditions follow:

Vagotonia: Stelwag symptom, lagophthalmus, epiphora, bradycardia after pressure on the bulb, pulsus irregularis respiratorius, irregular type breathing, low blood pressure, positive, dermatographismus, profuse sweating, hyperacidity, gastropasm (hourglass and bullhorn form), diarrhea, no steatorrhea after the ingestion of 200 grams of butter, low diuresis, after one mgm. adrenalin, sugar free urine, increased tolerance for alimentary glycosuria, strong reaction following pilocarpine administration, eosinophilia, status thymicolympathicus, absence of deglutition reflex, wet and cold hands and feet.

Sympathicotonia: Xerophthalmus, protrusion of the bulb, Moebius's sign, tachycardia, increased blood pressure, negative dermatographismus, brittleness of the skin, obstipation, gastroptosis, atony of the stomach (hook form), decrease in gastric secretion, increased diuresis, after one mgm. of adrenalin a pronounced glycosuria, reduction in the effect of pilocarpine upon the body, eosinopenia and increased deglutition reflex.

Vagosympathicotonia: Any of the findings of the preceding conditions found together.

To me, the study of the thyroid appealed, particularly because of the bearing of disturbances within this gland upon the gastrointestinal tract and its associated organs; and owing to this fact I was prompted to look into the histories of a series of cases of thyroid disease in which the patients were treated and operated upon in the surgical service of one of our largest institutions.¹ These statistics were gathered together in 1915 and include 111 patients who entered the hospital from December, 1911 to February, 1915.

I sought the information furnished from the records of these particular cases for my personal satisfaction and had no intention of publishing these statistics until some time ago when a most interesting case of thyroid perversion with a predominating gastrointestinal symptomatology presented itself for study. Practically the only symptoms complained of were gastric distress, occasional attacks of so-called diarrhea, attacks of general weakness, nervousness and cardiac palpitation. A barely palpable thyroid was the only other sign noted; no tachycardia, no abnormal blood pressure or pulse findings upon the first few examinations. The patient was observed for a period of two weeks and once only upon the fifth examination was a tachycardia noted. The case was regarded as one of mild hyperthyroidism with the vagal symptoms predominating slightly. Rest in conjunction with the administration of thyroidectin in small doses for a period of three months caused the condition to disappear entirely. It is almost two years since the patient was first attended and during that time no return of the symptoms has occurred although the thyroid gland is still palpable.

The histories that were investigated pertained to fifty-six cases of exophthalmic goitre, twelve cases of diagnosed hyperthyroidism, thirteen cases of adenoma of the thyroid, twenty-one cases of colloid goitre, seven cases of thyroid cyst, one case of acute thyroiditis and one case of aberrant thyroid.

The findings in the fifty-six cases of exophthalmic goitre, twelve cases of hyperthyroidism and forty-three remaining cases respectively, follow:

	Exophthalmic goitre.	Hyperthyroidism.	Other cases.
Past gastrointestinal history positive.....	18	4	19
Past gastrointestinal history negative.....	18	8	21
Present gastrointestinal history positive.....	39	5	17
Present gastrointestinal history negative.....	17	7	26
Dyspepsia.....	1	0	3
Eruptions.....	1	0	4
Nausea.....	9	3	7
Vomiting.....	20	3	8
Epigastric discomfort.....	15	1	6
Abdominal discomfort.....	8	0	0
Localized right iliac discomfort.....	4	1	0
Jaundice.....	5	0	6
Diarrhea.....	21	6	19
Dysentery.....	18	2	4
Hemorrhoids.....	2	0	1
Splenomegaly.....	2	0	2
Hemorrhoids.....	3	0	5
Pulse below 80.....	1	2	12
Pulse above 100.....	11	0	12
Pulse 100-110.....	24	7	4

In looking over the preceding list of findings in the total 111 cases, it will be noted that past history of gastrointestinal disturbance occurred in sixty-one instances and that a present history of gastrointestinal disturbance occurred in the same

¹From the Surgical Service of the Johns Hopkins Hospital, Baltimore, Md.

number of instances. From this it is very apparent that gastrointestinal manifestations are a common accompaniment of thyroid disease. In the opinion of the author, it is very probable that gastrointestinal symptoms will quite often precede in assertion, let alone follow, the more definite significations of thyroid disease.

Numerous authorities have in the past endeavored to link gastrointestinal disturbances with the glands of internal secretion in so far as causation is concerned, and many experiments have been performed upon animals that seem to substantiate their assertions. By virtue of these experiments upon animals, in which artificial disturbances were created within the thyroid and adrenal body, it is thought that a constitutional anomaly is established that contributes to the creation of definite anatomical as well as functional disturbances within the gastrointestinal tract. That disease of the thyroid gland, like artificial experimental disturbances of same, may be able to create a constitutional infirmity that eventuates in the establishment of stomach and bowel disturbances, goes without question. Upon such an assumption, this paper was written purposely, in order that it may more adequately impress upon its readers the necessity for excluding thyroid disease from those cases that present themselves for gastrointestinal study.

768 WEST END AVENUE.

THE PROBLEM OF REDUCING THE MORTALITY FROM PULMONARY TUBERCULOSIS.*

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Until recently tuberculosis was considered incurable, without regard to the patient's resistance, occupation, or the stage of the disease. Today clinical experience has proved that tuberculosis is curable, provided it is diagnosed and treated properly at the right time. This depends entirely, I may say, upon the early diagnosis. Positive physical findings should not be considered as the primary evidences of incipient tuberculosis. An early diagnosis, in my opinion, is made by a close survey of the subject's symptoms prior to the appearance of physical signs.

Opinions differ, however, regarding the early diagnosis of tuberculosis and, aside from the finding of the tubercle bacilli; there is not one symptom or chain of symptoms which may be considered conclusive. It is certainly an utter impossibility to diagnose a case soon after the bacilli have entered the body. It is usually a very long time after the primary infection has taken place that any symptoms of diagnostic value are observed. When the study of bacteriology is so perfected that the tubercle bacilli may be isolated before any damage is done, then unquestionably the mortality will be reduced to a minimum; in other words, to make

a positive early diagnosis, we must have a clearer knowledge of infection, and the methods of recognizing it. Since this is not the case, what chain of symptoms will guide us to a proper conclusion? The symptoms which may serve as expressions of pulmonary tuberculosis are so numerous and confusing that we are likely to apply them to other organs. Pottenger (1) classifies symptoms of early pulmonary tuberculosis in three groups:

1. Symptoms due to toxemia—malaise, feeling of being run down, lack of endurance, loss of strength, nervous instability, digestive disturbances, loss of weight, increased pulse rate, night sweats, rise in temperature.

2. Symptoms due to reflex cause—hoarseness, tickling in the larynx, cough digestive disturbances, circulatory disturbances, chest and shoulder pains, flushing of the face.

3. Symptoms due to a tuberculous process—frequent and protracted colds, spitting of blood, history of pleurisy, rise in temperature.

The last two groups of symptoms are significant of pulmonary tuberculosis and the patient should get the benefit of the doubt—whether or not the diagnosis is substantiated by laboratory aid or physical findings. In the vast majority of cases, however, the last mentioned groups of symptoms are lacking, the patients presenting themselves with symptoms which may be attributed to anything, from a simple gastritis to an infected sinus. The majority of such patients are brushed aside with the assurance that there is nothing to worry about, and are not seen again until an active lesion is developed.

With regard to the use of tuberculin as an aid to early diagnosis little can be said; its subcutaneous use is being condemned by most of the best authorities. The Moro and von Pirquet tests are still popular on account of their simplicity and because they produce reactions in about sixty per cent. of the cases. The x ray, if properly interpreted by a competent man, will often reveal features of diagnostic value. In short, aside from the finding of the tubercle bacillus, there is not a pathognomonic sign or group of symptoms which is positive. No wonder the majority of practitioners have not the courage to tell their patient what they suspect. This applies particularly to the class of people whose existence depends upon their daily employment.

The organization of a sufficient number of commissions composed of competent diagnosticians would, in my opinion, serve a double purpose. First, it would aid the physician in determining a comprehensive conclusion, thus relieving him of responsibility; secondly, it would aid the patient by making him more confident and thus inspire him to employ every conceivable means to get well. You may remind me of the fact that there already exist numerous institutions for that purpose. I regret to say, and I am sure you will agree with me, that nearly all are not properly conducted.

While tuberculosis attacks all classes of people, it is no secret that it is more common among the poor. Poverty and the high cost of living compel people to live in overcrowded quarters and in unsanitary conditions. It is easy to conceive, there-

*Read before the Philadelphia County Medical Society, November 21, 1919.

fore, that an individual living under those circumstances has, as a rule, a low vitality and is more or less predisposed to infection. When such a person presents himself with the symptom mentioned in Group I, I at once suspect tuberculosis, but I am reluctant to convey my impressions to him, for the reason that there are so many obstacles in the way of his getting the proper treatment. Unless the State or government will make provisions to deal adequately with this economic question we shall be handicapped. When you consider that tuberculosis is a curable disease, and that 150,000 Americans succumbed to it last year alone, it can readily be seen that little progress has been made.

The medical profession is aware of the importance of early diagnosis and it is recognized that the treatment, although not of a specific nature, is satisfactory; but laymen are still pessimistic. A little effort on the part of the medical profession would teach the public the rules of personal hygiene, sanitation, prevention, and thus create a greater interest in treatment. Fear and pessimism would soon be replaced by hope and optimism.

The most important question after the diagnosis is assured is the management of the patient. By that I mean not so much actual treatment, but the care of the patient from the standpoint of prognosis and of preventing dissemination. The sanatorium is the ideal place for the care of tuberculous patients. Here the chance for a speedy recovery is increased fifty per cent., for the reason that the patient is relieved from responsibilities, cares and worries. The man of means, or one able to get assistance, usually pursues such a course. The poor apply to aid societies, hospitals, or State dispensaries, where they undergo examinations with but little regard to the proper course of treatment. During the time consumed in seeking a place for cure the patient's powers of resistance become greatly diminished and the disease more active. Thus, a favorable case often becomes incurable.

CONCLUSIONS.

1. The medical profession has employed in the past, and is still employing, every known means to arrest the spread of tuberculosis. We are convinced that the disease in the majority of cases will heal and that its course will be checked under favorable conditions. In private practice we are handicapped because it is not alone the disease we are dealing with, but the individual; in other words, it is the economic question.

2. The establishment of enough sanatoriums, either by the government, the State, or by philanthropists, where it would be possible to admit patients early enough to meet with success, thereby reducing mortality.

REFERENCES.

1. POTTINGER: *Clinical Tuberculosis*, vol. i, p. 366.

Whooping Cough.—Heubner (*Journal of the Med. Soc. of N. J.*, November, 1919) uses:

Quinine hydrochloride,	āā	2.5 grams
Antipyrine,		
Aque distillatæ,		75.0 c. c.
Syr. ipecac,	ad	100.0 c. c.
Teaspoonful three times daily.		

GONOCOCCEMIA AND METASTATIC GONORRHEA.*

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The occurrence of a number of interesting cases of gonorrhea associated with various complications, in my practice, during the past ten years; the great prominence now being given to focal infections, and the lack of any definite form of treatment recommended in textbooks and recent literature, have led me to gather together a few facts on this important class of infections that are too little emphasized and still less recognized. When we consider that gonorrhea is the most prevalent of all infectious diseases, leading to acute and chronic complications of which gonorrheal arthritis is the most serious and damaging, occurring in from two to five per cent. of all gonorrhea patients—this phase of the subject certainly deserves a prominent position. I will deal principally with gonorrheal arthritis.

The first probable demonstration of the invasion of the blood by gonococci was made by Wertheim. Absolute proof rested with the cultivation of these organisms from the circulating blood by Thayer and Blumer in 1895. In 1894 Hewes succeeded in isolating the gonococcus from the blood of a patient in a case of arthritis. Rufus Cole made a study of twenty-nine septicemia cases collected by him and divided them into four groups: 1, Patients with malignant endocarditis with fever, sweating, chills, and septic infarcts in some; 2, patients with local suppurative lesions in internal organs or in subcutaneous tissue and features of pyemia; 3, patients with no metastatic local infections—all of these patients recovered; 4, patients with gonorrheal puerperal septicemia. Some authors state that as many as twenty-five per cent. of all cases of puerperal fever are due to gonococci.

The prognosis is not necessarily hopeless when gonococci are cultivated from the blood. The prognosis is worse when endocarditis is present—of Cole's twenty-nine patients, twelve died, sixteen recovered, and one not stated. As far as (Cole) secondary metastatic lesions are concerned, it seems probable that they are usually due to the transmission of a very few bacteria through the blood and their localization in *loci minoris resistentiæ*. The most common primary focus is a chronic prostatitis or vesiculitis in the male or salpingitis in the female. Treatment of these foci along with appropriate local treatment is necessary.

Gonorrhea is an acute infectious disease, and locally is a contagious catarrhal inflammation of the genital mucous membrane, chiefly propagated by sexual intercourse and due to the *Micrococcus gonorrhoeæ* or gonococcus Neisser. We know that this disease may limit itself to the mucous membrane of the genitalia: 1, The local primary disease; 2, it may invade the genitourinary organs, bladder, kidneys, tubes and ovaries, by direct continuity of structure, secondary local infection;

*Read before New Jersey State Medical Society, Spring Lake, N. J., June 24, 1919.

3. it may enter the blood stream and cause constitutional infection with metastatic involvement. It is with this last group that I wish to deal principally in this paper. Recently little has been written on this subject. Little space is given to this serious complication and its treatment in the textbooks of general medicine and in special treatises on the genitourinary organs.

Any patient with local gonorrheal infection is susceptible to systemic and metastatic disturbances manifested by symptoms of general toxemia and localized inflammation, especially in the joints, heart, meninges, chiefly in and about the joints. The condition is probably due to the entrance of the gonococcus into the blood and to the absorption of toxins. So-called gonorrheal rheumatism is the most common localization in septicemia cases. It may occur in infants, as a complication of gonorrheal ophthalmia neonatorum, and in young children (vulvovaginitis).

Angle cited a case of ophthalmia neonatorum occurring forty-eight hours after birth, followed two weeks later by an arthritis involving the left wrist and right knee, also a second case infected in a similar way affected both wrists. C. Lucas collected twenty-three such cases of gonorrheal rheumatism in infantile subjects of ophthalmia. It is therefore evident that gonorrheal arthritis is not limited in its origin to the urinary and genital tracts. In these days, arthritis due to focal infections is most frequently traced to tonsils and teeth, and patients have had their teeth and tonsils removed for so-called rheumatism, when as a matter of fact they were harboring gonococci in the urethra, vaginal tubes, or prostate. In such cases, of course, examinations of the smears and a blood complement fixation test for gonorrhea would have disclosed the diagnosis, and with proper local and general treatment the patients would have been cured, without the needless removal of good teeth and innocent tonsils.

Gonorrheal arthritis most commonly begins in the acute stage of a urethritis and may be associated with a subsidence of the discharge. It may not occur until after the discharge has greatly diminished or not for several weeks after the beginning of the attack. It usually occurs during the third or fourth week of the disease. Its onset is seldom abrupt and is ordinarily unattended by chills or high fever, though there may be a rise to 101°-102° F. It occurs most frequently in men and rarely in women.

It has often been stated that it is monarticular in occurrence; however, although it may only affect a single large joint, more often two or three or even four joints are involved. The polyarticular involvement may last only a few days. In almost all patients more than one joint is involved. In all but three of Cole's fifty cases there was polyarthritis. Of course, many patients seen in the later stages, when the disease is frequently localized in one or two larger joints, will show monarticular involvement, and if the history is not considered, a mistake may be made. The affection is not so migratory and fugacious as acute polyarticular rheumatism. The ankles, knees, and wrists seem

to be especially susceptible to gonorrheal inflammation. The vertebral, sacroiliac, temporomaxillary, and hip joints may also become affected. Previous rheumatic diathesis has no bearing on this disease and in the cases which I have seen no such connection could be traced. On the contrary the patients are usually young and healthy and remarkably free from muscular and joint pains.

The joints remain inflamed and improve slowly. The inflammation is endoarticular and periarticular and the tendon sheaths also become involved, with a resulting tenosynovitis. Serous or seropurulent effusion may appear. Relapses are frequent and disabling ankylosis may result. This disease was first noticed coincidentally by Selle and Swediaur more than 125 years ago. Often the disease extends its violence on the fibrous and bursal structures about the knee, elbow, or ankle. The muscles and their tendons, the sheaths through which they pass, the bursal sacs, and the nerves may also suffer. When gonorrheal rheumatism attacks the synovial membrane of a joint, though there may be little pain and an entire absence of surface redness, there will generally be a considerable effusion into the cavity of the (joint) articulation which is not easily removed.

Osler states that the knees and ankle are most likely to be involved. Suppuration is unusual, and he suggests that the nonsuppurative cases are due to the action of the gonococcal toxins taken up from the area of primary infection and that the suppurative cases are due to mixed infection with pyogenic bacteria. In most of my cases the inflammation is located around rather than in the joints.

CLINICAL FINDINGS.

Blood changes in gonorrheal arthritis. Anemia is not so marked as in rheumatic fever. A moderate grade of leucocytosis is the rule. There is no apparent relationship between the degree of leucocytosis and the severity of the lesions.

Endocarditis.—The association of endocarditis with gonorrheal arthritis was recognized as early as 1847 by Ricord. Thayer and Blumer in 1895 proved this with blood cultures during life and smears from the thrombus on the heart valve after death. Kulbs collected forty-nine cases, thirty-six in men and twelve in women, of endocarditis. Twenty-eight cases were aortic and eight mitral. Thayer found seven aortic and two mitral in fifteen cases collected. The right heart was affected more frequently in gonococcal than in simple endocarditis. Von Leyden first described a case of genuine gonorrheal endocarditis. Later, Finger, Schlagenhauser, Lenhart, Ghon described cases of gonorrheal endocarditis.

Nolan recognized heart lesions in from ten to twenty per cent. of the cases of systemic gonorrhea—in sixteen out of 115 cases of gonorrheal arthritis and Sears in twenty-five out of 167 cases. Sears in an analysis of sixty-eight cases of gonorrheal endocarditis—sixty-one men and seven women, found the heart lesion associated with arthritis in fifty-six cases, forty-eight of which involved three or more joints. The mitral valve was chiefly involved.

Phlebitis.—Heller has collected twenty-six cases of gonococcal phlebitis, in fifteen of which arthritis was also present. Gonorrheal skin eruptions may occur in cases of arthritis. Buschke divides them into four groups: 1, Simple erythema, the most frequent form; 2, urticaria and erythema nodosum; 3, hemorrhagic and bulbous eruptions, probably embolic in origin in very septicemic cases; 4, hyperkeratoses, which form a most interesting group because the lesions are apparently specific. They have been extensively described by Baermann. These follow a severe general infection with joint lesions. Emaciation and anemia are quite pronounced. They appear suddenly on palmar and plantar surfaces or about the nails. The French writers consider the condition a trophoneurosis due to toxic changes in the nerve endings. Baermann does not think the crust formation a true keratosis but a dermatitis papillaris parakeratotica. Roth thinks them angio-pathic skin eruptions. It is to be remembered that exanthemata may occur in gonorrhea, that are not due to drugs or sera. Buschke thinks they are due to gonorrheal toxins. Vidal and Besnier consider them trophic myelopathic toxicodermata. Herpes labialis has been observed by Lenhartz, Irons, Thayer, and others. Other complications, such as iritis, pericarditis, and pleurisy, may occur.

There are two views as to the direct cause of the most frequent and also the most important complication of gonorrhea, namely, arthritis: 1, That it is due to the action of soluble toxins elaborated at the seat of local infection; and 2, that it is due to localization in the joints of gonococci which have gained access to the general circulation or have passed from the local lesions to the joints through the lymphatic channels. The view that the lesion is due to the localization of gonococci in the joints is now well established by the cultivation of these organisms from the joints in a large number of cases. The organisms are often present in the tissues, even where the examination shows the exudate to be sterile. The gonococci probably reach the joints by way of the blood current. Slight injuries may so render the joints *loci minoris resistentia* as to predispose them to such localization of infection. William H. Park states that the pathogenic effects exerted by gonococci are chiefly due to endotoxins.

Koenig classifies these joint conditions: 1, *Hypodrops gonorrhoeicus*; 2, *arthritis serofibrinosa et catharralis*; 3, *arthritis purulenta* (empyema of joints), and 4, *arthritis phlegmonosa* (essentially the periarticular or pararticular form). The arthritis with serous effusion is a condition in which there is little structural change in synovial membrane and the joint is more or less distended with a clear, serous fluid. In arthritis with serofibrinous and catarrhal exudate, the synovial membrane is found more decidedly infiltrated and the fluid contains flocculent masses of fibrin. The suppurative variety shows the joint cavity to be filled with pus. Osler says mixed infection is rare. The phlegmonous form is the rarest, causes the greatest damages to the joint and surrounding structures, and results in the greatest functional disturbances.

According to Osler, gonorrheal arthritides are classified as follows: 1, Arthralgic, manifested in

wandering pains about the joints without redness or swelling. Resistant for a long time. 2, Polyarthritic, in which several joints become affected. The fever is slight; local inflammation may fix itself in one joint, but more commonly several become swollen and tender. In this form cerebral and cardiac complications may occur. 3, Acute gonococcus arthritis, in which a joint, usually the knee, becomes suddenly involved. The pain is severe, the swelling extensive, and due chiefly to periarticular edema. The general fever is not proportionate to the intensity of the local signs. The exudate usually resolves, though suppuration occasionally supervenes. 4, Chronic hydroarthrosis is usually monarticular and is particularly likely to involve the knee. It often comes without pain, redness or swelling. The occurrence of pus is rare. 5, Bursal and synovial form attacking chiefly the tendons and their sheaths, the bursæ, and the periosteum. The articulations may not be affected. The bursæ of the patella, the olecranon, and the tendoachilles are most likely to be involved. 6, Septicemic form, in which, with an acute arthritis, the gonococci invade the blood, and the picture is that of an intense septicopyemia, usually with endocarditis. 7, Painful heel of gonorrhea is a remarkable form of pododynia, due to local periosteal thickening and exostosis on the os calcis, at the insertion of the tendon Achilles and the plantar aponeurosis, causing pain and great disability. Baer has demonstrated the gonococcus in the periosteal lesion. Retrocalcaneal bursitis may be present, giving a cystic enlargement, along with the periostitis and exostosis. The achillodynia (or *pieu blenorragique*) manifests itself as a painful swelling below the insertion of the tendon Achilles and interferes with walking.

According to Robert W. Lovett, of Boston, the types of gonorrheal joint affection are as follows: 1, Arthralgia without definite lesions in the joint; 2, acute serous synovitis with much periarticular swelling; 3, acute fibrinous or plastic synovitis with slight effusion; 4, chronic serous or purulent synovitis, and 5, involvement of periarticular structures, such as bursæ and tendon sheaths.

Peripheral nerves may become affected. A. Fraenkel, Fournier, Lesser, and others have observed ischialgia. Engle-Reimers has described cases of neuralgia of gonorrheal origin in the region of the ischiatic, obturator, crural and auditory nerves. Roswell Park was among the first to report a case of typical pyemia following gonorrhea and to recognize it as such.

Gonorrheal urethritis.—S. Reines treats acute posterior gonorrheal urethritis and cystitis with intravenous injections of a two per cent. methylene blue solution at the dose of ten c.c. to the injection. The subjective disturbances quickly disappear and the second glass of urine becomes limpid. This treatment is contraindicated when the prostate, seminal vesicles, testicle, or epididymis are involved in the gonorrheal process. After three injections given every second day the usual treatment is taken up and continued.

Schlittler reports a very interesting case of gonorrheal infection of the upper respiratory and digestive tracts. In the patient, a man forty-two years

of age, there developed an acute stomatitis and pharyngitis on the fourteenth day of a gonorrheal infection. A severe, painful inflammation of the parts first appeared, followed by profuse suppuration.

DIFFERENTIAL DIAGNOSIS.

The diagnosis must be made from acute rheumatism, gout, tuberculous arthritis, acute luetic synovitis, from acute arthritis of infants and Still's Disease, acute epiphysitis in children, and various forms of septic and syphilitic osteitis; hypertrophic and atrophic arthritis. In children acute epiphysitis may be confounded with gonorrheal arthritis, as may also various forms of septic and syphilitic osteitis. The gonorrheal process is more gradual and milder than acute articular rheumatism, resolution is slower, is not common in women, and as a rule is less febrile than acute articular rheumatism. Cardiac complications are exceptional as compared to rheumatism. The joints affected are not so numerous and do not wander as in rheumatism.

The disease frequently arises after painful instrumentation in cases of gleet and stricture. So-called articular rheumatism occurring in pregnancy and the puerperium is often metastatic gonorrheal arthritis, because pregnancy, labor, and the puerperium favor the development of metastatic gonorrheal infections in woman. In women the wrist joint is most frequently affected and the knee joint in men (Nasse). There is less prostration and perspiration and less tendency to migrate from joint to joint, and the less frequent occurrence of endocarditis than in acute rheumatism is an important aid in the diagnosis. Blood cultures may show gonococci. The complement fixation test for gonorrhea would be positive and the gonococci could be found in smears. The history of a urethral discharge, being discovered, would lead to a correct diagnosis of metastatic gonorrheal arthritis. Leucocytosis may be absent in gonorrheal conditions. Gonorrheal rheumatism shows a tendency to go on to recovery and may disappear in four to six weeks with any treatment. The salicylates do no good in gonorrheal arthritis, whereas if the case were a true articular rheumatism, improvement would take place under large doses of the salicylates.

It has been suggested that vaccines be used in diagnosing obscure cases of arthritis of suspected gonorrheal origin. In children, joint tuberculosis can be differentiated by the usually slow advent of the condition and absence of great tenderness, swelling or redness; rather, a doughiness is present. There is early rigidity of muscles and fixation of the joint in tuberculosis. The presence of vulvovaginitis or ophthalmia neonatorum or a urethritis and the discovery of the gonococcus in the effusion would settle the diagnosis. In children, in gonorrheal osteoarthritis bone rarefaction can be shown by the x ray very early, even in the first few days. If there is no rarefaction the disease has probably settled within the capsule.

Park and Krumwiede conclude that the non-specific response to vaccines is of importance in gonorrheal infections and that a reaction following gonococcus vaccine is of therapeutic value. Also,

that a positive focal reaction is not only of value as a guide to doses, but is of diagnostic importance; the absence of the reaction is not. Aspiration of fluid may give information of the greatest therapeutic and diagnostic value. Gonococci may be obtained from the aspirated fluid. Cabot urges that all monarticular infections of any seriousness or obstinacy should be tapped. The age of the patient is important. Most of our patients are young men between eighteen and twenty-five. Hypertrophic arthritis does not attack the hip, knee, ankle, or sacroiliac joint in a man of twenty or twenty-five. In the hip joint hypertrophic arthritis constitutes *malum coxae senilis*, leaving young men unscathed. Arthritis deformans may in some cases cause some errors in diagnosis at the time of acute exacerbations, or in cases of a recent or chronic urethritis and leucorrhea.

Atrophic arthritis might involve these large joints in a young man, but always involves other joints as well, especially those of the hand, and it is very prone to be symmetrically distributed, e. g., both ring fingers, both feet, both wrists, or both hips. However, if a young man has subacute or chronic pain in both feet without evidence of flat feet, gout may be suspected. Of course, a gouty patient may have gonorrhea. It is also true that a patient having a four plus Wassermann may also have an arthritis due to a previous gonorrheal infection. In such an instance the gonorrheal fixation test would also be positive.

Irons states that the injection of a half billion killed gonococci into the tissues of a person free from gonococcal infection was found to cause practically no constitutional disturbances in eight cases. In infected cases, however, results were quite different within twenty-four hours, and corresponding to the negative phase, there was increased articular pain, rise in temperature, and general malaise—it was, therefore, suggested, because of the pronounced reaction, that the injection of killed gonococci be employed as a diagnostic agent in cases of doubtful gonococcal infection.

Still's disease is an interesting variety of arthritis deformans in children, differentiated by Still, in which the general enlargement of the joints is associated with swelling of the lymph glands and of the spleen. The onset is almost always before the second dentition, and girls are more frequently affected than boys. The epitrochlear glands may be as large as hazel nuts. Sweating is often profuse; heart complications are rare, and anemia may be present. The little patients are puny and their development arrested. Limitation of movement and marked fixation of joints may be present with muscular wasting.

When gout occurs the patient is probably a middle-aged man, living well rather than wisely, getting a sudden attack of pain, especially in the great toe, ankle, knee, or wrist. The swelling of the toe is the most characteristic, the metacarpophalangeal joint is tensely swollen, livid and glossy, and he may have gouty tophi around the small joints and in helix of ear; there is no recent history of gonorrheal urethritis. The uric acid is increased in the blood and urine. Infectious arthritis must be ruled out in a

septic arthritis. The history of the case, the presence of a focus of infection, caries, osteomyelitis, or some recent acute infectious disease like typhoid fever, pneumonia, meningitis or scarlet fever, will help in making the diagnosis.

Women are singularly exempt from gonorrheal arthritis. The female sex escapes almost entirely (adults). Many cases are diagnosed as chronic rheumatism, neuralgia, and neuritis, which are attributed to focal infections of the teeth, sinuses, tonsils, but in reality are due to gonorrheal infection, recent or remote.

In the differential diagnosis one must remember that a gonorrheal infection may occur in a rheumatic patient. In a person having gonorrhea there may also develop an acute (articular) rheumatic fever (polyarticular rheumatism). However, cases in which only a limited number of joints are involved, without migration and associated with a urethral discharge containing the small, round, or oval gonococci of Neisser and Bumm in the pus cells easily stained with the alkaline solution of methylene blue, and their failure to stain by Gram's method—with or without endocardial involvement and the possible implication of the sternoclavicular, temperomaxillary, or vertebral articulations, make the differential diagnosis between gonorrheal and articular rheumatism an easy matter. Finally, gonorrheal rheumatism does not as a rule give rise to acute constitutional disturbance. This is usually a transient one only. It is more or less fixed and has little tendency to change its locality. The tendency to become multilocalized is not marked; and there is only a slight tendency to cardiac complications. Of course, there rarely may be a pericarditis, myocarditis, and endocarditis or even a pancarditis. Be that as it may, gonorrheal rheumatism is a bad term and should be abandoned.

JOINTS INVOLVED.

According to Northrup, Finger, and Benecke the knee, ankle, wrist, elbow, shoulder, hip, small joints of hands, small joints of foot, heel and toes, temperomaxillary, and sternoclavicular articulations were affected in the above order of frequency. Out of 655 articulations involved the knee was involved 258 times, the ankle 125, and the wrist seventy-six times.

BACTERIOLOGY.

Gonococci can be grown best on Vedder's medium (ordinary beef infusion agar—1.5 per cent. agar, to which 1 per cent. cornstarch is added), or Wright-Steinschneider's medium consisting of urine, human or bovine blood serum and nutrient agar-agar as Lipschütz's medium made with nutrient agar-agar or ordinary bouillon and pulverized egg albumin on which *Micrococcus gonorrhoeae* grow satisfactorily. The *Micrococcus gonorrhoeae* is differentiated from the commoner pyrogenic organisms by certain peculiarities:

1. In gonorrheal pus it is nearly always within the protoplasmic bodies of pus cells; 2, it stains readily with the ordinary staining reagents, but loses its color when treated by Gram's method; 3, it is not pathogenic for animals such as are ordinarily used in the laboratory, and is without pathogenic properties for horses, dogs, and monkeys; 4, it is

practically always seen in the form of diplococci, the pairs of individual cells having the appearance of two hemispheres with the diameters opposed, and separated from one another by a narrow, colorless slit; 5, does not develop upon any of the ordinary nutrient media and is isolated in culture through the employment of special methods, all including some nutrient substance supplied by blood or blood serum; 6, Wherry and Oliver say it is a microaerophile or partial tension organism. (Grows best when placed under conditions of partial oxygen tension.)

IMMUNITY.

A man can usually not be reinfected by a woman upon whom he has conferred the disease. The gonococcus only confers a relative immunity to the person who harbors it. Relapses of a given attack are less severe than the initial attack. No immunity, or a very slight one, exists after a cured attack. Subsequent attacks are milder, though they may be even more complicated than the initial attack.

PROGNOSIS.

In the severe cases there is more likely to be a particular infiltration and serious joint disability. Mild cases may result in no disability whatever. There exists a tendency to form adhesions, contraction of joint appendages and surrounding muscles. Osteoarthritis might occur, for at the beginning a focus is present with an area of rarefaction around it or a diffuse infiltration of the articular end of the bone. The infection may spread rapidly to the joint surface itself, and thus destroy the cartilage and invade the interior of the joint, the joint involvement being secondary in osteoarthritis. These cases may go on to resolution without loss of joint motion. Osteophytes and spicules and other thickenings of the periosteum may take place as a result of proliferation and thus limit motion. Complete bony ankylosis may result in cases where the cartilages are completely destroyed. Bone rarefaction appears as a rule within the first few days of an osteoarthritis and never appears in arthritis at any stage. The x ray, therefore, is useful in making a diagnosis. With an absence of rarefaction and only arthritis demonstrated one can be reasonably certain that there will not be any bony destruction or bony ankylosis. Where rarefaction is present the prognosis is not good; bone destruction and some permanent disability are sure to result, because of a primary bone focus of infection. In the most severe cases, arthritis alone may end in fibrous ankylosis.

(To be concluded.)

Efficiency of Oat Protein in Adult Human Nutrition.—H. C. Sherman, J. C. Winters, and V. Phillips (*Journal of Biological Chemistry*, August, 1910) found that in the maintenance metabolism of adults, as shown by nitrogen balance experiments, the proteins of oats and of maize are of about equal nutritive value. This is so whether these proteins make up practically the sole nitrogenous food or are supplemented by a constant, small amount of milk protein.

LOCAL ANESTHESIA.*

A Plea for Its More General Use.

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The subject of anesthesia is ever of interest to the surgeon and modern surgery would be impossible without some way of eliminating pain. While local anesthesia was practised even as far back as the ancient Egyptians, it was never used with any degree of success until the introduction of cocaine in 1884. Cocaine gives an excellent anesthesia, but its toxicity is so great that it is too dangerous for ordinary use. The many unfortunate casualties resulting from its extensive use soon brought local anesthesia into disrepute.

Since the discovery of the synthetic compound, novocaine, however, which has all the advantages of cocaine, with much less toxicity, local anesthesia is gradually coming to the front again, but is not yet receiving the consideration from surgeons in general that its importance deserves. Where it is given a fair trial, it is used extensively. Thus the French surgeon Regnault (1) reports that of 764 operations done on board a hospital ship, four fifths were done under local anesthesia. At the clinic of Narath and Wilms in Heidelberg, in 1911, fifty-four per cent. of all operations were done under local anesthesia (2). J. Shoemaker, of the Hague, reports 6,000 cases in which he injected novocaine (3). In this country, too, men who have taken the time and made the effort to master its technic use it extensively. Among these men are Farr, of Minneapolis (4), Wiener, of New York (5), Bevan, of Chicago (6), Lahey, of Boston (7) and many others. Cunningham, of Boston, recently reported 500 herniotomies, which he did under local anesthesia (8).

Why should local anesthesia be more generally used by the surgeon? In the first place, there are many patients requiring surgical treatment in whom a general anesthesia is absolutely contraindicated. In this class are those with heart disease or defective kidneys; those suffering from extreme shock or whose vitality is at low ebb from other causes; patients suffering from inanition, as from stricture of the esophagus, and the very old. The oldest patient operated upon under local anesthesia by the writer was a woman eighty-two years old, with a severe myocarditis and endocarditis, who was suffering from an acute strangulation of a femoral hernia. She made a good recovery and lived to be eighty-five. In this class of patients, local anesthesia is distinctly a life saving measure. To unnecessarily add another toxin to a patient already saturated with infection, or who is a bad risk from other causes, is just about as bad as to introduce a new infection through careless sterilization of the instruments. The one is as unnecessary as the other.

In the second place, among those patients in whom there is discovered no contraindication to general anesthesia before operation, a certain num-

ber nevertheless succumb to the anesthetic. Although this number is small, it is by eliminating a few fatalities here and there that we reduce our death rate to a minimum. This includes not only those who do not survive the operation, but also those in whom there develop later complications directly due to the anesthetic, such as aspiration pneumonia and delayed chloroform poisoning.

In the third place, much of the so-called post-operative discomfort is due not so much to the operation as to the anesthetic. If a patient is given ether for one hour without any operation at all, he will suffer from nausea, vomiting, distention, and possibly heart weakness for some time; and when a patient is very near the borderline between life and death, the added strain to the body of the general anesthetic may change the result from a favorable to an unfavorable one, to say nothing of the added discomfort to the patient. There is great satisfaction in returning a patient to his bed smiling and in good spirits, ready for his next meal, instead of presenting the horrible picture that is so common in our surgical wards. Furthermore, many patients have a dread of passing into a state of unconsciousness and often it is possible to persuade a patient to have a necessary operation done under local anesthesia who otherwise might refuse to be operated upon at all. And finally, local anesthesia allows the surgeon to take his time, operate deliberately and carefully, and stop at any time that may be necessary.

What are some of the disadvantages and limitations of local anesthesia? Like all other surgical procedures, it must be used with good judgment and in suitable cases. Certain operations, such as extensive explorations, cannot be satisfactorily done under local anesthesia, but their number is diminishing as the technic is being improved.

Nervous patients often dread the possibility of suffering pain and consequently are too ready to react to a sensation of any kind, even if not painful. However, if the confidence of these patients can be secured and they are assured by other patients who have been operated upon under local anesthesia that there really is no pain, they too can be operated upon successfully in this way, especially after the administration of a sedative. In young children local anesthesia is difficult, although some men report that it is no more difficult than in adults.

Operations seem to take a little longer on account of the time it takes to inject the solution, but when one considers the time necessary to anesthetize a patient with ether, it really does not take any longer to operate with local than with general anesthesia.

Tissues must be handled gently, and while this may be a disadvantage to the surgeon in some cases, it is a distinct advantage to the patient and a check on the work of the surgeon. It requires that the surgeon keep himself well under control, show no sign of nervousness, and by his quiet behavior keep the patient from becoming excited. Not all men are adapted by disposition for this kind of work, and in any case it is more trying to the surgeon. However, when we consider the great advantage of local anesthesia to the patient,

*Read before the Buffalo Academy of Medicine, October 1, 1919.

these objections should not deter us from using it.

Before taking up the subject of technic, let us consider the pain sensations of the various tissues of the body. In the following table these are placed under three headings: 1, those with no sensation; 2, those with slight sensation, and 3, those with very acute sensation.

No sensation.	Slight sensation.	Acute sensation.
thoracic organs	except when traction applied	skin
abdominal organs	mesentery	pleura
visceral peritoneum		parietal peritoneum
kidneys		mucous membranes (near orifices)
ureters		{ capsules
thyroid gland		{ covering them
lymphatics of neck		
esophagus	connective tissue	blood vessels, while covered with connective tissue
trachea	muscles	
brain	fascia	
piaraarachnoid		
dura (convexity of brain)	dura (lower part)	
bone		periosteum
cartilage		perichondrium
neoplasms		tendons
granulations		

A study of this table shows that abdominal operations require anesthesia of the abdominal wall only, provided no traction is made or the mesentery divided; that the same is true of the chest; that bone, cartilage, thyroid gland, lymphatic glands, brain, and neoplasms can all be painlessly operated upon, provided their coverings are anesthetized.

Of the various forms of local anesthesia only the two most important, infiltration and conduction anesthesia, will be considered here. In the former the anesthetic solution is injected at the point of operation; in the latter at some distance from it, the so-called nerve blocking.

Infiltration is the simplest and best method in most operations, but occasionally a combination of the two is necessary. Exact nerve blocking, i. e., injecting directly into the nerve supplying the operative area, is too difficult and uncertain for ordinary use, and, furthermore, is unnecessary in most cases. Where it is necessary, it is better to infiltrate the region through which the nerve passes rather than attempt to "spear" the nerve itself.

As already indicated, the discovery of novocaine made local anesthesia a safe procedure, and it is still the anesthetic of choice. Since the war it is manufactured in the United States under the name of procaine, which is identical with the original novocaine. Of the many other agents on the market, the writer has had experience with only one, apothesine, and it has given just about as good satisfaction as procaine, although Sollman, in a series of experiments, found it only one fourth as efficient (9).

The use of epinephrine in combination with the anesthetic has made local anesthesia even more safe and efficient. When combined with the anesthetic in strengths of one in 200,000 to one in 500,000, it causes just enough vasoconstriction to keep the anesthetic from entering the general circulation too rapidly, thus prolonging its anesthetic effect and lessening its poisonous effect. The epinephrine may be added to the solution, or it may be procured in combination with procaine or apothesine in tablet form. This latter is the best way to make the solution, as the tablets do not deteriorate, are easily handled, and the solution may be sterilized

without diminishing its power. Procaine is used in one half to two per cent. and apothesine in one to two per cent. solutions. In these strengths there is no danger of any toxic effects, except where exceptionally large massive infiltrations are made. These solutions should be isotonic, consequently the lower percentages are best made up with salt or Ringer's solution.

The preoperative treatment and technic for an operation under local anesthesia that have proved most satisfactory to the writer are as follows: The patient enters the hospital the night before the operation and is given fifteen grains of triple bromides and five to ten grains of veronal. Forty-five minutes before the operation, which is usually done early in the morning, one quarter grain of morphine is given hypodermically. The patient is taken to the operating room quietly, preferably on the operating table, and great care is used to make him as comfortable as possible. If the patient does occasionally complain during the operation, it is usually not from any pain at site of wound, but rather from backache or other aches caused by his position. The assistants and nurses are instructed not to speak loudly and not to rattle instruments or dishes.

Under these conditions about one half of the patients will sleep or doze during the operation. In an extensive goitre operation the writer removed one lobe without waking the patient, then a doctor came into the operating room, started to converse in a loud voice, and awakened the patient. Although she suffered no pain during resection of part of the other lobe, she became restless and complained of backache.

When the patient does not sleep, it is wise to speak to him occasionally, preferably in a jocular way, to take his mind off the operation. One witty old lady of sixty-five kept the operating room personnel in a state of uproar with her funny sayings, while she was being operated upon for a femoral hernia. But it is preferable to have the patient sleep and often a second dose of morphine is advisable.

The needles used in the injection should be of fine bore, twenty to twenty-two gauge, to diminish the danger of injuring bloodvessels, and should be at least two and one-half to three inches long, so that fewer punctures through the skin need be made. For work at unusual angles, a shorter needle should be at hand. The needles must fit snugly and the syringe should be of comparatively small diameter, so that greater pressure may be made. The pneumatic injector of Farr (4) and the selffilling syringe of Bessenes (10) make possible a uniformly continuous stream of solution, but the writer prefers the simple syringes to a complicated apparatus that is likely to get out of order and makes perfect asepsis more difficult.

The first injection is made at one end of the proposed line of incision and this is the only needle prick that the patient should feel. Here a wheal is made. The needle is then pushed along in the subcutaneous tissue close to the skin, always keeping up a continuous injection into these parts. When the end of the needle is almost reached, the point is

again pushed into the skin from below and a second wheel made, through which a fresh puncture can be made without pain. This takes care of the skin and subcutaneous tissue. A series of punctures about one inch apart are then made into the deeper tissues beneath the fascia. The incision can now be made through skin and fascia without any fear of pain.

In an abdominal operation, the peritoneum is next anesthetized by injecting into the subperitoneal tissues, either in the line of incision or on each side of it, after which it may be incised. In other operations, the technic will vary slightly according to the operation, but the principle will be the same. Infiltration layer by layer at the site of the incision is the best and easiest method.

It is impossible to describe in this article the variations from or the additions to this principle and the detailed technic of every operation. Almost all surgical operations have at some time been successfully performed under local anesthesia, including gastroenterostomy, Cesarean section, radical amputation of the breast, appendectomy, and cholecystectomy. Herniotomies and thyroidectomies are particularly well adapted for local anesthesia and it seems too bad to subject these patients to the horrors of postanesthetic nausea, when they can easily be done without general anesthesia.

In conclusion I wish to state a premise and from this draw a conclusion. The truth of my premise, I think, will be admitted by all, even by those who are indifferent to local anesthesia.

It is this. Certain operations can be done under local anesthesia and the lives of patients saved, who would have died had the operation been done under general anesthesia. My conclusion is: It is therefore the duty of every surgeon to perfect himself in the technic of local anesthesia in order that he may be in a position to handle the cases in which it is a life saving procedure.

The only way to acquire this technic is to use local anesthesia in other cases, beginning with simple cases, and leading up to the more difficult and extensive ones. Then, if his experience coincides with that of the writer and of others who have written on this subject, he will not say as one well known surgeon recently said, "Local anesthesia I have no experience with, my time being too much occupied by numerous operations to permit wasting any of it in practising this form of anesthesia," (11) but will consider it his duty to at least allow the patient his choice between a general anesthesia with its dangers and disagreeable aftereffects and a local anesthesia with practically no dangers or aftereffects.

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1196 MAIN STREET.

LONDON LETTER.

(From Our Own Correspondent.)

Registration of Nurses.—London Traffic Problem.—Women in the Welsh Medical Schools.—Annual Meeting of the British Orthopedic Association.

LONDON, November 29, 1919.

Registration of nurses in Great Britain is likely to become an accomplished fact in the near future. Doctor Addison, M. P., the Minister of Health, in the House of Commons a few days ago moved the second reading of a bill to provide for the registration of nurses, and in the course of his speech said that nothing was more important for the well being of the sick and nurture and care of young children than well qualified nurses, and the bill just brought forward was the first step toward placing the English nursing profession on a proper basis. The provision of a register correctly drawn up was necessary.

Doctor Addison expressed the hope that the bill would indirectly do a great deal to improve the nurses' lot, because, he was sorry to say, the payment which had been made to nurses, hitherto, had been on a most discreditable scale, much less even than that of an ordinary cook. At the same time, their training was exceedingly arduous and their hours were very long. The bill was limited to the compilation of a register and the setting up of the necessary authority to compile the register. He thought that the measure represented a common agreement between the parties most concerned. The consultative council was authorized to draw up rules relating to various matters and these would be subject to the approval of the Minister of Health and placed before Parliament. It was provided that for two years after the rules were made any person would be admitted to the register on producing evidence that for at least three years there had been a bona fide engagement of nursing the sick. That would provide that a very large number of nurses who might not have undergone the prescribed specialist training would be entitled to be entered on the roll. The rock on which all other bills had split had been as to how the council should be set up. The permanent council under the bill would consist of sixteen persons, who would be elected by the nurses on the register. A measure of this kind has been needed for some time

and it is to be hoped that the bill will pass. As affairs in this connection stand now, a trained nurse in some ways has little advantage over the untrained one. The latter can dress in a uniform and masquerade as a nurse and no one can say her nay. It is to the manifest behoof of all concerned and especially to the patient that the nurse shall be thoroughly trained. Also a well trained nurse has the right to expect to be adequately remunerated. Nurses' pay in this country is for the most part ludicrously small and, as Doctor Addison pointed out, not at all in keeping with their long training and the trying and responsible nature of their work.

* * *

Mrs. Lloyd George, the wife of the Premier, presided recently at 10 Downing Street, the official residence of the Prime Minister, over a committee interested in the training of medical women in the medical schools attached to the Welsh University of Cardiff. The speakers at the meeting emphasized the importance of strengthening the fund for which to give scholarships and to advance loans to poor students who show exceptional promise after their third year in the medical schools and desire to extend their training. The representatives of the Ministry of Health dealt especially with the need for medical women in connection with welfare work among women and children. The importance of training Welsh speaking girls for medical work in Welsh speaking districts was discussed by other speakers.

* * *

The Annual Meeting of the British Orthopedic Association was held in the rooms of the Medical Society of London on November 14th. The president, Mr. Muirhead Little, was in the chair. Perhaps the most important discussion of the meeting (and as space is limited only a tithe of the discussions can be given) was that dealing with birth paralysis.

Mr. Platt pointed out that up to 1913 the conception of birth paralysis as a supraclavicular injury held undisputed sway. Since that date investigations of various American and Continental authors had thrown some doubt on the correctness of this theory. At the present time he said there were two schools. The first considered that all cases of birth palsy were due to a supraclavicular lesion of the plexus, while the second school thought there was a primary injury of the shoulder joint capsule, with secondary involvement of branches of the brachial plexus in close relation to the joint.

Mr. R. C. Elmslie spoke of the need for orthopedic surgeons to make up their minds on this subject. The nerve theory seemed to him to fall in very well with clinical observations in tracing and following these cases. The cases of birth palsy fell clinically into three groups: those which recovered very quickly, in many cases without treatment; those recovering more slowly, in from three to twelve months; and those which either did not recover at all, or else only partially. He believed the

last named scarcely existed, there were so very few. Those three groups fell in very well with three presumed pathological conditions:

1. That in which there was injury to the nerve not involving rupture of axis cylinder.

2. That in which the nerve injury involved axis cylinder rupture.

3. A condition of injury of axis cylinders with degeneration of their ends. Cases of subluxation of the shoulder he regarded as nerve lesions, with a tendency to recover more or less rapidly; the slowly recovering cases ending in contracture. In these cases he always put the arm in the standard position. He thought the functional loss of the use of the arm was mostly due to lack of external rotation, and for that reason he had used external rotation in the abducted position.

* * *

In prewar times the streets of no large city were safer for the humble pedestrian than those of London. Traffic was enormous, but it was well controlled; and in proportion to the immense number of persons who frequented the streets for business or pleasure the casualties were few. Since the war matters in this respect have changed decidedly for the worse. At the present time London is a dangerous place for the foot passenger and not by any means too safe for those who drive. This state of affairs is known to all and deplored, but although protests have been made on many occasions nothing definite has been done to better the situation. The fatal accident to Lord Brassey a week ago has brought the question of the control of street traffic to a climax and steps are now being taken to discover the causes of the increasing dangers of the streets and to formulate effective schemes to prevent them as far as is possible. While taxicab drivers are not entirely free from blame it is the drivers of private cars who are most at fault, and the worst features of the situation are that the dangers of furious driving by reckless men is great and increasing.

In time of war a vast number of motor cars were placed in the hands of those who went anywhere and everywhere as fast as the car would travel. This was perfectly legitimate and honorable under the then conditions, but the habits thus inculcated seem hard to break, with the result that caution and safety are thrown to the winds, and methods which on the western front were highly commendable are intolerable and dangerous to the life and limb of peaceable citizens in the crowded streets of London and of other big cities. The principle ruling the control of the streets must be safety before speed. Human life is of more importance than rapid transit, and if the two are incompatible, then rapid transit must go. The street accidents of London have increased largely during the past few years, and in a subsequent letter I will send figures to show that to the pedestrian, in particular, the perils of the London streets are obviously evident and call for reforms either to be brought about by the force of public opinion or to be compelled by adequate penalties.

Editorial Notes and Comments

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WOOD ALCOHOL.

Blindness and death have followed the use of methyl alcohol as a beverage. A dangerous substitute has been used by the habitues of ethyl alcohol with disastrous results. The cravings of a group of people deprived of the liquor to which they had become accustomed were temporarily satisfied. Perhaps the reserve liquor stocks of the more provident prevented the disaster from being more widespread. Generally speaking, it has been predicted that some way would be found whereby the constant desire for alcohol would be appeased. This is just the beginning. Other substitutes will crop up and replace the now illegal alcoholic beverages.

Apropos of the subject of drink control and a proposed solution of the question from a British point of view is the article appearing in this issue of the NEW YORK MEDICAL JOURNAL, by the Rt. Hon. Lord D'Abernon, who has made an extensive and careful study of the question and presents a scientific solution for the problem of drink control. He recognizes the dangers of complete prohibition, without taking into consideration the more dramatic incidents that have occurred in the past few days. Many physicians feel that complete prohibition is not a satisfactory basis for drink control. Some of them have advocated the abolition of the more concentrated spirits, allowing the use of beer and light wines. They insist that a complete and sudden curtailment of alcohol would lead to the illicit

manufacture and distribution of dangerous substitutes, where an attempt would be made to produce a highly efficient reaction in a small quantity of liquor. Their deductions were based on observations of communities where complete prohibition had been in effect for some time. Underground channels for vile concoctions were created and the health of those who patronized these illegal money making institutions was injured. The perilous lone drinker was created. Drinking for the sake of sociability was destroyed, but the substitute proved more dangerous. The seekers of solace found illness and misery; the law had taken away their former source of joy and had given them nothing to replace it. These lonely beings in a blind reaching had found the poison bottle, even as the child in the absence of its parents finds the forbidden bottle in the cupboard.

Coming back to the concrete, if somewhat sor-
did, realities of what occurs in the event of poisoning from wood alcohol. This subject will be fully covered by Dr. S. Dana Hubbard, of the Bureau of Public Health Education of the Department of Health, in a specially prepared article which will appear in the NEW YORK MEDICAL JOURNAL next week. The subject is completely covered in this paper and we shall not attempt to do more than call attention to some of the salient and important features concerning the symptoms of wood alcohol poisoning.

The severity of the intoxication depends largely upon the quantity consumed and the resistance of the individual. The victim will suffer from vertigo, nausea, gastric pains, muscular incoordination, malaise, and befogged cerebration which may assume varying forms. This is followed by disturbances in vision. More severe states of intoxication may be manifested by sudden blindness, with the pupils widely dilated and not reacting to light or accommodation. The respiration is slow, the pulse is weak. Delirium may be followed by unconsciousness, merging into coma, and finally death ensues.

The characteristic feature in cases which do not terminate in death, emphasized by Doctor Hubbard, is the occurrence of total blindness. The vision may be partially restored and then be followed by blindness of varying degree. In this way the clinical picture varies from that of any other form of intoxication.

In experiments upon the lower animals it was found that minute doses of methyl alcohol were

extremely toxic and that they tended to have a cumulative effect. The disastrous effect was supposed to be due to the fact that the alcohol was only partially oxidized in the body and led to the formation of formic acid, which was markedly toxic.

The treatment is limited, as no known antidote is available and only symptomatic treatment can be administered. This consists of thorough evacuation of the alimentary tract and soothing the stomach by the administration of oily emulsions. Dr. A. H. Brundage, after an extensive experience, recommends the following: Siphonage of the stomach, cold affusions to the head, cardiac stimulants, inhalations of oxygen, injection of pilocarpine, the application of external heat to the body, moist heat over the kidney region, rectal enemata of hot coffee, and normal salt solution.

The problem of alcohol consumption will not be solved by prohibition. In the meanwhile we are confronted by one of the sequelæ and are obliged to do all we can to treat the victims. This should not prevent us from attempting to seek a remedy for the conditions which will be brought about when strict prohibition goes into effect and the private reserve of alcoholic beverages will have been consumed.

INSANE SOLDIERS IN CANADA.

The unfortunate beings who in civil life become afflicted with some form of mental disturbance command great sympathy from friends in their immediate environment; and governments are constantly striving to provide competent medical and nursing supervision for these people and in various ways to ameliorate their lot in life. Humane methods in dealing with these unfortunate are now generally adopted everywhere.

Public sentiment in Canada demanded that those soldiers who were returned to Canada mentally afflicted should receive the very best the country could present. War has not brought out anything special in the way of novel symptoms or syndromes, for it has been found that in the army these are practically the same as in civilian life. It did, however, result in the collection of a large amount of clinical observations, which, when analyzed and collated, will surely stimulate interest in many psychical disorders. In fact it is safe to say, judging from both the lay and the technical press, that psychology is today a subject of more general interest than it ever was before.

The military method of dealing with the mental or psychical patients should engage the attention of civilian authorities. In the latter instance there is considerable medicolegal form required before admission can be obtained into a hospital for mental diseases. Often days elapse before a patient is finally admitted. In the army admission is as easy as for one with pulmonary disease or typhoid fever. A revolution in this respect, with the increase of insanity in Canada, must be brought about before there will be any appreciable decrease in the incidence of insanity in that country.

There is only one military hospital in all Canada for the admission of psychopathic soldiers—the Coburg (Ontario) Military Hospital, which has accommodation for 425 patients. These are generally received from other military hospitals, and the command at Coburg takes charge of the overseas cases at the port of embarkation. All documents are ready the moment the patient arrives at Coburg in charge of a medical officer. Immediately the patient is put to bed and remains there until seen by the doctor; he is not allowed to go about if he exhibits any manifestations of insanity. In this hospital there are no bars, no padded rooms, no straitjackets, nor soundproof rooms. Instead, there is full equipment for medical and surgical services. In addition there are dentists, x ray, electrical, and hydrotherapeutic apparatus as well as appliances for medical gymnastics—designed, in fact, to represent a civilian general hospital.

In the Coburg institution there are seven medical officers on the staff, Major E. H. Young being in charge. Nurses are on duty day and night. Here is a general hospital for mental diseases, with a possible population of 425, with seven medical officers, which, when contrasted with other mental hospitals' throughout Ontario, satisfies the Canadian people that the Government is doing everything possible for their care and treatment; for the average medical officer in the provincial hospitals for the insane has anywhere from four to six hundred inmates to attend. It is even better than this, for the population of Coburg hospital is at the present time about 236. Employees of the Canadian soldiers' civil re-establishment conduct occupation courses. These embrace bedside work, ward work, and employment in the workshops. Patients progress from lower to higher grades. Melancholy is prevented thereby. In addition to the medical officers, there are two dental officers, and they are kept busy. Canadian hospitals have not as a rule any

dentists on their staffs; and some of them have as many as 1,200 patients. It appears that much public interest is directed to this hospital. To prevent institutionalism, free mingling with the public is encouraged. No patient is discharged as fit to go back to civil life until the opinion of the staff is given. Four hundred patients from this institution have been sent back to civil life, although about eight hundred have been boarded. To date twelve hundred patients have been admitted and cared for, and there has not been a case of suicide, homicide, or other manifestation.

Does not this splendid record point the way to the provincial hospitals for the insane in all Canadian provinces, and to the general hospitals of the country as well, to provide a department of psychiatry? Can the provincial governments of Canada hesitate to reform their methods of admission and treatment? Can those in charge of civilian institutions any longer complain of the apathy of the general public in their work? Can they afford to remain recluses with their patients? Their plain duty is to excite interest in their work in the hearts and minds of the general public in their immediate communities. It is the government's duty to provide the wherewithal.

THE DEGENERATE HYSTERIC.

Hysteria and degeneration, which are frequently prominent in medicolegal affairs relating to responsibility, are still more frequent when associated in the same individual. From the nosological point of view the association of degeneration and hysteria occurs in various degrees, each one of the two morbid states preserving its own characters in the ensemble. As a general rule the intensity of both states is the inverse of each other, the hysteria becoming attenuated as the accentuation of degeneration progresses. From the medicolegal viewpoint, degenerate hysterics constitute one of the most important elements in modern medicolegal expert examinations. Out of a total of thirty-eight cases collected at random by Parau, nine subjects were degenerate hysterics. The crimes most commonly committed by them are, in order of frequency, theft, homicide, and immoral acts. The nature and characters of the crime will vary with each case, according to the predominating morbid state. The expert will generally conclude that there is more or less attenuation of the subject's responsibility, but few will be the cases where absolute irresponsibility can be admitted. It may be said that the degree of responsibility is proportional to the degree of degeneration much more than to the degree of the hysteria.

The majority of these individuals are discharged or are acquitted at trial; the courts taking into consideration the mental disturbance of these subjects will order them to be placed in an asylum. The others are condemned to some slight penalty but during their term in prison they are likely to offer evidence of their neurological accidents, in which case they should be removed to a proper institution for their care.

Whether these persons are condemned or hospitalized, the public is still insufficiently protected against these subjects, who are generally essentially and progressively dangerous socially. They receive their discharge from the hospital where they have been confined with far greater ease, on account of their lucidity, than is the case with other insane. This state of affairs should be remedied by proper legislation if society is to be efficaciously protected against these and other forms of degenerates.

EACH AFTER HIS KIND.

The practice of medicine is largely a practice of mind upon mind, and the family physician is frequently chosen not because of his schooling or his scientific knowledge but for his agreeableness, his jollity, and his power to fit into the nature of his client. There are many types of human nature, and not every physician can fit himself to the various sorts. When, however, he can be all things to all persons, he becomes, with comparatively few other qualities, a man of large practice. On the other hand, if he is a most gifted and highly educated man, but does not have the ability of making himself agreeable, it is not likely that his following will be large. Eccentricity sometimes seems to help build up a practice. It may be a good advertising card to be known as uncouth or unapproachable though, unless there is considerable professional skill or social introduction behind it, it does not always produce the desired result.

Most of us must fit in with our kind. It follows, then, that in those groups where there are many of a kind there is room for large followings, while in those smaller circles comprising people of experience out of the ordinary, the clientele of the man of like type is bound to be limited. The physician for the smaller group need not feel that he is a failure if the multitude does not flock to him, though his pocketbook would be fuller if they did.

Fortunate is the man who can be all things to all men, but the medical man who cannot be such a universalist need not be chagrined if his following is small. He can do better work for the few than he could for the many. He need not be a busy practitioner who is usually too busy to make thorough examinations, and certainly too busy to do more than offer a prescription and then pass on to the next case. There are compensations in being limited in our ministrations to our own kind.

PIGS AND PEOPLE.

In viewing the sights of a western city we came upon a building which rivaled, in size and architecture, the Carnegie library of the place. It was the Poland China Registration Association. On investigation we found it to be the headquarters of a society interested, neither in the Chinese nor in the Poles, but in pigs. For the sum of one dollar the proud possessor of a porker of this peculiar breed can have the name, the date and place of birth, with the names and official numbers of parents, grandparents, and great grandparents recorded and kept in a mammoth safe deposit vault. In the same state there is, however, no such thing as registration of the birth of children. The association does more for pigs than simply register them. It issues a magazine of from three to four hundred pages which aims to arouse interest in this brand of pigs. It is full of helpful hints as to feeding, exercise, cleanliness, and protection from disease, even down to the prevention of flat feet in pigs that are being fattened. Even fretfulness is taken note of and its cause removed. It is also recommended that the hog be weighed very week or two to find whether he is doing well.

All of which leads one to remark that pigs are pigs but people are peculiar. Of course a pig may be worth as much as twelve thousand dollars, while the human is not usually valued at more than five thousand dollars. Great care is taken (and apparently on the best of grounds) to have pigs, sheep and other animals brought to their best condition prior to breeding. The breeders say it makes a vast difference in the product. The human animal takes no such foresight, but depends on that will-o'-the-wisp process known as physical education to correct the defects in the brood. Further comment on the relation of hogs and humans would seem superfluous. It might be said, however, that the common comparisons of the two animals, which have crept into the language of one of them, are either ignorant or intentional slurs upon the more humble of the two, for pigs prefer to be clean when it is possible, and do not eat more than they can manage. Domesticated, they must do as the disturber of the law of their normal existence makes necessary.

THE SEMI-ANNUAL INDEX.

It has been our custom to publish a semiannual index in the last issue of the volume. Under ordinary circumstances, the index would appear in this number of the NEW YORK MEDICAL JOURNAL. Due to the upset caused by the printers' strike and our efforts to reestablish the JOURNAL on the old basis, with the additional original material we have been publishing, it is impossible to incorporate the index in the present issue of the JOURNAL. We have, therefore, decided to print a limited number of copies of this index and send it only to those of our subscribers who are interested. Anyone, therefore, who is desirous of obtaining a copy of our semiannual index will please address a postal card to the Editorial Department.

News Items.

Major General Gorgas Honored.—Major General W. C. Gorgas has been elected an honorary member of the National Academy of Medicine of Peru.

Soldiers Freeze in Hospital.—Seven hundred soldiers of Kolchak's army are reported by a press dispatch to have been found frozen to death in a hospital near Omsk.

Bellevue to Be Heated by Oil.—Bellevue Hospital will take no more chances with coal shortages but will use oil for heating and power purposes. Plans have been filed with the Manhattan Building Department for installing four fuel tanks on the grounds near the river which will have a capacity of 20,000 gallons of oil.

Patient Shoots Doctor at Hospital.—Dr. John F. Rooney, of the Public Health Service, was shot three times on December 20th in Washington, D. C., by Walter S. Holbert, a former soldier and a patient at Providence Hospital, where Doctor Rooney had attended him. Unless complications occur, the physician is expected to recover. The hospital authorities said Holbert's act probably was due to the effects of shell shock.

Schools at Fort McHenry Hospital to Go?—Colonel Henry Page, commanding officer at Fort McHenry Hospital, Maryland, is to be transferred on January 1st to the army general hospital at Denver, Col. It is reported that Colonel Page is endeavoring to have the majority of the educational and vocational schools now in operation at the fort transferred to Denver, where facilities are such that the schools can be improved upon.

Personal.—Dr. Ralph R. Fitch read a paper on December 17th before the Rochester, N. Y., Pathological Society on Osteomyelitis, recounting his experiences with this disease as an orthopedic surgeon for many years.

Dr. David R. Melen, of Rochester, is taking graduate work in urology at Brady Institute, Johns Hopkins University.

Dr. M. J. Schoenberg has been appointed adjunct consulting ophthalmologist to the Presbyterian Hospital, New York city.

Dr. A. Strachstein, 17 East Thirty-eighth Street, New York, has been appointed instructor in Urology in the medical school of Columbia University.

Social Hygiene Motion Picture.—A new motion picture entitled *Some Wild Oats* and dealing with the venereal disease question has been released with the approval of the New York City Health Department. The picture was made under the auspices of the health department and with the aid of the U. S. Navy recruiting division. In one of the reels Commissioner Copeland is shown at work, and the film also shows what the health department is doing to stamp out the menace of venereal disease in New York City. The producers aver that *Some Wild Oats* is a clean production and teaches a "wonderful lesson without preaching." It will be shown in regular theatres throughout the country.

Rochester Clinic for Group Medicine.—The Rochester Clinic, formed for the practice of group medicine by Dr. R. R. Fitch, Dr. H. L. Prince, Dr. M. B. Palmer, Dr. D. A. Haller, and Dr. L. M. Ossman, has opened offices at Rochester, N. Y.

Eight Die in Hospital Fire.—Eight patients of the Connecticut Hospital for the Insane, Middletown, are believed to have been burned to death in a fire which destroyed one of the frame buildings of the hospital group, a mile east of the main building, on December 23rd. Forty-five patients escaped.

Philadelphia County Medical Society.—The South Branch of the County Society has elected the following officers: Chairman, Dr. A. I. Rubinstein; vice-president, Dr. H. B. Schmookler clerk, Dr. Louis Edeiken. The Kensington Branch has elected Dr. G. Harvey Severs, chairman; Dr. George C. Yeager, vice-president, and Dr. William N. Ferguson, Jr., as clerk.

Improvements for Kings County Hospital.—Improvements which will cost approximately \$30,000 are being planned for the Kings County Hospital by Commissioner of Charities Bird S. Coler. The chief items are a new dormitory for female employees, an addition to the nurses' home, remodeling of the main operating room, erection of an incinerator plant, and construction of an addition to the refrigerating plant.

Australasian Medical Congress.—A meeting of the Australasian Medical Congress will be held in Brisbane in 1920. Topics to be discussed are the possibilities of white settlement in tropical Australia, the work done at the newly established Australian institute of tropical medicine, the control of venereal disease, military surgery and hygiene, the dispute between the medical profession and the lodges, and the adjustment of health administration between the commonwealth and the States. All the Australian States and New Zealand will be represented at the Congress.

Hospital Ship Launched.—The United States hospital ship *Relief*, believed to be the first of its kind constructed for that purpose, was launched on December 23d at the Philadelphia Navy Yard. The *Relief* is of 10,000 tons displacement, is 483 feet long, and has a speed of sixteen knots. Congress appropriated \$3,250,000 for the hospital ship and work was started early in 1917 but was abandoned during the war. The ship is to carry 500 beds, and is equipped with operating rooms and field hospital equipment. She is divided into wards and will carry a complete medical staff of officers, nurses, and hospital corps men besides the crew.

Wants Health Job Back.—Dr. Bernard Rein has applied to the Supreme Court of Brooklyn for a writ of mandamus requiring Health Commissioner Copeland to appoint him industrial medical inspector, second grade, at \$1,500 a year. Doctor Rein says he formerly held that position but was dismissed in 1913 without reason. He obtained permission to take another examination recently and passed sixth but alleges that the commissioner appointed an applicant with a lower examination mark. Commissioner Copeland said that Rein was purposely let out because he was dismissed for disobedience to orders.

Department of Health for South African Union.—A new public health act for the Union of South Africa establishes a department of public health, which shall be under control of a minister and in respect of which there shall be a government portfolio of health. The act provides for the establishment of an advisory council of public health, consisting of the minister as chairman, the chief medical officer, and seven other members to be appointed by the governor general four of whom must be medical practitioners.

Ask State to Aid Industrial Cripples.—The committee on education of the New York State Reconstruction commission at a recent conference decided to urge the State to inaugurate immediately a policy of caring for men and women crippled through industrial accidents or otherwise. A committee was appointed to draft proposals for the legislature's consideration and to map out a program of rehabilitation. This is to be carried through irrespective of the federal bill now pending, in which \$1,000,000 is appropriated for the work, an equal amount to be raised by the several States.

Bronx Hospital Appeals for Funds.—The Bronx Hospital is appealing for a contribution of \$100,000 for the completion of a 125 bed institution which will be able to care for approximately 1,500 bed patients, 50,000 clinical patients, and 1,000 outdoor maternity patients annually. Its buildings are now being completed and will be equipped in the spring of 1920 if funds can be raised. The hospital is situated in a district at present entirely without hospital provision. Bronx County at present affords only one bed to approximately 1,800 inhabitants, representing a deficit of seventy-five per cent. in hospital facilities, and many patients in need of immediate hospital care must be driven over miles of rough pavement to Manhattan hospitals, where bed facilities are often secured only after considerable delay.

Monroe County Medical Society.—The annual meeting of the Medical Society of the County of Monroe (N. Y.) was held December 16th at the quarters of the Rochester Medical Association, Dr. Benedict J. Duffy was reelected secretary. Dr. E. G. Nugent read a paper on tuberculosis, recording his experiences as an examiner of candidates for Ray Brook Sanatorium. He gave a comparative study of tuberculosis as it occurred throughout the animal kingdom and described in particular the development of the tubercle bacillus as a pathogenic organism. The discussion brought up the topic of dust as a causative factor in the disease. Dr. John J. Lloyd, superintendent of Monroe County Sanatorium, in discussing the paper, stressed the fact that tuberculosis was a disease of the old as well as the young and that repeated sputum examinations would often clear up the diagnosis in many cases referred for study as cases of chronic emphysema and bronchiectasis in the aged. Dr. Walter C. Allen, recently of the U. S. Public Health Service, described the successful use of the tuberculin reaction in the diagnosis of tuberculosis, especially in cases with physical signs of tuberculosis but without positive sputum.

Oxford to Admit Women.—Oxford University has at last decided to fall into line with other universities which admit women to their degrees. It has been officially announced that in Hilary term next a statute will be promulgated in congregation of the university providing that women may be matriculated and admitted to degrees in the university on the same conditions as men.

Heart Classes for Pupils.—Representations are about to be made to the Board of Education of New York City to provide special classes for children suffering from cardiac derangements. A five year old boy recently fell dead from excitement following a school fire drill, and it was shown that he was suffering from a weak heart. Classes for children with cardiac disorders have been held by the Educational Alliance, Beth Israel Hospital has helped with its social service, and there have been additional classes for children in New York, with gratifying results.

Hospitals Handicapped by Shortage of Nurses.—The problem of securing student nurses for the training schools of hospitals in New York City and the country generally is affording anxiety to hospital authorities. A number of hospitals in sections of the city are reported to have been forced to partially close down because of seriously curtailed nursing staffs. Dr. R. E. Shaw, superintendent of the Long Island College Hospital, is quoted in a published interview as saying that the hospitals of New York City are losing from \$25,000 to \$100,000 and more a year, according to size, and it is impossible for them to meet the situation by increasing the pay of their student nurses.

Public Health Service to Aid Seamen.—A port centre for the aid of seamen is to be established in New York by the United States Public Health Service with the cooperation of the American Red Cross. The centre will be provided with club facilities such as library, reading rooms, and baths. Trained social workers will be on hand and every effort made to have the place as attractive as possible. Experts from the Public Health Service are to examine such seamen as may be ill or in search of medical advice. If a man is found to be suffering with a venereal disease he will be sent to a clinic where he will be given free treatment. If he has any other disease he will be sent to a marine hospital, if hospital treatment should be considered necessary.

New South African Medical Schools.—Construction on the University of South Africa Medical School, at Johannesburg, has been begun, under the auspices of the Johannesburg University College. It is situated in immediate proximity to the Johannesburg Hospital, which has over 500 free beds, and to the South African Institute for Medical Research. The new medical school will be intimately associated with this latter institution. The departments of anatomy and physiology are already working, and there are at present twenty-five first year students. The course of study, which occupies six years, is modelled on that of the English and Scottish universities. South African students will also be able to study medicine in Capetown, where a well equipped school of medicine has recently become part of the university life.

Annual Report of the Surgeon General of Navy.—The annual report of Rear Admiral W. C. Braisted, surgeon general, U. S. Navy, for the fiscal year 1919, covers health statistics to the close of the calendar year 1918 and the operations of the navy medical corps to the close of the fiscal year 1919. During the year 1918 there were 9,307 deaths in the navy. Of these 5,938 were due to disease, 1,158 to accidents and injuries, and 2,211 to casualties in action. Of the 5,938 deaths from disease 5,027 were due to pneumonia in one form or another, as follows: lobar pneumonia, 601; bronchopneumonia, 156; influenza pneumonia, 4,158; measles pneumonia, 112. In spite of the difficulty in giving adequate treatment to the thousands of cases of influenza that occurred among the army contingents on the troop ships, the results obtained may be considered remarkable when compared with those of civilian communities. Out of 129,364 troops transported, 11,385 contracted influenza and 1,040 contracted pneumonia; 733 died. On July 1, 1919, the total of the Medical Corps on active duty numbered 592 officers of the Reserve Force, 865 officers of the permanent Medical Corps, and 315 officers holding temporary appointment, with eighty-two former pharmacists commissioned as assistant surgeons. The report devotes sections to psychiatric work, reconstruction and rehabilitation of the disabled, naval hospitals, and various other topics.

Honors for Medical Men.—The war department announces the award of Distinguished Service Medals to the following British medical men:

Major Generals.—Sir Robert Jones, A. M. S., British Army; eminent orthopedic surgeon and chief of division or orthopedic surgery, British army. Placed at disposal of medical service of A. E. F. his eminent talents and broad experience in standardizing methods of treatment for sick and wounded and took active personal interest in class instruction of American medical officers.

Sir Anthony Bowlby, A. M. S., British army; while serving with the B. E. F. in France devoted his time and energy toward co-operating with and unreservedly placing at disposal of the A. E. F. his eminent talents, broad experience, and knowledge of general conditions in preventing wastage among our forces from wounds and disease.

Cuthbert Wallace, A. M. S., British army; while serving with the B. E. F. in France devoted time and energy toward promoting efficient treatment of American sick and wounded.

Sir Henry Thompson, A. M. S., British army; director of the medical service, 1st British Field Army in France. Placed time and energy at disposal of A. E. F. The sanitary school maintained in his army for teaching front line medical requirements was utilized for instruction of American medical officers sent to him by classes. The observation and experience gained by these student officers under his able supervision and guidance eventually resulted in saving lives of many American wounded.

The Distinguished Service Cross has been awarded to Lieut. Joseph A. Mendelson, Medical Corps, 305th Infantry, for heroism near Ville-Savoy, France, on August 15-16, 1918.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

MISLEADING FORMS OF ACUTE RHEUMATIC DISORDER AND THEIR TREATMENT.

BY LOUIS DE M. SAJOUS, B. S., M. D.,
Philadelphia.

(Continued from page 1040.)

In infantile scurvy the usual cause is a too exclusive feeding with artificial foods or with milk that has been subjected to heat sufficiently to destroy the antiscorbutic vitamins. Recovery may soon take place in early cases after a mere change from sterilized milk or infant foods to raw milk. To alleviate suffering as quickly as possible, however, the specific remedy, orange juice, should invariably be given, the usual amount being one ounce daily in divided teaspoonful doses. In the average case complete relief from the symptoms is thus obtained in a few days, the joint manifestations disappear along with the rest, and striking contrast in the benefit from orange juice, as compared with that from antirheumatic remedies, such as salicylates and liniments, is afforded. In neglected cases, with marked joint changes, a much longer time may be required for recovery. Thus, Kerley has witnessed a case in a child eighteen months old that had been treated for rheumatism for three months, and whose extremities were swollen to twice or three times their normal size, with entire loss of motor activity. In this case convalescence occupied three months, but recovery was nevertheless complete at the expiration of this period.

In preceding installments of this series a review of most of the clinical conditions likely to be confused with rheumatic fever has been given, and some features of use in differential diagnosis, together with a summary of the therapeutic measures appropriate in each condition, presented. Before concluding the series, a brief consideration of certain disorders recently described for the first time, or some unusual aspects of which have lately been emphasized, seems warranted. Among the rheumatoid affections to which attention was particularly drawn during the recent war was the so-called trench rheumatism, involving, as a rule, the portions of the body chiefly exposed to dampness in the trenches, viz., the lower extremities and back. This condition was ascribed to the prolonged action of cold and moisture during the winter months, and the inflammatory lesion involved was believed by many to be an acute or subacute myositis. Some cases were very obstinate, pain in the muscular tissues affected continuing for several months.

The effect of cold, whether it is produced through direct radiation of heat from the tissues or through dition of the muscles, if of interest when correlative of moisture in inducing such a condition with the observation of Kent, 1917, that in lumbago, sciatica, and neuritis not actually associated with some febrile disease, the temperature

is always subnormal. Kent suggests that in the presence of low tissue temperature certain products of catabolism which could otherwise be held in solution in the blood and disposed of through the usual channels of elimination become deposited or retained in the tissues, thus causing irritation and a series of symptoms which varies according to the part affected. Salicylates and other coal tar derivatives, while more or less effectual in relieving the pains of true acute rheumatism, fail to bring about cure in the other conditions referred to, such agents all tending to lower the temperature still further and hindering absorption of the deposited waste compounds into the blood. Following this etiological conception to its ultimate practical conclusion, Kent strives in the treatment to reheat the blood stream, and relies for this purpose, with asserted success, on free ingestion of olive oil by the mouth, together with liberal use of butter and bacon. Oxidation of the fats thus taken is held to raise the temperature of the blood and thereby secure the desired clinical result. In Kent's cases rapid improvement followed such treatment, relief of the pain, moreover, always being afforded consentaneously with the rise in temperature. Pine wool was also used for local protective purposes in these cases.

The emphasis generally placed on local application of heat in muscular rheumatism—fomentations, hot water bags, poultices, baking etc.—is in apparent relationship to this etiological conception. The recognized influence of excessive muscle activity—coupled with exposure—in causing muscular rheumatism is doubtless exemplified in trench rheumatism, the subjects of this disorder having, at least at certain periods, been engaged in heavy physical labor, thus producing an excess of wastes, which became all the more readily deposited in the tissues. The benefit from massage in muscular rheumatism would thus be accounted for through acceleration of the blood stream, carrying off stagnant catabolic products. Similarly, injections of normal saline solution, as recommended by C. E. de M. Sajous and others, might be expected to afford relief by flushing out the tissues involved. Rest of the parts would seem to be of value not only to obviate unnecessary local pain but also to avoid the formation of additional waste material which would tend to perpetuate the disorder. The administration of alkalies, such as sodium carbonate or bicarbonate, has also been recommended—a procedure the utility of which may, perhaps, lie in that it tends to neutralize the acid wastes set free in large amount during strenuous muscular activity.

After experience with trench rheumatism in the British Army, Comrie, 1917, states that the plan of treatment finally adopted was to keep the patients in bed for two weeks, practise massage on alternate days, give occasional hot alkaline baths, and administer injections of colloidal sulphur into the painful muscles on the days intervening be-

tween the massage days. The colloidal sulphur used was prepared as a one in 1,000 suspension, and was injected in an initial dose of one mil, made isotonic by addition of a solution of sodium chloride just before use. The injections were made at painful points in the affected muscles and continued for three weeks, the dose being gradually raised to two mils where no reaction followed. The marked persistency of the disorder in untreated cases suggests a possible infectious element in the condition, which may conceivably have been reduced by the colloidal sulphur as a promoter of phagocytosis. Schmidt, 1916, notes that some persons are unable to acquire tolerance to gymnastic exercises, and myalgia always develops upon exertion. Such a myalgia one would expect to be merely temporary, whereas in trench rheumatism the pain was often obstinate. Yet, according to Schmidt, myalgia resulting from functional use of a muscle is not always relieved by rest. At all events, simultaneous action of cold and activity seems probable in the causation of trench rheumatism, and while participation of an infectious factor might appear to be a reasonable possibility, definite evidence of such participation has not been obtained.

(To be continued.)

New Fields for Cardiac Surgery.—H. Vaquez (*Bulletin de l'Académie de médecine*, October 7, 1919) notes that Delbet and Donay have shown that the benefit derived from Brauer's operation in adhesive pericarditis is not due to relief of tugging by the heart on surrounding structures but to the fact that it allows the lung to slide over the heart during systole and fill the empty spaces it leaves formed about it during contraction. This conception led the author, with Delbet, to attempt similar operations where heart action was hampered by other pathologic conditions, e. g., extensive pleural adhesions, fibrosis of the lung, etc., which frequently cause permanent dilatation of the organ, especially on its right side. Mobilization of the sternum and anterior portions of the ribs, as in Brauer's procedure, results in reduction of cardiac dilatation in such cases, and a patient reported seven years ago, in whom severe heart insufficiency due to recurring pleurisy had been overcome by the operation, has since remained in good health and been able to engage in fatiguing occupations. Hirtz has even proposed the use of this operation in the exhausted heart, no longer able to improve its tone under drug action, and with immobilization of the surrounding lung tissue—a condition readily detected by x ray examination. Operations on the heart itself do not seem practicable in valvular insufficiencies, whether auriculoventricular or arterial; but in marked valvular stenosis there appear to be distinct possibilities of surgical relief. A suitable case would have been one seen by the author with Tuffier some years ago, in which mitral stenosis had so raised intrapulmonary blood pressure that the second pulmonic could be heard at a distance; in this case, however, the operation was not performed, and the patient died a few

months later of lung infarction and hemoptysis. In arterial stenoses, resection of the sigmoid leaflets might be attempted if the stenosis were not due to changes in the vessel itself. In mitral stenosis, possibilities would seem to lie in some procedure other than operative work directly on the margins of the valvular orifice. Hope from new procedures along these lines is all the greater in that technic has been greatly advanced in recent years. The proper routes of access to the heart are known, and likewise the means of suspending the circulation during the period required for the operative procedure. War experience has completed our knowledge of cardiac and vascular suture. Coupled with persistent laboratory experimentation all this seems destined soon to result in extension of the field of heart surgery to disorders hitherto considered exclusively medical.

Treatment of Placenta Prævia.—George W. Kosmak (*Surgery, Gynecology and Obstetrics*, December, 1919), states that there are many unsolved problems in obstetrics, among them the one demanding attention is the one of placenta prævia on account of the deleterious effects on the mother and the unborn child. It may cause the most serious accidents, and in the less marked forms constitutes a source of potential danger. The suddenness of the onset, and the necessity for quick action, calls for an exercise of judgment greater than that of any other complication. Abdominal Cæsarean section has been advocated, and is of value in a limited number of cases. Braxton-Hicks's version with perforation of the placenta and the use of the fetal thigh as a tampon is being discarded except in emergencies. The dangers are hemorrhage and shock, sepsis and embolism. In a primipara with a rigid and slightly dilated cervix with the child at or near term, in good condition and the probability of a central placenta the best method is an abdominal Cæsarean section. The majority of cases do not conform to this, for the placenta is usually placed so that only a portion of the organ is in the region of the internal os and hemorrhage is not marked until the uterus is well dilated. Even in these cases the bleeding may be extensive, as the lower uterine segment in multipara separates easily from the placenta. The first consideration is to stop the hemorrhage. The vaginal pack offers a ready solution. This pack becomes saturated with blood and allows for a collection of clots above the packing without control of hemorrhage. The pack acts as a stimulus for uterine contractions and as the membranes are often unruptured the presenting part is not satisfactorily forced down against the bleeding area in order that it may act as a check. The use of the elastic bag has many advantages. The compression, however, is not direct because the soft placental mass remains interposed between the bag and the uterine wall allowing for more or less continuous bleeding. The introduction of the bag also causes bleeding by the separation of the placenta during insertion. If strong labor pains are not induced the bag is not firmly held against the placenta unless traction is applied. The object is to bring about gradual dilatation of the cervix without laceration, to reduce the possibility of hemorrhage as much as

possible, to avoid septic infection and to deliver a living child. The amount of bleeding undergone in most cases before delivering results in a degree of fetal asphyxia. Sepsis usually occurs from the weakened resistance caused by hemorrhage and by manipulations and lacerations. Control of hemorrhage during the process of dilatation is the important indication and this is done by extra-ovular introduction of the bag. In using this method the patient is prepared by shaving the vulva, scrubbing or the application of iodine. She is then placed in the lithotomy position. A large size Voorhees bag is folded upon itself and, held by an introducer, is inserted directly into the cervix, preferably on the side away from the placenta. The bag is distended after the greater mass of the bag has entered the os. The clamp is removed and warm sterile water slowly injected so the bag adjusts itself in the direction of least resistance, which is usually under the membrane rather than the placenta. Two fingers of one hand should be kept in the vagina so as to guide the inflating bag, otherwise it may be displaced into the vagina rather than find its way into the lower uterine cavity. As soon as the distention is completed the stem is firmly tied and placed in the vagina. It is not necessary to have it project from the vulva or attach a weight to it, as this increases the danger of infection and laceration. Pains, if not present, usually begin in an hour and labor proceeds without loss of additional blood. The patient must be watched carefully and a vaginal examination made every two hours. If bleeding reappears an examination must be made for it usually denotes an expulsion of the bag. Where engagement and descent are prevented, a version with breech extraction may be considered, but it is better to allow a normal delivery. The deep cervical tears cause more hemorrhage than the placental site. Bleeding may occur immediately after the delivery of the child, but it is thought advisable to conserve the patient and immediate expulsion of the placenta is advocated followed by the injection of one or two c. c. of pituitrin, or ergot by mouth.

Cæsarean Section.—Edward P. Davis (*Surgery, Gynecology and Obstetrics*, December, 1919) states that the indications for Cæsarean section have been greatly enlarged and the profession has had an extensive experience with this operation. It avoids suffering and delay of parturition, the disturbance of rest and uncertainty for the operator, and gives most favorable time and circumstances for the operation. The operator has the choice of three procedures: First, the placing of the mother on a restricted diet, with careful hygiene, with the hope that the fetus may become proportionate to the shape and size of the birth canal and that successful spontaneous labor will result. The second is the induction of spontaneous labor at such a time as might seem most advantageous. The third choice lies in promoting the nutrition of the mother and child in the highest degree throughout pregnancy and at its termination performing elective section. The advantages are the vigorous condition of the child, an uninjured and unwearied mother and relief from uncertainty and delay. The obstetrician takes

great responsibility in advising elective Cæsarean section. Where the lives of the mother and child are not endangered operation is not advised. In performing elective section care must be taken to secure effective drainage for the lochia. This is not necessary when the body of the uterus is removed, but it is well to see that the cervical canal is sufficiently open to give exit to such fluid as may accumulate in the upper portion of the stump. Where hysterectomy is not done some operators content themselves with passing one or two fingers from above downward through the cervix when the uterus is emptied. Others pass a large sized solid dilator, while some dilate the cervix with the finger, pack the body of the uterus with iodoform gauze and bring the end of the gauze through the cervix into the vagina. This is considered the safest and most efficient procedure. The presence of the gauze acts as a stimulus to uterine contraction. The cervix dilates sufficiently to give free exit to retained material and the removal of the gauze forty-eight to sixty hours after the operation has not been painful or dangerous. Recovery from elective section is often more speedy and complete than after fatiguing and tedious labor. Morbidity is no greater than after any other operation of equal importance.

Exophthalmic Goitre as a Cause of Sterility in the Female.—Raoul Blondel (*Bulletin de l'Académie de médecine*, October 14, 1919) comments on the unusual frequency of Graves's disease in women, and likewise even in men, in France under the recent war conditions. This is ascribed to the unusual exposure to emotional factors, such as prolonged anxiety and violent mental stress. The most frequent cases are those lacking one or two of the four cardinal features of the disease, viz., exophthalmos, tachycardia, tremor, and goitre. The presence of two of these features, in the absence of any organic disturbance elsewhere accounting for them, suffices for a diagnosis of "fruste" or incomplete Graves's disease. Even in this form, the disorder brings about various and variable trophic changes, one of the commonest of which, among women, is atrophy of the uterine muscle. This often occurs in the absence of any menstrual flow, though most cases of exophthalmic goitre do show a reduction in the menstrual flow, which may pass into complete amenorrhea. The uterine atrophy of Graves's disease is a direct factor in sterility. The condition should always be sought for, in the presence of sterility unaccounted for by local causes. The uterus in these cases is small, pearshaped, or with an exaggerated conical shape, the cervix participating in the atrophy. Such participation may, however, be lacking, especially if there is copious leucorrhea, due to overactivity of the cervical glands, which are only an auxiliary factor in the genital functions. Upon bimanual examination the uterus is found either elongated and soft, or narrow or small in general. The treatment consists of reducing thyroid activity by prolonged x ray treatment, resection of the cervical sympathetic, injection of serum from thyroidectomized animals, administration of thymus gland, and palliative drugs such as bromides, arsenic, and cannabis. Of these measures, Blondel has had much the best success with

thymus gland. He uses preferably raw thymus tissue, giving a half of a lamb's thymus daily, chopped up and made into balls with a little flour, butter, and salt, these balls being placed in soup just before it is consumed. In the absence of raw thymus, tablets of dried thymus may be used, but large amounts are required. A warning is issued against giving iodine in amenorrhea of obscure causation. Local treatment consists of massage of the uterus and dilatation by means of laminaria tents or gauze wicks, employed for three or four days at a time once a month or every two months.

Value of Antistreptococcus Serum in Influenza.—W. Hughes (*Lancet*, November 1, 1919) mentions the diversity of results of bacteriological studies of influenza and says that from most of his own cases a diplostreptococcus was isolated, which led him to try the effects of antistreptococcus serum. He concludes from his own experience that there is no doubt that antistreptococcus serum aborted or considerably shortened the course of the disease in patients seen early. The serum also had a marked beneficial effect in cases complicated by pneumonia, and, while no definite statement can be made, it seems very probable that its early use aborted many potential cases of pneumonia. The serum was quite disappointing in those very virulent and fulminating pneumonias which were characteristic of the epidemic. The author suggests that a dose of ten mils of the serum should be given promptly in all cases while waiting for the bacteriological report, although it seems reasonable that it will be of benefit only in those cases showing infection by streptococci. The serum was given subcutaneously and the initial dose was never more than ten mils and in no case was the total given more than forty mils. The single dose was repeated every twenty-four hours when it was found necessary.

Artificial Heliotherapy with the Mercury Vapor Lamp.—Martin du Pan (*Presse médicale*, October 11, 1919) notes that in countries with but little sunshine heliotherapy can be carried out with the mercury vapor lamp, which gives off ultraviolet rays. As some of these rays are injurious they must be filtered by means of a certain quality of glass, which the author discovered the utility of only after trial of a number of specimens. From the start of the exposures, ozone is set free, apparently stimulating the patients' appetite. The exposure should be of ten minutes' duration at the first sitting and increased by five minutes on subsequent days. The lamp is placed at about twenty-five centimetres' distance from the diseased tissues. With more complete apparatus the author was able to have eight to twenty children at a time completely exposed to the rays. Results were especially good in cases of adenitis with sinuses and in deep bronchial or mesenteric glandular involvements. Caution was found to be necessary in tuberculous peritonitis, the rays seemingly acting unfavorably on intestinal peristalsis. Skin pigmentation does not always parallel the benefit obtained. As with true heliotherapy, the treatment is contraindicated in nervous subjects, in active pulmonary lesions, and in heart disease or arteriosclerosis.

Functional Diagnosis of Polyglandular Disease.—C. P. Howard (*American Journal of the Medical Sciences*, December, 1919) presents the following conclusions: That a secondary hyperpituitarism may result from a greatly or rapidly increasing intracranial pressure. That the determination of a decrease in the sugar tolerance in the presence of other symptoms of disturbance of pituitary function justifies a diagnosis of increased activity of the pars intermedia. That the adrenalin conjunctival test may be of positive value in certain cases of dyspituitarism in demonstrating a hypofunction of the chromaffin system. That the subcutaneous adrenalin test was only of doubtful value in both the normal and the diseased cases studied. That both the conjunctival and the subcutaneous pituitrin tests were too equivocal to be depended on for studying the functional activity of the hypophysis. That the internal administration of the pituitary extract of either the whole gland, or the anterior, or the posterior lobes, appears to exert no definite influence upon the symptomatology of the disease.

The Treatment of Lupus Vulgaris.—R. W. McKenna (*Lancet*, November 22, 1919), discusses methods of treatment. He advises against interference in long standing, quiescent cases, and against anything but sedative treatment in cases undergoing active evolution. Methods employed are: 1. Excision of isolated patches where there is little danger of disfigurement. 2. Five to ten per cent. ointment of pyrogallic acid in equal parts of lanolin and vaseline, dressing changed twice a day until pain is severe. Then starch and boric poultices until pain subsides. Repeat alternately until only small patches are left. Destroy these with a silver nitrate stick. 3. Curetting and linear scarification with sharp knives followed by dressing of two grains of ichthylol and one ounce of vaseline repeated every two weeks gives rapid excellent results. 4. Freezing the patch with carbon dioxide snow for one and a half to two minutes usually leaves an excellent scar, but the method is not satisfactory in elderly or in underfed patients. 5. X ray, unless used with extreme skill, is dangerous because of resulting epithelioma. The ultraviolet ray, properly used, gives very good results. 6. Ionization, after rubbing the patch briskly with liquor potassæ to remove the epithelium, is excellent treatment. A pad, soaked in two per cent. zinc chloride or ten per cent. zinc sulphate solution, is placed over the area, and a metallic zinc electrode connected with the positive pole of a battery is laid on the pad. The other pole is attached to a convenient part of the body and two to three milliamperes to the square centimetre of area treated, is applied for ten to twenty minutes. Dress and repeat at fortnightly intervals. This leaves a better scar than any except Finsen's original method. 7. The electrocautery gives the best results in affections of mucous membranes. Anesthetize with cocaine or novocaine, regulate cautery to dull red heat, apply cautery cold, and then turn on current. Make several punctures over the surface. 8 and 9. Tuberculin and salvarsan seem to give only transient relief.

Lumbar Puncture in Syphilis.—P. Ravaut (*Presse médicale*, October 8, 1919) has found by experience that a syphilitic patient will consent to one or two lumbar punctures in the course of his illness but will refuse if repeated punctures are requested, owing to the discomfort entailed. However useful repeated punctures may be, therefore, the fact remains that but one or two can be carried out, and the question arises, under what circumstances shall it be most advantageous to resort to the procedure. From observations in 1,000 patients in different stages of the disease, he concludes as follows regarding the indications for cytodiagnostic study of the cerebrospinal fluid: In any syphilitic presenting nervous disturbance, lumbar puncture will show whether the lesion is accompanied by meningitis; it will also permit, especially through study of the leucocytic formula, of ascertaining the intensity of the meningitis and of following its subsequent progress. In any syphilitic presenting suspicious nervous disturbances or psychic manifestations, lumbar puncture will show whether the condition is of an organic nature or merely neurotic. In a syphilitic free of any nervous disturbance, the physician should practise lumbar puncture to make certain that there is no latent meningeal reaction. Puncture may be urged upon such a patient under two different circumstances. In a patient under complete charge of the physician himself, puncture should regularly be performed in the fourth year, after three years of treatment. If it proves positive, treatment must be continued until it disappears; if negative, puncture should be repeated in the tenth year, general rules as to treatment being followed meanwhile. In a patient merely consulting the physician to find out his condition, puncture should, in the absence of nervous manifestations, be postponed until the fourth year. If he first consults the physician between the fourth and tenth years, puncture should be carried out forthwith, while if he consults him after the tenth year, puncture, while advisable, is less necessary, since after this year over seventy-five per cent. of patients giving positive tests already present manifest nervous disturbances. In a patient with obscure nervous disturbances, in the absence of any evidences or history of syphilis, examination of the spinal fluid will permit of referring to syphilis, in some cases, symptoms which might otherwise have been wrongly ascribed to another cause.

Voluntary Muscular Movements in Cases of Nerve Injury.—F. W. Jones (*Lancet*, November 22, 1919) discusses the information obtained during the war concerning the actions of various muscles and the application of this information to the diagnosis of nerve lesions and to the methods of reeducation. He points out that, aside from its function as a prime mover, the muscle acts as an antagonist, as a synergic, and as a fixation muscle. He feels that too little emphasis is laid on the last three functions in anatomy, as it is usually taught. Over the prime mover function we have voluntary control, while of the other functions we have neither consciousness nor voluntary control. This is of considerable importance in the consideration of results of tendon transplantation, for it is a com-

paratively simple matter to reeducate a muscle with its tendon properly transplanted to perform such movements at a joint as it was intended to do. It is, however, impossible for the muscle to assume the involuntary functions. Hence, while motion at a joint may be perfectly good after transplantation, the strength and precision of the motion may be less satisfactory. As regards the diagnosis of nerve lesions from sensory and motor disturbances, it was frequently found that much more serious damage had been done than simple sensory and motor tests would indicate. This is because of the considerable overlapping of sensory areas by adjacent nerves and because of the ability of neighboring muscles to assume new functions as prime movers. Two reasons for the retention of fairly good movement at joint, in spite of an extensive nerve lesion, are given: 1. The anomalous innervation of certain members of a muscle group; 2. the assumption of the function of a prime mover by muscles which are capable of giving the movement, but with little force. Among other instances, are the following sources of error in diagnosis and prognosis under the second head. 1. Complete division of the musculocutaneous nerve. The elbow is flexed by the supinator longus. 2. Complete division of the musculocutaneous and the musculospiral. The elbow is flexed by the pronator radii teres. 3. Complete division of the ulnar. The fingers are spread and brought together by the long extensors and the flexors. The index finger is adducted to the mid line by the extensor indicis proprius. The two terminal phalanges are extended by the long extensors if the metacarpophalangeal joints remain slightly flexed. Protesting against reeducation by monotonous repetition of certain movements and leading the cooperation of attendant and patient in the performance of voluntary purposive efforts, the author warns against teaching the injured man to use ill adapted muscles to perform the desired movements. Such procedure will mask the true lesion and may deceive the surgeon so that he will not perform the operation necessary to restore the function to muscles thrown out of action.

Methods of Choice in Immunity.—A. G. Shera (*Lancet*, November 22, 1919), presents evidence favorable to the use of streptococcus serum and vaccine. He enumerates five methods for producing immunization against the streptococcus: a, with serum alone; b, with serum followed after a short interval by a full dose of vaccine; c, by a serum in the acute stages, followed by a vaccine when the sub-acute stage has been reached; d, with vaccine alone; e, by immunization *in vitro*. Vaccine was not given in acute stages, save when antiserum was present. Of the series, fourteen, including two septicemias, were unequivocal successes. Four did satisfactorily after surgical interference, and two patients died. Serum from American strains, stored in colored phials, was more satisfactory than English serum, stored in clear phials. The author concludes that serum should be used in toxic cases, and serum plus vaccine in others. He warns against anaphylaxis, and recommends that a small initial dose be given, followed in a few hours by a large dose.

Miscellany from Home and Foreign Journals

Epidermophyton Infection.—James L. Revans (*Military Surgeon*, November, 1919) states that probably many cases of epidermophyton infection are unrecognized in the army and in civil life. The following types are described: 1. Vesicular, grouped, marked itching, sago grains, occurs in hot weather. 2. Squamous, resembles scaling dysidrosis; has central primary lesion; results from confluence of vessels. 3. Pyodermic secondary infection. The essential lesion is given as a vesicle. It is deep seated, of the sago grain variety. There is no erythema around the vesicle. A brownish macule follows its bursting. It may remain discrete, desquamate, and produce a slight scaling. It may produce a yellow-brown keratotic button instead of desquamating, thus forming the hyperkeratosis, or it may become bullous. If irritated or infected, the patch becomes eczematoid dermatitis or results in pyoderma. Location changes the character of the manifestation; thus on the hand the exfoliated isolated vesicle and hyperkeratosis on the heel. The fourth interdigital space is the commonest site because of the ideal condition for the growth. The season of maximum is reached in September, with May the second highest month.

As the lesion occurs on the thighs it is slightly elevated, sharply bounded, red or brown-red or yellow-red, delicately and generally homogeneously scaling area with little if any accentuation of the periphery in untreated cases. It is often bilateral and covers small or great areas. The epidermophyton infects the scrotum, penis, labia, perineum, anus, intergluteal folds, and accidentally the pubes, abdomen, and umbilicus. There are various anomalies as to moisture, redness, white vesicopustulation, and degrees of infiltration, papulation, lichenification, and pigmentation. The perineum becomes rough, thickened and pigmented; the scrotum is red and glazed and its rugæ are obliterated. The penis reacts as it does to irritants and shows redness, slight infiltration, rare scaling and frequent moisture. On the pubes, the disease may readily be mistaken for eczema seborrhoicum and is likely to be multiple. At the anus and anal fold maceration occurs. The area has a dirty white centre and an angry, moist periphery. The condition on the labia, dry, thick with slight scaling and much itching, causes confusion as to eczema and pruritis.

In cases appearing on and between the toes exfoliation followed hyperidrosis and left red surfaces. Fissures were common. In less moist cases lamellated exfoliation occurred, and often there was white soddenness and wrinkling. The lardlike masses between the toes could be detached. Traveling back on the foot the lesion may be dry, with a serpiginous border. The dry vesicular type often became pustular. A cribriform appearance was noted after the breaking of the pustules. Thick, yellow calloses, with superficial scaling, represented another form. At times the nails showed pigmented subungual hyperkeratosis and were thick and dull. The lesions promptly subsided upon the application of Whitfield's ointment.

Cardiac Diagnosis.—Lewis A. Conner (*American Journal of the Medical Sciences*, December, 1919) says that the examination of the cardiovascular apparatus of immense numbers of soldiers by specially qualified medical officers has resulted in a distinct gain in our knowledge of certain phases of cardiac diagnosis in three principal directions: A better appreciation of the extent and frequency of normal variations from the conventional physical signs of the heart; the recognition of the importance and frequency of the syndrome known as the irritable heart of soldiers or the effort syndrome; and an increased accuracy in the diagnosis of the mild forms of valvular disease, especially of mitral insufficiency and mitral stenosis. Variations from the conventional physical signs of the heart are very common in normal individuals and affect every type of physical sign. The systolic accidental or functional murmurs heard at the apex and in the pulmonic area are the most important and the most likely to lead to errors in diagnosis. It is believed that fully nine tenths of all apical systolic murmurs are accidental or functional. The most frequent and most important heart disorder encountered during the war was the irritable heart, which is very likely to be mistaken for some organic disease, especially mitral insufficiency or stenosis. The knowledge gained indicates that only a minority of the cases had their origin in conditions peculiar to war, and that the condition must have been far from rare in civil life in spite of our failure to recognize it. Mild grades of valvular disease show a cardiac reserve well within normal limits and are remarkably free from subjective symptoms; in this respect they offer a striking contrast to the effort syndrome, in which such symptoms are usually pronounced. The extraordinary rarity of cases of syphilitic disease of the aorta and heart among the men examined seems to indicate that the clinical manifestations of syphilis in the aorta and heart almost never appear before the thirty-fifth year.

Diphtheria Occurrence in the Army.—Marcus P. Neal and Alan C. Sutton (*Military Surgeon*, November, 1919) report an epidemic of diphtheria which occurred in the A. E. F. in France. After the armistice the epidemic was limited to the army of occupation, as the disease was introduced from the civilian population. The disease became scattered through the different units. The clinical features were not unlike the textbook descriptions. The only fault was that the cases were not diagnosed or treated as diphtheria until the presence of the disease was proved. This was contrary to general teaching. Some cases of wound diphtheria were seen. Antitoxin treatment resulted in improvement. The treatment did not vary from the usual type of antitoxin administration in large doses. In some cases unfavorable results from delayed treatment or insufficient dose were noted. Myocarditis, cardiac paralysis, postdiphtheritic paralysis of optic, laryngeal and other nerves, a prolonged convalescence, a certain number of carriers and an increased

number of days lost by individuals, were the results of this inadequate method of treatment.

The points to be watched in making throat cultures are:

1. The Loeffler's media must be of good quality. The most important single factor is that it must contain plenty of moisture as indicated by the presence of some water in the condensation tube. This is important if a three inch test tube is used, as is frequently essential on account of a limited amount of incubator space.

2. The swabbing must be passed over both tonsils and then across the posterior pharyngeal wall while strong tongue depression is maintained. The pharynx should be swabbed last, as this is likely to gag the patient, filling the throat with mucus, which interferes with further swabbing. If any membranous condition is present, a piece should be detached and cultured. Throat swabbing, if done in a large number of patients, is likely to become slipshod as attention to small details causes rapid fatigue. The work showed that extensive culturing in the search for carriers was only justified when great care was taken, otherwise the results did not equal the work done. It often gives a false sense of security and a sense of protection.

3. Care must be taken that the inoculated culture tubes are not exposed to direct sunlight, as this is fatal to the diphtheria organisms.

The reliability of the Schick test was based on the following factors:

1. The use of a properly diluted and potent diphtheria toxin.
2. The use of a control test with heated toxin.
3. A proper technic with suitable instruments making the injection.
4. A correct interpretation of the reactions.

An Epidemic of Influenza in the Strasbourg Garrison.—E. Folly (*Bulletin de l'Académie de médecine*, October 7, 1919) states that there were three epidemics of influenza in the French Army in 1918. The first was the relatively mild spring epidemic; the second, the severe fall epidemic, and the third, the winter epidemic, favored by the movement of troops, the placing of garrisons in the Rhine cities, and the coming and going of men on leave. Among 648 cases in the third outbreak, occurring in the Strasbourg garrison, the mortality was 5.24 per cent. Practically all cases were of the thoracic form of influenza, only three being of the gastrointestinal type and none of the nervous type. The facies proved of marked prognostic significance, and led to a classification in three groups—flushed, pale, and cyanotic. In the first group there were pronounced oculonasal catarrh, epistaxis, and often high fever and pulmonary congestion; recovery was the rule. The pale group comprised "infected" cases, with poor general resistance and frequent complications such as pneumonia, empyema, jaundice, and phlebitis, and with prolonged convalescence and guarded prognosis. The cyanotic group was that of the toxic forms with extreme facial discoloration, high fever, feeble and rapid pulse, and marked dyspnea; auscultation did not always reveal distinct pulmonary lesions,

but sometimes bilateral bronchopneumonia existed. This form was usually fatal, profuse sweating often preceding the final collapse. Bronchopneumonia preceded one half of the fatalities, and was often recurrent in its course. The mortality of pneumonia was thirty per cent. All pleural effusions observed were purulent and of pneumococcal origin; generally the effusion was very insidious in its onset. Nephritis was the rule in grave cases. No instance of otitis media was met with. Congestive rhinitis and purulent sore throat were frequent during convalescence. In the treatment, best results were obtained from digitalis, camphor in oil, adrenalin, diuretics such as theobromine, and repeated venesection. The latter measure, especially, gave striking results in several cases. Moist applications to the chest and oxygen inhalations were also used and the patients constantly watched, as their condition sometimes grew suddenly worse.

Ovarian Residue.—William P. Graves (*Surgery, Gynecology and Obstetrics*, December, 1919) asserts that an internal secretion is manufactured in the general ovarian tissue equal in therapeutic value to that produced in the corpus luteum. Animal experimentation is for the most part excluded. In the treatment for such subjective symptoms as vasomotor disturbances of the menopause, or ovarian asthenias, or the diverse manifestations of dysmenorrhea, it is necessary to rely for the tabulation of results upon the patient's statements. The observations are more accurate in the treatment of objective irregularities. Another serious handicap is securing reliable preparations. All ovarian preparations, excepting those in ampule form, deteriorate and the diverse results obtained may be attributed to this. The term ovarian residue relates to that part of the ovary which remains after the ablation of the corpus luteum, and has usually been discarded as valueless. In employing ovarian residue an endeavor was made to secure ovaries of pregnant animals on the ground that follicle atresia is more active during pregnancy. Ovarian residue contains a minute amount of corpus luteum substance as the corpora lutea are ablated by machinery and small fragments may be left behind. A series of cases treated with the whole ovary gave results almost the same as those treated by ovarian residue. But the general impression is that in using the two forms of ovarian therapy the results were in favor of the residue. Cases treated with corpus luteum showed a higher proportion of failures than the use of the other two forms. The conclusions were as follows: 1. That the ovarian secretion is not solely confined to the corpus luteum, a view which some still hold. 2. That the secretion of the atretic follicles and the corpus luteum is a similar product being manufactured by the analogous cells, namely by those proliferated from the internal theca. 3. That the ovarian residue preserves its chemical integrity longer than those ovarian preparations which contain corpus luteum substance. 4. That under present conditions of preparation ovarian residue is in general superior in its clinical results to the commercial articles now on the market.

Primary Perinephric Suppuration.—A. Bergeret (*Presse médicale*, October 4, 1919), asserts that the so-called primary perinephric suppurative process is in reality always a secondary, metastatic localization of an infective focus elsewhere. He divides the cases into three groups, according as to whether the perinephric process following chronic renal disease occurs in the course of infectious disorders with septicemia, or is secondary to slight medical or surgical infective conditions, the last named category corresponding to the former "primary" perinephric suppuration. Early diagnosis of the perinephric disorder is difficult, yet important, to prevent an extensive suppuration passing to distant tissues. The onset is usually insidious and slow, and the chief symptoms constitutional, though sometimes there is sudden lumbar pain and a chill. Previous local affection elsewhere, and an indefinite constant pain in the lumbar region, are suggestive features. Contraction of the muscles in the costovertebral angle, best detected externally to the main sacro-lumbar muscular mass and by comparison with the opposite side, is always pronounced, and there is exquisite pain upon deep pressure at the apex of the angle formed by the twelfth rib with the sacrolumbar muscles. Retraction of the thigh from poas contraction is rather frequent. Leucocytosis is of little value, but examination of the urine after segregation is usually of great service. Urea elimination on the two sides should be compared and cellular and bacteriological studies of the sediments made. Unilateral bacteriuria or functional deficit confirms the diagnosis. Radiography and pyleography are not of sufficient service to be worth using.

Twenty-five Years of Antidiphtheritic Serum Therapy.—Louis Martin (*Bulletin de l'Académie de médecine*, October 14, 1919) gives definite figures illustrating the reduction in morbidity and mortality from diphtheria since the introduction of antitoxin in 1894. Before that time yearly mortality in 100,000 of population in Paris had been as high as 100. Since that time the highest mortality has been 27.7 per 100,000 in the epidemic of 1901 and 1902, and the lowest 6.4 per 100,000 in 1906. Since 1894 the mortality in Paris has nearly always been below twenty and often below ten. In the four years from 1890 to 1893, the mortality among 3,971 children in a Paris hospital was 51.75 per cent. Among the cases treated from February to July, 1894, the mortality dropped to 24.5 per cent., and in 1904 as low as 7.6 per cent. In tonsillar diphtheria the mortality was reduced from about thirty-four per cent. to its present figure of about ten per cent., and in laryngeal cases radically treated, from seventy-three to twenty per cent. The proportion of cases radically treated fell, moreover, from thirty-six to fifteen per cent. The general hospital mortality now ranges from ten to fifteen per cent. In the French Army there were 3,551 cases from 1888 to 1894, with a mortality of 11.07 per cent. From 1897 to 1914 the army mortality was but 3.3 per cent., while during the recent war it was but two per cent. In Paris 1,432 persons died from diphtheria yearly before the serum treatment; in the last few years the figure has been reduced to 130. In spite of this striking improvement, still better

results can be obtained by making a prompt clinical diagnosis and injecting antitoxin in the earliest period of the disease, as soon as diphtheria is suspected. Increasing attention should be paid to diphtheria convalescents carrying highly contagious germs. Before the war, anaphylaxis from reinjection of serum was feared, but experience during the war with repeated injections of antitetanic serum has led many to a firm conviction that subcutaneous serum reinjections never cause serious anaphylactic attacks in man. Improvement in results since the earlier days of serum treatment in grave, toxic cases has been obtained by the use of massive doses or of intramuscular or intravenous injections. Recoveries in tonsillar cases otherwise doomed have thus been secured. Increased use of the intravenous route will further improve results. This route can be used in grave cases without fear of anaphylaxis by diluting the serum with nine parts of saline solution and injecting very slowly.

Cancer.—J. R. Morison (*British Medical Journal*, November 22, 1919), thinks that cancer is increasing more in younger people than in older. He urges frequent examination of the populace so that early diagnosis can be made, with resulting satisfactory surgical cure. He enumerates the common predisposing causes; clay pipe smoking, chronic irritation, old burns, leucoplakia, phimosis, and so on. The presence of simple tumors, e. g., papillomata, polypi, parotid and thyroid tumors, is emphasized as a predisposing cause. Ulceration or tumor always forming the basis for cancer, the following characteristics of malignancy are given: Hardness, nodular structure, a merging into the surrounding tissues with fixation due to infiltration. Cancer spreads by four methods: 1, by continuity; 2, by contiguity; 3, by the lymphatics; 4, by the blood stream. Diagnostic symptoms of chief importance are: Blood in the urine, stool, or from the vagina; indigestion, constipation with rumbling, and regurgitation. Patients over forty who show such symptoms must be given a rigid examination before cancer is ruled out.

Later Stages of So-called War Nephritis.—Tasker Howard and A. F. Robertson (*American Journal of the Medical Sciences*, December, 1919) studied thirty-seven cases of nephritis contracted overseas for an average period of four months. Half of the men recovered, a quarter developed chronic nephritis (with one death), and a quarter still have nephritis but may ultimately recover. Persisting albuminuria is common, but is considered of little prognostic significance. Polyuria is not uncommon, and when it occurs is a valuable sign. Relative increase of night urine is practically constant in active cases and is not infrequently the only anomaly in the apparently recovered. Blood urea above thirty-five mg. to the 100 c. c. usually meant nephritis, as proved by other factors. Normal readings were frequently found in active cases. Moderate reductions of phenolphthalein output is not an uncommon finding in those patients who have apparently recovered. An elevated blood pressure proved the most reliable single sign. A moderate degree of anemia is extremely common.

Susceptibility to Measles.—Andrew Watson *Reports (Military Surgeon, November, 1919)* affirms that a census of susceptibles and immunes would be of distinct value in controlling measles by isolation and quarantine. The statement of the average adult that he has never had measles is unreliable. There are many minor sources of error, but the discrepancy lies predominantly in the direction of immunes reporting themselves susceptible. The incidence of measles during infancy is extremely prevalent; in adult life, the individual himself is unable to remember his infection. Accurate data concerning the efficacy of quarantine measures in protecting nonimmune individuals can not be computed from the unconfirmed statements of adults reporting themselves susceptible to measles.

Onychogryphosis and Onychomycosis.—A. Sartory (*Bulletin de l'Académie de médecine, October 7, 1919*) notes that the term onychogryphosis is commonly understood as referring to a hypertrophied condition of the nails, either regular or irregular, e. g., clubbed nail, transversally grooved nail, backward or forward curved nail. Onychomycosis refers to a disease of the nails caused by fungi such as the *Achorion schönleini*, various trichophytons, etc. The author investigated microscopically twenty-one cases of true onychogryphosis. In every instance the nails were found infiltrated in certain parts by a network of mycelial filaments. Chlamydospores, usually terminal, were often found, and sometimes conidia. Parasites belonging to one of the following genera were usually found: *scopulariopsis*, *penicillium*, or *aspergillus*. The author considers the term onychogryphosis superfluous, as all instance are actually cases of onychomycosis. The organisms referred to cause thickening of the nails, whereas presence of the trichophyton diminishes their thickness.

Origin of the Latent Meningitis of Syphilitics.—A. Sézary (*Paris médical, October 4, 1919*) notes that hitherto all authors have been in accord in considering meningitis as the common precursor of all syphilitic nervous affections. That latent meningitis in syphilitics may be due directly to the spirochete seems plausible, but it has not been scientifically demonstrated. From a review of recent work on the subject Sézary is led to conclude that latent meningitis is not actually due to the spirochete either during the secondary stage of syphilis or in tabes or general paralysis. A more likely hypothesis is that the primary localization of the spirochete is not in the meninges but in the nerve centres, to which it is brought by the general blood stream. The meningitis is thus merely an ordinary reaction of a serous membrane due to the presence in the vicinity of aggregations of the spirochete and doubtless also of sclerotic and degenerated tissues. It is a known fact that the meninges may become inflamed through contact with primary disease conditions of the nerve centres, whether aseptic, as in cerebral softening, tumor, or disseminated sclerosis, or infective, as in herpes zoster and rabies. Recently Weissenbach, Mestrezat, and Bouttier have shown that in wounds of the brain, intracranial suppuration may be accompanied by a meningeal symptom-complex.

Rapid Diagnosis of Disorders due to Anaerobic Microorganisms.—J. Lignières (*Bulletin de l'Académie de médecine, October 14, 1919*) describes a new method for facilitating and accelerating the bacteriological diagnosis in anaerobic infections. A semiliquid culture medium is used, prepared either with gelatin, or better, with agaragar or a mixture of the two. Whereas in the ordinary agar tube a solid medium is made by mixing one to two per cent. of agar with peptone bouillon, in Lignières's medium only 0.25 per cent. of agar is added, forming a semiliquid mass. As with the usual agar media, various products such as sugars, albumin, blood, bile, etc., may be added to the semiliquid medium, which, however, must not be deprived thereby of its special consistency. The tubes are inoculated as usual with a pipette. After twenty-four to twenty-eight hours of incubation, the anaerobic germs will be found to have developed throughout the medium. Actually a culture of anaerobic organisms in an aerobic medium is thus obtained. The bacilli of necrosis and tetanus, the septic vibrio, and the perfringens, sporogenes, putreficus, and edematous organisms all grow well in this medium. Sugars, and particularly glucose, markedly increase the density of growth, but are not essential. Aerobic germs, such as the subtilis and anthrax bacilli, also grow on this medium, which is therefore a particularly useful one for bacteriological studies. In clinical diagnostic tests, both liquid, solid, and semiliquid media should be inoculated, complete information as to the aerobic and anaerobic germs present being thus secured.

Alcohol in the Cerebrospinal Fluid.—E. Lenoble and F. Daniel (*Bulletin de l'Académie de médecine, October 7, 1919*), experimenting on eight men, found that the minimal amount of alcohol required to cause appearance of alcohol in the cerebrospinal fluid is 325 mls. After ingestion of this amount, .02 to the 1,000 of the alcohol appeared in the cerebrospinal fluid; after 350 mls, three mls, and after 450 mls, six mls. Alcohol was present in larger amounts in the urine, but was eliminated more rapidly. The percentage of alcohol in the blood varied greatly in different subjects, but that in the cerebrospinal fluid was very constant. Ten days was the average time required for complete elimination of alcohol from the cerebrospinal fluid, after cessation of alcohol ingestion; in deeply intoxicated subjects, even eighteen days were sometimes required. In tests of this kind the cerebrospinal fluid must be collected aseptically; otherwise the alcohol soon disappears from it. Acetone must also be excluded. A murderer pleading alcoholism in extenuation of his crime could be easily confounded after analysis of his cerebrospinal fluid; and any attempt to add alcohol surreptitiously to the fluid would prove futile because contamination would occur and turbidity develop, the alcohol, moreover, disappearing at the same time. The test has proven clinically of value in ascertaining the cause of certain cases of obscure jaundice, of meningeal, cerebral, or pontobulbar hemorrhage; of coma due to acute alcoholism in subjects with azotemia; of certain instances of epilepsy, and of toxic ataxia with mental confusion.

Proceedings of National and Local Societies

THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-ninth Annual Meeting, Held at Harrisburg,
Pa., September 22 to 25, 1919.*

Dr. JULIUS COMROE, of York, Third Vice-President, in the
Chair.

(Continued from page 1052.)

GENERAL MEETING.

Physical Findings of Pennsylvania Men in the Draft.—Major W. G. MURDOCK, State Draft Executive for the United States Army, Harrisburg, in a paper on this subject, stated that much had been written and said, and to his mind a great deal of it erroneously, about the high percentage of rejections, not only by examining physicians of draft boards but also by medical officers at camps, of men who had been passed as physically qualified by board physicians. The first report of the Provost Marshal General showed the rate of rejections for the State of Pennsylvania to be 46.67 per cent., the highest of any State in the Union. If these figures had been correct there surely would have been cause for alarm, but fortunately they are not. In the same report statistics were given showing the number of men accepted and rejected in detail by every local board in the State, and a tabulation of these figures showed that during this period the percentage of rejections had been only 28.55, which was less than the average for the entire country.

Statistics showed that the physical condition of the men in Pennsylvania, in spite of the thousands of accidents annually in the industrial plants, was not alarming, but undoubtedly it could be greatly improved by a proper system of health education. In many cases of rejection the registrant had not been aware of any physical defect. The record made by 2,000 physicians in Pennsylvania in the examination of registrants was unimpeachable. The physical condition of the men of the State was not nearly as bad as one might be led to believe from many newspaper and magazine articles, but it could and should be bettered as far as possible and the best way to accomplish this was by a system of universal training and schooling for a period of three months for eighteen year old men, based, not on the idea of building up a fighting machine, which had already doomed the present bills before Congress, but with the sole idea of improving the health of the individual, pointing out his defects and teaching him how to take care of himself; for, after all, in case of emergency, the general health of the men, not a short period of instruction in military tactics, would determine the strength of an army.

Dr. FREDERICK L. VANSICKLE, of Olyphant, Pa., said he believed that Pennsylvania might have had a larger number of rejections than some other States because of her industries. Pennsylvania had had the opportunity for many years to cripple its workers in mines, in mills, and in manufacturing interests; hazardous occupations had made it possible to render militarily unfit men who would come

before the examining boards. It had been the newspaper reports of the high rate of rejection of men from the State of Pennsylvania which had caused the request for Major Murdock's paper and he was sure that each one ought to take an interest in the discussion of the subject, because in the history of the great world's war each State would carry its own burden regarding the accuracy of the statistics. It seemed to him that we should have endeavored to correct these reports when some newspapers stated that the rejections in the State of Pennsylvania were as high as forty-three per cent., and he was glad that Major Murdock had placed on record 28.55 per cent. as being the correct figures, with only eight per cent. rejected in the camps. The public had not realized how difficult it had been for those who had been members of the draft boards, or medical advisory boards, to step out of general practice into that of a military machine and examine rapidly every individual that came before them, making an accurate diagnosis. Furthermore this had been done in the heat of the summer and at periods when doctors were very busy with influenza.

Colonel EDWARD MARTIN, of Philadelphia, commissioner of health of Pennsylvania, said that Major Murdock's paper was a vindication of the profession at large and particularly the profession of Pennsylvania. Through Doctor Finegan, the head of the public school system, there would be introduced into every public school of the State a curriculum which involved not only a thorough systematic education in health, a course ranking with mathematics, the students and teachers being graded and promoted in it, but also a regular systematic course in physical training.

Dr. CHARLES A. E. CODMAN, of Philadelphia, said that during the course of training at Fort Sill a number of men had been sent to the Base Hospital for obvious defects. Among them were several said to be suffering from valvular heart disease. After careful examination it was found that many of these men had a simple mitral lesion. According to statistics published by the British their cardiovascular commission decided that a mitral murmur was almost physiological in adolescents and was of comparatively no significance. Working upon that basis a great many of these men had been returned to duty.

Colonel WILLIAM J. CROOKSTON, of Pittsburgh, said that he had been surgeon to the Twenty-eighth Division in Camp Hancock and he believed in that time perhaps 1,500 to 2,000 men with mental defects and physical defects were turned down. There were a tuberculosis expert, a heart specialist, and a psychiatrist at this camp and they turned men down right and left and no man went abroad who was found by these boards to be defective. Every alcoholic was turned down, 200 of them. Colonel Crookston believed that when the Twenty-eighth Division went abroad it was as nearly perfect, physically and mentally, as any division that went overseas.

Major W. G. MURDOCK, of Harrisburg, said that he wanted to bring out forcibly two things: First, that the physical condition of the men of Pennsylvania was not as bad as it had been represented and, second, that the work of the examining physicians of the State could not be criticized. He knew from his experience and correspondence with other States during this period that they were not up to the standard that the Pennsylvania men set and he did not think that any physician, and there were more than 2,000 of them engaged in this work in this State, needed to be ashamed of any of the work that he had done.

What the Medical Reserve Corps of the Army Should Be.—Surgeon General MERRITT W. IRELAND, U. S. Army, of Washington, D. C., prepared this paper which was read in his absence by Colonel Edward Martin. Surgeon General Ireland said that the creation of the reserve corps was decidedly an act of foresight, for otherwise it would not have been possible to assemble such a cohesive organization of eminent men who promptly responded to the call of their country. After the declaration of war on April 6, 1917, the first American unit to arrive in France was a Red Cross Military Hospital staffed almost entirely by men who were officers in the reserve corps, and this event enabled the medical profession of the United States to point with pride to the fact that a medical unit, the personnel of which was taken almost entirely from civil sources, was the first one in the army to enter the zone of conflict. Many of these gallant officers had made the supreme sacrifice and rested with the noble dead in carefully attended cemeteries in France and Flanders, beside those with whom they had lived and ministered unto in the great offensive. Lest these should have made their sacrifice in vain it behooved us to do all that was within our power so to affiliate ourselves with the military machine of this country, and in every way to improve the living conditions of the people, to the end that the physical standard of the militarily trained American youth might be such that no nation would have the temerity to ever again seek an issue on the field of battle with the United States. The comparative success of the medical department of the American Expeditionary Forces must not be taken as a standard of sufficiency of personnel, equipment, or transportation, for it might be a surprise to learn that the medical department of the combat army of the Expeditionary Forces had only two thirds of the personnel, one fourth of the evacuation hospitals, and one third of the transportation allowed by existing tables of organization. Therefore, any argument to the effect that the American Medical Department in France had a sufficiency of everything should be refuted, for the reverse condition existed, and it was solely the splendid selfsacrificing labor of the personnel for a time that counterbalanced the deficiency in equipment and transportation.

Colonel REUBEN MILLER, of Washington, D. C., said that the Medical Reserve Corps had given much to the country, but it was found to be always true that those who had given most were the easiest

to approach when more was wanted. The war was over and it was right that most of those who had been in service should turn their attention to civil pursuits and forget in a measure the military work that they had been engaged in, but they should not forget that this war might not be the last war. We did not know when war might come again. The appointments in the Medical Reserve Corps were now limited to those who had had service in the present war, who had served honorably and had requested appointment in the reserve subsequent to discharge from the service. That condition of things could not go on. No organization, no matter how high grade its personnel, could live and thrive without the constant introduction of new blood. The youngest of those now in service would not remain young indefinitely. We must have new blood. The source from which we ought to obtain that new blood was among the recent graduates from the medical schools, but he thought these graduates should, preliminary to graduation, be given instruction in medicomilitary matters. Although the law did not limit the organization, the War Department intended to limit the development of these organizations to Class A medical schools, because the department has not an unlimited supply of instructors. He would be very glad indeed if this society saw its way clear to adopt a resolution favoring the introduction into the curriculum of the medical colleges of the State of Pennsylvania of the requirements of the National Defence Act of the R. O. T. C. unit. He thought this society would have a great deal of influence with the colleges and it was very fitting that Pennsylvania should take up seriously the matter of educating for any possible demands which the public might make on them.

Dr. C. A. E. CODMAN, of Philadelphia, said it was the duty of every man who had had the privilege of serving in the great war to volunteer as a member of the Medical Officers' Reserve Corps for the reason that he had been efficiently trained. The value of trained men was selfevident and if the Medical Officers' Reserve Corps could be started with men who had been in the army it would be a great step in advance. And not only the trained men, but the younger men would be needed to take the places of the men who pass on. These men should attend regular schools and be taught the *modus operandi* of field hospital and evacuation hospital work. Men should be taught the paper work, which was extremely difficult, troublesome, and irksome, but must be done in order to have complete reports. The men should be trained also as executives. Medical men should be taught how to organize hospitals and how to take care of men when put in command of organizations of that kind. Another point the War Department should take up is the revision of the *Medical Manual*, which should be brought up to date.

Pennsylvania's Campaign against Venereal Disease.—Dr. S. LEON GANS, of Philadelphia, read this paper saying that the prevalence and seriousness of venereal disease had been sufficiently established both to the professional and lay mind to demand an energetic campaign for the minimizing of this class of infection. The important problem

was the angle of attack. The State Department of Health had thoughtfully outlined a sane program and the success or failure of this campaign would depend quite as much upon individual practitioners as upon any work that the department might undertake. The health of the commonwealth was in the hands of the medical profession of which the department was one unit. The State Department of Health consistently considered the viewpoint and the cooperation of the medical profession in its plans and without their cooperation the campaign would not be successful. This was the day of preventive medicine; therefore, first, all means must be utilized to prevent infection; second, methods must be employed to locate and detect infected persons; third, when infection was detected, treatment must be carried out until a cure was accomplished. Under prevention was classed the educational campaign consisting of organizations which were being formed in every town in the State. These organizations would be composed of responsible men and women, their purpose being to carry education to the individual in his or her town. The block system had been successfully carried out, which brought comprehensive education into each home and dealt with broad public health work. These organizations would supervise a system of talks to assemblies of men and women which would be graded as to sex and age and followed by the distribution of carefully prepared pamphlets. It was recommended that a selected course in sex instruction be introduced into schools and that the parents, the clergy, and the family doctor be urged to discuss this problem so that the growing child would have a sane sexual education rather than a morbid sensual smattering. All inmates of penal institutions or reformatories were being examined and treated when infected. They would be given instruction concerning prophylactic measures, the dangers of infection, and the spread of venereal disease. Framed posters would be distributed throughout the State giving information on venereal infection and advising the proper method of securing relief, also a warning against quacks. The principle of the old fumigation method was now being tested, a preparation known as spirocide being the agent. The residue after burning showed no mercury, indicating volatilization, symptoms usually disappeared after two to six treatments; Wassermann reactions frequently became negative and occurred if the patient was not carefully observed, all indicating absorption. This had been verified by the elimination tests which showed mercury in the urine within two hours, lasting in some cases six days. The preliminary report offered indicated a simple positive method for the administration of mercury.

Colonel EDWARD MARTIN, of Philadelphia, said that because the time for talking was over and the time for doing was here he was going to ask his colleagues to adopt a resolution which he would read and which was direct and clear and which would really help:

Resolved, That the Medical Society of the State of Pennsylvania favor a rational campaign against the incidence of venereal diseases. 1. By the elimination of the prostitute, utilizing social

agencies for making her self-supporting by a less pernicious occupation. 2. By the general knowledge and reasonable availability of the immediate treatment package. 3. By the discovery and treatment till cured of foci of infection. 4. By the restraint of those infected, who by occupation, temperament, or habits endanger others. Be it further

Resolved, That the United States Government through the Treasury Department, Public Health Service, be requested to give to Philadelphia, our port of entry, that protection against a steady influx of fresh venereal infection through the Merchant Marine, which it now affords against other transmissible and quarantinable diseases. (The resolution was adopted.)

Dr. JACOB LEWENGOOD, of New York, said that he had been asked to give an account of his experience. Naturally a drowning man grasped at a straw and he had been placed in a position to grasp anything that was beneficial for the effect on syphilis, both for mankind and the medical profession in general. The spirocide when brought to him was rather crude and he improved and perfected it and naturally used it with a great deal of misgiving. The first thing was its ease of administration, no needle, no danger in preparation of any sort, nothing at all but an ordinary tablet made up of mercurial preparation in combination with copper and a few vegetable compounds to keep it together and when at first tried it he was rather amazed at its possibilities. Being situated in New York and not being able to handle a great many of these active syphilis cases, he looked around for a place in which to enlarge his experimental research in this matter. The opportunity was given him by Colonel Thomasson, Commandant of General Hospital No. 5 at Oswego, N. Y., and a number of cases there of all sorts were treated, 150 to 200. He watched carefully and treated on a scientific basis and ethically. He has declined to use any spirocide until they guaranteed that it would not be used in any other way than ethically. The people who abused this thing had to be suppressed. He had declined to use any of it until they guaranteed that it would not be used in any other way than ethically through the medical profession. The cases had been extremely numerous. The more he had seen of it the better he was pleased. There was nothing new in the inhalation method of giving mercury, but there was something in the effect that inhalation gives with spirocide. This preparation gives you such rapid and immediate results that it is worth trying. He made up his mind not to publish until absolutely certain of its value. He wanted corroboration. He had received it. He had been fortunate enough to get corroboration from a number of military surgeons connected with No. 5. He considered himself more than fortunate in becoming acquainted with Major Gans and through his cooperation demonstrating over the eastern portion of the State, and although he had good results he had also had adverse opinions. At present the use was not limited to any stage of the disease. Wherever there were acute symptoms they disappeared extremely rapidly, even where salvarsan or its allied drugs had proved a failure.

The system of administration was simple. The only ill effect which was likely to occur was the burning of the eyes. Bandaging the eyes might be done to prevent this. In so far as he had used it he had never given more than nine treatments successively and in two years he had not had a single return of a positive Wassermann or active symptoms. It seemed incredible and he had had some observers who had even better results.

Dr. ROBERT L. SCHAEFFER, of Allentown, said that mercury had been for years the drug to kill the spirochete. Salvarsan a few years ago came into vogue and made such rapid progress that he believed some of us neglected the mercurial treatment. This he thought was a mistake. He believed that treatment with salvarsan or arsenical preparations should be combined with mercury treatment. He had had experience in twelve or fifteen cases in which he had found that the clinical symptoms disappeared rapidly. The majority of the patients become salivated to a moderate degree.

Colonel EDWARD MARTIN, of Philadelphia, said that with some little personal experience of syphilis and some little acquaintance with its literature, this was the first time he had heard salivation advocated. He regarded salivation as a lowering of vital resistance. A man got well by his own vital resistance. Each time a patient was salivated his symptoms might disappear, as they would if he was not salivated. The symptoms would disappear merely and his cure would be postponed. As an expression of personal opinion he would say that salivation, even in the faintest degree, was the one thing to be avoided.

Dr. S. LEON GANS, of Philadelphia, said that there were two questions he would like to answer. The formula had been given. As to the salivation they found they were getting reports of salivation and instructions were sent out to prolong treatments and avoid salivation. In other words, to change the technic in administration.

The Antinarcotic Law.—Dr. THOMAS S. BLAIR, of Harrisburg, chief of Bureau of Drug Control, presented this subject saying that the Federal and the State antinarcotic law required physicians to use narcotic drugs according to the data set out in extended textbooks on materia medica, therapeutics, and the practice of medicine. The law did not exact anything more, except that physicians render reports and do what was possible to help the people who were addicted to drugs. They were getting a more exact knowledge of the narcotic situation in the State and it showed that pro rata annually every doctor in the State must be credited with a little more than two ounces prescribed in his practice either in dispensing or prescriptions to patients about five drachms of cocaine and six ounces of opium. One third of the physicians of the State, the less intelligent ones, were responsible for giving out ninety per cent. of this total quantity of narcotic drug. So the rates were from almost nothing for some men up to as high as forty pounds of opium in a year for others. Morphine had ranked as high as fourteen pounds in the case of one alleged doctor.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Textbook of the Pathogenic Bacteria and Protozoa. By JOSEPH MCFARLAND, M.D., Sc.D.; Professor of Pathology and Bacteriology in the University of Pennsylvania; Pathologist to the Philadelphia General Hospital. Ninth Edition, Revised and Illustrated. Philadelphia: W. B. Saunders Company, 1919. Pp. ix-858.

Dr. Joseph McFarland during his army experiences found time to revise his extremely popular textbook and make many changes and additions. The book is so well known among students and bacteriologists that little comment is necessary. The entire book has been brought up to date and its practical value increased. The author makes apology for the frequent reference to *enemies in politics*, and states that the circumstance is deplorable and that it is inconceivable that it shall persist. We do not feel that an apology is required, for an evaluation of our enemies, past or present, often leads to defeat. This happened time and again on the Western Front. The same holds good in science, in literature, in every field of endeavor, and it is hardly rational that we should consider a man an absolute fool because we happen to quarrel with him. It cannot be said that they, our enemies, have the fault of not accepting everything they could use that they could possibly get from us. Usually attempts are made to block progress when some new idea comes along which is not in accord with the ones we hold, or when it interferes with our own set formulas, but we seldom stand in our own light by refusing to accept scientific or artistic products when they happen to come from our former enemies. The wheels of progress cannot be stopped in this way.

Births, Marriages, and Deaths.

Died.

CHESTON.—In Philadelphia, Pa., on Monday, December 22d, Dr. Daniel Murray Cheston, of Harwood, Md., aged seventy-six years.

FOLSOM.—In Epping, N. H., on Friday, December 12th, Dr. Charles Albert Folsom, aged forty-five years.

GIFFORD.—In Fall River, Mass., on Monday, December 15th, Dr. John Henry Gifford, aged sixty-one years.

GILLESPIE.—In Wyoming, Ohio, on Monday, December 15th, Dr. Paul Gillespie, aged forty-eight years.

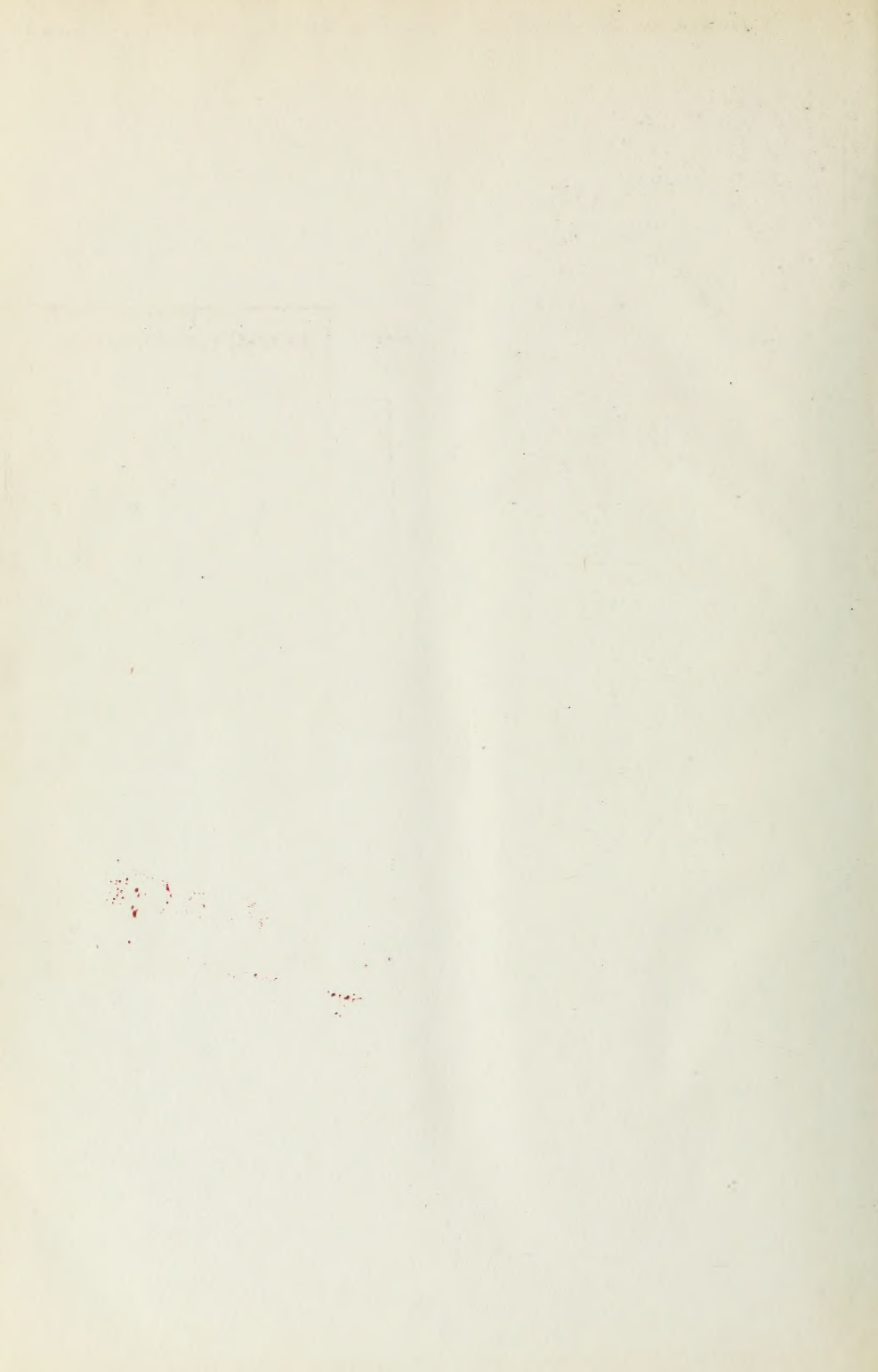
HAGGERTY.—In New York, N. Y., on Thursday, December 18th, Dr. John E. Haggerty, aged forty-three years.

HALVES.—In Brooklyn, N. Y., on Sunday, December 21st, Dr. Frederick Halves, aged seventy-nine years.

SCHAEFFER.—In Philadelphia, Pa., on Friday, December 19th, Dr. Clarence W. Schaeffer, aged thirty-four years.

SPELLMAN.—In Toms River, N. J., on Thursday, December 18th, Dr. Dwight Seymour Spellman, aged fifty-three years.

TURNER.—In Ticonderoga, N. Y., on Friday, December 19th, Dr. Melvin H. Turner, aged sixty-seven years.



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